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Analysis of Eating Habits According to Socio-Demographic Characteristics of College Students

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Abstract: The purpose of this study was to analyze eating habits according to socio-demographic characteristics of college students. The study used a convenience sample of 212 students attending Florida A and M University (FAMU), a Historically Black College and University (HBCU) institution located in Tallahassee, Florida. The three nominal independent variables used in the survey to assess the socio-demographic characteristics of the students were gender, residential status and academic classification. Nearly 72% of the students (n = 152) were females and 28% were males (n = 60); 72% lived off campus in their own houses or apartments (n = 153) and 28 % lived on campus in FAMU dormitories and housing units (n = 59). The academic classification of these 212 students included 65 freshmen (31%), 60 sophomores (28%), 40 juniors (19%), 32 seniors (15%) and 15 graduates (7%). More than half of the students (58%) were between 18 and 20 years old; 36% were between 21 and 24 years old and only 6% were 25 years and older. The results of this study showed significant differences in eating habits based on gender, residential status and academic classification. The data also indicated that students have misconceptions regarding the impact of proper diet and good eating habits on good health. Therefore there is a real need in improving the student's knowledge about nutrition. This need is especially important since many diseases could be delayed or prevented by just changing or improving the nutritional habits. This preliminary study concluded that a better nutrition education program is highly needed by students attending Historically Black Colleges and Universities (HBCU) especially those at Florida A and M University. It is recommended that a study on Body Mass Index in relation to certain socio-demographic characteristics of College students at FAMU be initiated to find out how it correlates with nationwide studies.

Key words: Eating habits, college students, FAMU, HBCU

INTRODUCTION

The Surgeon General's Report on Nutrition and Health emphasizes healthy eating habits and exercise as important health behaviors that help to prevent not only the prevalence of chronic diseases, but also the deficiency in some minerals and vitamins that are associated with fatigue, reduced attention span, decreased work performance, reduced resistance to infection and poor cognitive performance (USHHS, 1988). For example, eating disorders create a variety of medical conditions that occur more frequently in the college-age population as published by (Grace, 1997). For college students, especially those attending Historically Black Colleges and Universities (HBCU), these conditions are key factors that may have a lasting impact not only on their academic achievements while in school, but also on their professional performances before and after graduation.

One of the conditions that can affect the college students' academic achievements is their inability to sleep due to bad eating habits. In a study of the relationship between habitual sleep duration and eating disorders in college students, indicated that short-sleepers were five times more likely to exhibit abnormal eating patterns than long-sleepers (Hicks and Rozette, 1986). However, this study did not examine the socio-demographic characteristics associated with students' sleep deprivations due to their eating disorders.

Another researcher used the National College Health Risk Behavior Survey as an instrument to collect and analyze data related to six health-status categories, including dietary behaviors of HBCU students (Fennell, 1997). The results of this study indicated that women were significantly more likely than men to view themselves as overweight and more than one third of them were trying to lose weight. However, this study focused on health status, e.g., body mass index, rather than on specific eating habits of the students and gender was the only socio-demographic characteristic used to compare the differences in health status of the students.

Nutrition education is one approach used to increase nutrition knowledge that can promote healthy dietary behaviors. However, a quasi-experimental study of high school students indicated that although nutrition education improves knowledge of nutrition, it does not greatly influence the food choices (Anderson *et al.*, 2001). A graduate student obtained the same result

using data collected on black university students (Unaegbu, 1982). This negative relationship between nutrition knowledge and food selection suggests that other factors such as peer pressure, especially among young people and the media, including televised ads and food network shows, have great influence on people's eating habits. Another researcher reported that the media are responsible for perpetuating the notion that being very thin is both healthy and beautiful (Ryan, 1995). This may explain why a growing number of college students, especially females, are mostly concerned about their physical appearance at the expense of their health. For example, these students may try to adopt some attitudes and eating behaviors to control and reduce their body weight through unbalanced and ill-conceived diets by avoiding all high energy food products, skipping breakfast, giving up milk, fruits and vegetables and eating far too little at every meal. Two more researchers who studied the health behaviors of 224 HBCU undergraduate students enrolled in health education classes indicated that most students do not eat breakfast, have a diet that is not nutritionally balanced and are usually not involved in daily physical activity (Ford and Goode, 1994).

