

RELATIONSHIPS BETWEEN LIFESTYLE BEHAVIORS, STRESS, AND WEIGHT
IN UNIVERSITY OF ARIZONA SORORITY WOMEN

By

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Abstract

The objective of this study was to determine the relationship between lifestyle behaviors, stress, and weight in University of Arizona sorority women. The lifestyle behaviors that were identified that have a potential relationship included physical activity and alcohol consumption. The study population consisted of a convenience sample of 82 sorority women at the University of Arizona. Study participants were invited to complete an online survey that contained questions regarding demographic information and lifestyle behaviors and their respective frequencies. They were also asked to complete a Perceived Stress Scale and a Food Frequency Questionnaire. Many participants reported gaining weight during their college career, with a weight fluctuation between 0 and 10 pounds. The study population reported high alcohol consumption, low physical activity, moderate stress, and a diet lacking fruit and vegetable consumption. It was concluded that these lifestyle behaviors have a direct relationship as a predictor for weight gain in college sorority women. The combination of lifestyle behaviors represented in the study population help to explain why this weight change may be occurring. Interventional studies are needed to help reverse the negative health effects experienced by this population to improve weight and provide the basis for healthy weight management.

1. Introduction

The notion that college students gain weight throughout their undergraduate career has become increasingly more common. The stereotype that students gain weight has garnered attention and awareness with the infamous “Freshman 15” expression that surrounds first-year college students. The “Freshmen 15” refers to an arbitrarily set number of pounds (15) that college students will gain during their first year. However, weight gain during this life period is not only occurring among freshmen students. The majority of existing literature focuses on weight gain of only freshmen, and other college levels of education are not represented even though each level has the possibility to experience weight change during their 4-year education.

There are certain lifestyle behaviors that have been found to play a vital role in the weight change seen in college students. These include eating pathology/eating behaviors, physical activity, depression/happiness, stress, alcohol consumption, living situation, and demographics. The majority of current literature supports the weight change notion, but the lifestyle aspects that have affected the weight change and the amount of weight gained is conflicting. On average, students gain between 5 to 10 pounds during the first semester of college. Additionally, some studies have found that females tend to gain more weight, while others have found males gain more weight than females. Most literature states that the weight gain is typically due to alcohol use in both females and males. On the other hand, there are studies that have found decreased physical activity to be positively correlated with weight gain, while other studies have found increased course work and stress to be positively associated with weight gain.

The purpose of this preliminary study is to gather information regarding lifestyle behaviors of undergraduate students, specifically sorority women, at the University of Arizona in order to assess their relationship with nutritional choices and weight gain. This study will

encompass all educational levels and the factors to be assessed include living situation, alcohol consumption, physical activity, food group consumption, and stress. The main question to be answered through the study is: how are lifestyle behaviors (stress, living situation, physical activity, and alcohol consumption) associated with diet quality and body weight in University of Arizona Sorority women? Based on literature review, it is hypothesized that increased stress is associated with reduced physical activity, poor eating habits, increased alcohol consumption and weight gain.

2. Literature Review

Each existing study discussed below plays a significant and insightful role into understanding weight change, primarily weight gain, and its relationship with various lifestyle behaviors. The current literature varies in study populations used, lifestyle behaviors analyzed, and results obtained. There are studies that have analyzed weight change during the freshmen year alone or throughout the four-year college career, but have primarily found that many college students often gain weight. The common lifestyle behaviors that have been analyzed to determine the effect on weight gain in existing literature include perceived stress, physical activity, eating patterns, alcohol consumption, and depression/happiness. The existing literature in the field of college weight gain supports the hypothesis that college students tend to gain weight during their college career, with various lifestyle behaviors playing a key role.

One of the most supportive studies is *Gender Difference in Freshmen Weight Gain* by Bodenlos, et al (2015). This study analyzed weight gain in freshmen over the course of the first year of college, with a focus on male versus female weight gain. The goal of the study was to determine what psychological and lifestyle behaviors were predictors of weight gain. The study population consisted of 304 college freshmen studied over a course of three years. The

methodology for this study examined various measurements including: anthropometric data (height and weight), demographic information, physical activity levels, eating behaviors, perceived stress, depression scale, happiness scale, and loneliness scale. The results of this study concluded that, on average, freshmen gained 4.12 pounds over the first semester and 4.89 pounds over the entire first year. In comparing males and females, over the first year males gained 6.38 pounds, while females gained 4.38 pounds. The main lifestyle behaviors that were positively associated with the weight gain included increased alcohol consumption and lack of physical activity. This study provides direct results of average college weight gain and its relationship with various lifestyle behaviors, supporting the hypothesis that lifestyle behaviors play a role in college student weight gain.