Although breakfast is considered the most important meal of the day, the gender seems to make a significant difference. Females skip breakfast three times more often than males, mainly because they do not have time and are not hungry in the morning (Shaw, 1998). However, the results of the study were not consistent with prior findings showing that males and young children, especially those from low-income families, are more frequent breakfast-skippers that other groups due to lack of money and food (McIntyre, 1993). Breakfast-skipping not only is associated with lower total energy intake and worse intake of various vitamins and minerals, but this abstinence is not compensated by other nutrient intakes during the rest of the day (Nicklas *et al*., 1993). Another published study indicated that breakfast-skippers are more likely to eat foods that are high in fat and sodium content, such as high-fat snacks, which often result in higher cholesterol levels (Resnicow, 1991). Based on the literature review showing very scarce information on eating habits of college students at HBCU, we decided to conduct a study to analyze eating habits according to socio-demographic characteristics of college students.

MATERIALS AND METHODS

The subjects of this study included a convenience sample of 212 black students attending the Florida Agricultural and Mechanical University (FAMU), an HBCU institution located in Tallahassee, Florida. Gender (male vs. female), residential status (on-campus vs. off-campus) and academic classification (freshmen, sophomores, juniors, seniors and graduates) are the three nominal variables used in the survey to assess the socio-demographic characteristics of the students. Nearly 72% of the students (n = 152) were females and 28% were males (n = 60); 72% lived off campus in their own houses or apartments (n = 153) and 28% lived on campus in FAMU dormitories and housing units (n = 59). The academic classification of these 212 students included 65 freshmen (31%), 60 sophomores (28%), 40 juniors (19%), 32 seniors (15%) and 15 graduates (7%). More than half of the students (58%) were between 18 and 20 years old; 36% were between 21 and 24 years old and only 6% were 25 years and older.

The survey instrument used to collect data was a 32-item nutrition questionnaire, which included not only the above socio-demographic characteristics, but also a series of multiple-choice and open-end questions that assessed various eating habits of the students, in terms of the type and frequency of the food consumed. Students' participation in the survey was voluntary and responses to these questions were anonymous, e.g., the questionnaire did not include any student identifiers or names. The questionnaire was completed during regular class period by students from the Colleges of Nursing, Pharmacy and Agricultural Sciences, who were enrolled in nutrition classes. A team of 5 research assistants, including 3 undergraduate and 2 graduate students, were in charge of distributing the questionnaire, which was completed by the respondents in the presence of the research assistant in Spring 2003 (n = 111) and in Spring 2004 (n = 101).

Responses to all eating habit questions, except the number of meals and snacks consumed daily, were nominal variables coded as Yes or No to facilitate the cross-tabulation and bivariate analysis of the data. The cross-tabulations of each eating habit by gender, residential status and academic classification resulted in a series of contingency tables in which the rows identified the categories pertaining to various eating habits and the columns identified the categories of each socio-demographic characteristic. For these nominal variables, chi-square (x^2) was the statistical technique used for testing whether there are significant differences in each eating habit according to socio-demographic characteristics of the FAMU students. For the two quantitative variables, i.e., number of meals and number of snacks consumed daily, the analysis of variance was the statistical technique used for testing differences in these eating habits according to socio-demographic characteristics of the students.

The simplest method for looking at relationships between nominal variables in a two-way classification of the data is to compare the percentages based on the row totals, the column totals or the overall total (Ott, 1993). Using this method, the eating habit entries (frequencies) for nominal variables are reported in Table 1 as percentages of the column total, showing the

relative number of times each eating habit occurred within each socio-demographic category. For the two quantitative variables, the eating habit entries are reported as average number of meals and snacks consumed daily.

RESULTS

The overall null hypothesis of this study is that there would be no significant differences in eating habits according to socio-demographic characteristics of FAMU students. Using alpha = 0.10 as the level of significance for eating habits measured as nominal variables, the null hypothesis would be rejected if the computed value of chi-square (x^2) is greater than the critical value in the table of chi-square (x^2) sampling distribution.

Eating meals and snacks daily: As shown in Table 1, the average number of meals consumed per student daily was 2.04, suggesting that some students skipped at least one of the three meals (i.e., breakfast, lunch or dinner). The results also show that the average number of meals consumed daily is slightly higher among students who are males, living off campus and academically classified as sophomores or seniors. As shown in Table 1, however, these differences in the average number of meals and snacks consumed are not statistically significant according to the three socio-demographic characteristics of the students involved in this study.

The most important meal of the day: The bivariate analysis of the data in Table 1 shows significant differences in breakfast eating habit according to gender and academic classification of the students. According to these data, the percentage of breakfast eaters is significantly higher among females (43.7%) than males (35%) and among senior and graduate students, who account for more than 50% of breakfast eaters. There is no significant difference in breakfast eating habit according to students' residential status, i.e., living on-campus versus off-campus.

In response to the question "what is the most important meal of the day", more than 77% of the students, regardless of their socio-demographic characteristics, think that dinner is the most important meal of the day, compared to only 13.2% and 8.5% of the students who think respectively that lunch and breakfast are the most important meals of the day. However, as shown in Table 1, the differences in the percentages of students, who think that dinner is the most important meal of the day, are statistically significant only according to academic classification of the students. By contrast, both gender and residential status make significant differences in the percentages of students who think that lunch is the most important meal of the day. As shown in the table, this percentage is significantly higher among females and those living on-campus. Furthermore, only gender and academic classification make a significant difference in the percentage of students who think that breakfast is the most important meal of the day, with males (13.4%) having a significantly high percentage than females (8.6%) and both freshmen (13.8%) and seniors (12.5%) having high percentages than juniors (5%), sophomores (8.3%) or graduates (6.7%).

Drinking habits: Milk, water, juice and soda were the four categories of beverages used to assess the drinking habits of students involved in this study. Students had three options to indicate how often they consumed each drink daily: never, once, or more than once. As shown in Table 1, the highest percentage of students drank water (84%) and juice (84.7%) daily rather than milk (38%) and soda (50.5%).

Residential status makes significant differences only in the drinking habit for juice and soda, with students living on-campus being more likely to drink juice (90.7%) and soda (55.9%) as compared to 82.4% and 48.4% respectively of those living off-campus. Academic classification does not make a significant difference in the drinking habit for juice. However, it has a significant impact on drinking habit for milk water and soda. For example, graduate students (93.3%) have the highest percentage of students who drink water daily as compared to seniors (90.6%), juniors (85%), freshmen (83.1%) and sophomores (78.3%). Those who drink juice daily are less likely to be graduate students, who have the lowest percentage of juice drinkers (73.3%), as compared to the other academic classification groups with more than 80%. Finally, the percentage of those who drink soda is significantly higher among graduate students (60%), followed in descending order by freshmen (55.4%), sophomores (51.7%), juniors (47.5%) and seniors (37.5%).

Cooking habits: Students were asked whether they were more likely than not to cook their own food or eat in a restaurant or order out their food. More than half (55.7%) indicated that they cooked their own food compared to those who ate in a restaurant (10.4%) or ordered out their food (34.9%). However, as shown in Table 1, there are some significant differences in these percentages according to the three socio-demographic characteristics of the students as indicated below.