The study by Kelly and Latner (2015) provides relevant results of weight change in a population of college women. This study analyzed patterns of weight change in college women over a one year period in an attempt to determine causes of obesity. The study included women of all grade levels in college at the University of Hawai'i at Mānoa, which comprised the study population of 131 women. The following measurements were used in the methodology and measured at six months and 12 months: height and weight, body fat percentage, eating pathology/disorder, physical activity, body image and dissatisfaction, and depression rates. The overall results across all grade levels showed that 44% of participants had gained a minimum of three pounds (termed the "Gainers"), 23% lost a minimum of three pounds (termed the "Reducers"), and 33% maintained their original weight (termed the "Maintainers"). Those participants who gained weight, gained on average 9.71 pounds during the year. However, the study found no correlation between weight gain and any of the potential patterns measured. The study supports the hypothesis that college students gain weight during college but does not

identify the cause of the weight gain. This study is relevant as it focused on a study population of college women of all grade levels. This study provides support of college weight gain, while also providing insight into a similar study population.

Nicoteri and Miskovsky further maintain the hypothesis supported by the previous two studies. This study was designed to analyze body mass index (BMI) of college freshmen and compare it to the BMI of college seniors or those in their post-undergraduate career. The study looked at weight gain during the college years due to the increasing number of students gaining weight and the prevalence rates of obesity in the young adult age group. At a college in the U.S., 5000 students were asked to provide health histories, and out of the 5,000 students, a convenience sample was used to yield 125 participants. The health histories from the 125 incoming freshmen and outgoing seniors were used to find the incoming and outgoing heights and weights to calculate BMI. The results of this study showed that 22.4% of incoming freshmen were overweight and 25.6% of outgoing seniors were overweight; 14 of the normal weight students were labeled as overweight at the end of college. The study also stated that there was a 25% increase in the rates of overweight and obese individuals during the four-year college career. This study supports the hypothesis of college weight gain by providing numerical data of individuals gaining weight and being labeled as overweight, where they were once normal weight. The college weight gain in this study supports the hypothesis, but does not provide relationships between the weight gain and lifestyle behaviors.

Wilson, et. al (2015) supports the hypothesis by showing weight gain and its relationship to various lifestyle behaviors. This study examined emotional eating as a result of perceived stress and its effect on body mass index (BMI) in college students. The study population included 97 college freshmen, both male and female. The methods used included an emotional

eating scale, perceived stress scale, and eating due to emotional stress questionnaire. Height and weight were also measured during the first month of college. This study found that those with higher amounts of stress were more prone to emotional overeating, and those who had found ways to cope with the stress were less likely to overeat. This study supports the hypothesis that stress, as a lifestyle behavior, may play a role in weight gain.

In conclusion, the five aforementioned studies reviewed all support and provide insight into the hypothesis that college students gain weight and certain lifestyle behaviors play a significant role. Each study reviewed provides results on the various amounts of weight college students tend to gain, making it undisputed that it is common for college students to gain weight. These studies also examine various aspects of students' lives that could be responsible for the weight change including stress, alcohol consumption, and lack of physical activity. Thus, it is relevant to examine various lifestyle behaviors to analyze potential relationships with weight change. Although the methodologies, study populations, and results all differ, these five studies all provide support for the hypothesis that when students attend college, the potential for weight gain exists.

3. Methods

3.1 Setting

The research took place on the main campus of The University of Arizona, located in Tucson, Arizona. The survey was conducted through the online survey generator, Survey Monkey, sent to potential participants via email after the weekly sorority meeting on January 23, 2017 of the Kappa Alpha Theta Chapter. The weekly meeting takes place in the Center for English as a Second Language building at 6:30pm every Monday. During the meeting, the Principal Investigator explained the survey to all attendees, then emailed the link to the survey to

all 298 members through the centralized email server, GIN system. Respondents had a three-week period from the date the survey opened to participate. The survey was completed on the student's own time and in the setting of their choice (i.e. in the comfort of their own home/apartment). Completed surveys were automatically uploaded to the Survey Monkey website without any personal identifying information.