Analysis by gender shows that college students are more likely to cook their own food if they are females (61.6%) rather than males (41.7%). Those who eat in a restaurant or order out their food are more likely to be males rather than females. For example, among those who eat in a restaurant, the percentage of males (16.7%) is almost twice the percentage of females (8.6%). Furthermore, the percentage of students who

Table 1: Eating habits according to socio-demographic characteristics of college students*

Eating habits	Socio-demographic characteristics of college students: Gender: Female (n = 152)	Gender: Male (n = 60)	Residential status: On-campus (n = 59)	Residential status: Off-campus (n = 153)	Total (n = 212)
Average number of meals consumed daily	2.04	2.10	1.97	2.07	2.04
Average number of snacks consumed daily	1.77	1.55	1.63	1.71	1.69
Percent eat breakfast daily	43.7^{b}	35.0^{a}	40.7	41.2	41.0
Percent think dinner is most important meal of the day	78.1	78.3	76.3	78.4	77.8
Percent think lunch is most important meal of the day	15.2^{b}	8.3^{a}	13.6^{b}	7.8^{a}	13.2
Percent think breakfast is most important meal of the day	8.6^{b}	13.4^{a}	10.2	13.1	8.5
Percent drink milk daily	35.4^{a}	45.0^{b}	36.4	38.6	38.0
Percent drink water daily	81.5^{a}	91.7^{b}	86.4	83.0	84.0
Percent drink juice daily	83.8	88.3	90.7^{b}	82.4^{a}	84.7
Percent drink soft drinks daily	48.3^{a}	55.0^{b}	55.9^{b}	48.4^{a}	50.5
Percent cook own food	61.6^{b}	41.7^{a}	42.4^{a}	60.8^{b}	55.7
Percent eat food in restaurant	8.6^{a}	16.7^{b}	22.0^{b}	5.9^{a}	10.4
Percent order out food	31.8	41.7	39.0^{b}	33.3^{a}	34.9
Percent eat fresh fruits daily	17.2^{b}	11.7^{a}	8.5^{a}	18.3^{b}	15.7
Percent eat fresh fruits more than once a week	34.4	36.7	32.2	36.6	35.4
Percent eat fresh fruits once a week	20.5^{b}	15.0^{a}	22.0	17.0	18.4
Percent eat fresh fruits less than once a week	28.5^{a}	35.0^{b}	37.3^{b}	27.5^{a}	30.2
Percent eat processed fruits regularly (at least once week)	70.9^{b}	53.3^{a}	67.8	64.1	65.1
Percent eat vegetables daily	51.0^{b}	43.3^{a}	40.7^{a}	53.0^{b}	48.1
Percent eat vegetables daily: with every meal	6.0	6.7	8.5	8.5	6.1
Percent eat vegetables daily: 1 out of 2 meals	30.5	30.0	30.5	29.4	29.7
Percent eat vegetables daily: 2 out of 3 meals	15.2^{b}	10.0^{a}	10.2^{a}	15.0^{b}	13.7
Percent feel eating habits improved since attending college	21.2	21.7	13.6^{a}	24.2^{b}	18.9
Percent feel eating habits worsened since attending college	65.5	61.7	76.3^{b}	59.5^{a}	62.9
Percent think they have good eating habits	27.2^{a}	31.7^{b}	22.0^{a}	30.1^{b}	27.8

Eating habits	Socio-demographic characteristics of college students: Academic Classification: Freshman (n = 65)	Sophomore (n = 60)	Junior (n = 40)	Senior (n = 32)	Graduate (n = 15)	Total (n = 212)
Average number of meals consumed daily	2.02	2.10	1.90	2.16	2.07	2.04
Average number of snacks consumed daily	1.71	1.65	1.55	1.69	2.13	1.69
Percent eat breakfast daily	43.1^{c}	36.7^{ab}	32.5^{a}	50.0^{d}	53.3^{d}	41.0
Percent think dinner is most important meal of the day	75.4^{ab}	76.7^{ab}	80.0^{b}	78.1^{ab}	73.3^{a}	77.8
Percent think lunch is most important meal of the day	10.8^{a}	15.0^{ab}	15.0^{ab}	9.4^{a}	20.0^{b}	13.2
Percent think breakfast is most important meal of the day	13.8^{b}	8.3^{ab}	5.0^{a}	12.5^{b}	6.7^{a}	8.5
Percent drink milk daily	32.8^{a}	40.0^{b}	38.8^{ab}	43.8^{b}	36.7^{ab}	38.0
Percent drink water daily	83.1^{ab}	78.3^{a}	85.0^{ab}	90.6^{b}	93.3^{b}	84.0
Percent drink juice daily	87.7^{b}	84.2^{b}	82.5^{b}	87.5^{b}	73.3^{a}	84.7
Percent drink soft drinks daily	55.4^{d}	51.7^{c}	47.5^{b}	37.5^{a}	60.0^{e}	50.5
Percent cook own food	41.5^{a}	60.0^{b}	65.0^{b}	62.5^{b}	46.7^{a}	55.7
Percent eat food in restaurant	20.0^{d}	6.7^{b}	0.0^{a}	12.5^{c}	6.7^{b}	10.4
Percent order out food	38.5^{b}	33.3^{b}	35.0^{b}	25.0^{a}	46.7^{c}	34.9
Percent eat fresh fruits daily	7.7^{a}	8.3^{a}	32.5^{c}	15.6^{b}	33.3^{c}	15.7
Percent eat fresh fruits more than once a week	27.2^{a}	38.3^{b}	27.5^{a}	53.1^{c}	40.0^{b}	35.4
Percent eat fresh fruits once a week	29.2^{c}	20.0^{b}	7.5^{a}	15.6^{b}	20.0^{b}	18.4
Percent eat fresh fruits less than once a week	35.4^{b}	33.3^{b}	32.5^{b}	15.6^{a}	20.0^{a}	30.2
Percent eat processed fruits regularly (at least once week)	66.2	66.7	62.5	65.6	60.0	65.1
Percent eat vegetables daily	38.5^{a}	46.7^{b}	47.5^{b}	68.8^{d}	60.0^{c}	48.1
Percent eat vegetables daily: with every meal	0.0^{a}	6.7^{b}	7.5^{b}	15.6^{c}	6.7^{b}	6.1
Percent eat vegetables daily: 1 out of 2 meals	26.2^{a}	27.3^{a}	27.5^{a}	28.1^{a}	40.0^{b}	29.7
Percent eat vegetables daily: 2 out of 3 meals	12.3^{a}	12.7^{a}	12.5^{a}	25.0^{b}	13.3^{a}	13.7
Percent feel eating habits improved since attending college	16.9^{a}	18.3^{a}	25.0^{b}	21.6^{ab}	40.0^{c}	18.9
Percent feel eating habits worsened since attending college	69.3^{bc}	65.0^{b}	72.5^{c}	65.4^{b}	40.0^{a}	62.9
Percent think they have good eating habits	16.9^{a}	27.5^{b}	30.0^{b}	43.8^{c}	26.7^{b}	27.8

*p>0.10, chi-square test

order out their food is significantly higher among males (41.7%) compared to females (31.8%).

Residential status also makes significant differences in cooking habits of college students. As expected,

students living off campus are more likely to cook their own food rather than eating in a restaurant or ordering out their food. By contrast, those living on campus are less likely to cook their own food and prefer to eat in a restaurant or order out their food. As shown in Table 1, the percentage of those living on campus who cook their own food, eat in restaurants and order out food is 42.4%, 22.0%, me and 39.0% respectively, compared to 60.8%, 5.9% and 33.3%, respectively, among those living off campus.

Analysis by academic classification shows that students are more likely to cook their own food if they are sophomores (60%), juniors (65%) and seniors (62.5 %) rather than freshmen (41.5) and graduates (46.7). As shown in Table 1, freshmen (20%) have the highest percentage of students who eat in a restaurant and the percentage of students who order out their food is significant higher among graduates (46.7%) than any other group.

Eating fruits and vegetables: Vegetables and fruits are the most important source of vitamins and minerals for the human body. The results indicate that only 15.7% of the students eat fresh fruits daily compared to 65.1% who eat processed fruits regularly. Students, who eat fresh fruits less than once a day, do so more than once a week (35.4%), only once a week (18.4%) or less than once a week (30.2%).

Analysis by the three socio-demographic characteristics shows that the rate of frequent fresh fruit eaters is significantly higher if students are females (17.2%) rather than males (11.7%); live off-campus (18.3%) rather than on-campus (8.5%) and are highly academically classified as graduates (33.3%), seniors (15.6%) and juniors (32.5%) rather than less academically classified as freshmen (7.7%) and sophomores (8.3%). Furthermore, although the gender makes a significant difference in the rate of eating processed fruits regularly, with females (70.9%) having higher percentage than males (53.3%), there are no significant differences according to residential status or academic classification of the students.

Overall, more students eat vegetables daily (48.1%) as compared to percentage of daily fresh fruit eaters (15.7%). As indicated in Table 1, the rate of frequent vegetable eaters is significantly higher if students are females (51%) rather than males (43.3%); living off-campus (53%) rather than on-campus (40.7%) and highly academically classified as graduates (60%), seniors (68.8%) and juniors (47.5%), rather than less academically classified as sophomores (46.7%) and freshmen (38.5%).

Changes in eating habits: Regardless of their socio-demographic characteristics, about 18.9.0% of the students thought that their eating habits improved since attending college and 62.9% of them felt that their eating habits worsened after joining the university. Although gender does not make a significant difference, the improvement in eating habits is mostly felt if students live off-campus (24.2%) rather on-campus (13.6%) or are highly academically classified as graduates (40%), seniors (21.6%) or juniors (25%) rather than less academically classified as sophomores (18.3%) or freshmen (16.9).

Overall, about 27.8% of the students think that they have "good eating habits". However, this rate varies significantly according to their socio-demographic characteristics. Most students, who think that they have good eating habits, tend to be among males (31.7%) rather than females (27.2%); those living off-campus (30.1%) rather than on-campus (22%) and those in higher academic classifications, especially juniors (30%%) and seniors (43.8%) rather than lower academic classification such as freshmen (16.9%) and sophomores (27.5%)

DISCUSSION

This research showed that the differences in the average numbers of meals and snacks consumed were not significantly different according to the three socio-demographic characteristics.

Previous researchers have indicated that students who eat fewer meals are expected to eat more snacks (Resnicow, 1991). The results in Table 1 corroborate this previous finding only for gender, where females eat fewer meals but consume more snacks. The results also indicate that those who eat more snacks are more likely to be students living off-campus and academically classified as graduates.

The data clearly indicated that most students think dinner is the most important meal of the day. However, according to literature, eating breakfast is one of the seven health habits identified as the most important meal of the day (Belloc and Breslow, 1972). In addition, breakfast provides nutritional intake of various vitamins and minerals as well as total energy which contribute to long term health and well-being of the consumers Nicklas *et al*., 1993).

In terms of drinking habits, analysis by gender reveals significant differences between males and females in all four categories of drinks (milk, water, juice and soda). The results indicate that the percentages of students who drink milk, water, juice and soda, are significantly higher among males than females.

This study indicated that there were some significant differences in cooking habits, eating fruits and vegetables based on socio-demographic characteristics and residential status of students. However, regardless of their socio-demographic characteristics the majority

of students reported that their eating habits have worsened after joining the university.

Conclusion: Our results suggest that there is a real need in improving the student's knowledge about nutrition. This need is especially important since many diseases could be delayed or prevented by just changing or improving the nutritional habits. This work serves as a preliminary study to further research especially in the African-American campus population. It is recommended that a study on Body Mass Index in relation to certain socio-demographic characteristics of College students at FAMU be initiated to find out how it correlates with nationwide studies.

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