3.2 Study Population

All participants in the study were University of Arizona undergraduate students, of either Freshmen, Sophomore, Junior, or Senior education level and age 18 years of age or older (typically no older than 23). The study consisted of students that are members of the Kappa Alpha Theta sorority at the University of Arizona, thus the study consisted of women; in order to participate in the study, the participant must have been an active member of the Kappa Alpha Theta sorority. There were no exclusions for majors, or racial/ethnic groups. The study participants were a convenience sample; 298 women were invited to fill out the survey, and the number of respondents that completed the survey represents the study sample.

3.3 Recruitment of Study Population

The recruitment of subjects occurred during a weekly sorority chapter meeting held on Mondays at 6:30pm in the Center for English as a Second Language building. The Principal Investigator spoke to the chapter after the meeting to discuss the study, answer any questions, and the investigator then followed the meeting with an email of the study description and a link to the electronic survey to every member through the GIN system, the sorority email server. The Principal Investigator stated that participation in the study was voluntary and that there would be no repercussions for not participating in the study. Since it is a convenience sample, the

recruitment methods only consisted of the Principal Investigator presenting the study to the sorority women and the sorority women deciding whether to participate or not.

3.4 Protection and Confidentiality of Subjects

No names or personal identifying information was collected from participants. Data from completed surveys was automatically entered into a Survey Monkey database, and was only accessed by the Principal Investigator. The results obtained from the completion of the survey do not state any identifying information of the study participant; therefore, by utilizing the online Survey Monkey, all information is de-identified.

3.5 Research Procedure

Participants completed one electronic survey distributed by email following a weekly sorority meeting (January 23, 2017) in the Spring of 2017. The Principal Investigator, a member of the sorority, explained the purpose of the survey as part of the Honors College Thesis requirement and its role in determining relationships between lifestyle behaviors and circumstances, body weight, and diet quality. The Principal Investigator sent an email containing study information and a link to the survey to the 298 women that are members of the Kappa Alpha Theta sorority. Prior to completing the survey, the women were invited to participate; only those who agree to participate (as indicated by clicking “Next” at the end of the waiver of consent) went on to access and complete the survey. Participants had access to the survey for three weeks, and were able to respond to the survey on their own time in an environment in which they were comfortable. The survey took approximately 10-15 minutes to complete. The survey also contained all relevant contact information of the Principal Investigator in case the participants had questions and needed to contact the Principal Investigator.

3.6 Measurements/Questionnaires in Survey

3.6.1 Demographics

A set of demographic related questions were created to determine the characteristics of the study population. The participants were asked to provide information regarding: age, gender, ethnicity, current level of education (freshmen, sophomore, junior, or senior), major/current area of study, and living situation (dorm, sorority house, off-campus apartment, off-campus house, home with parents, or other).

3.6.2 Weight Change

Participants were asked to answer questions regarding weight and weight change during their college career. The participants were asked whether they had gained weight, lost weight, or if their weight has stayed the same. The amount of weight fluctuation was then asked in five (5) pound increments including: 0 to 5 pounds, 5 to 10 pounds, 10 to 15 pounds, 15 to 20 pounds, 20 to 25 pounds, more than 25 pounds, or weight has not fluctuated. This measurement was the primary basis to determining whether college students gain weight during their college career.

3.6.3 Alcohol Consumption

Participants' alcohol consumption was measured using a basic alcohol questionnaire. The participants were asked to answer the questions using standard drink measurements of one drink equaling 12-ounces beer, 5-ounces wine, or 1.5-ounces distilled spirit. The frequency of alcohol consumption (weekly or monthly frequencies), the amount of drinks consumed in one sitting, and the incidence rate of more than five (5) drinks in one sitting during a two-week time frame were the measurements used to determine the alcohol consumption of the study population.

3.6.4 Physical Activity Assessment

The Godin Leisure-Time frequency-based questionnaire (Godin G & Shepard RJ, 1997) was used to assess the physical activity levels of the study population. The questions were based on a typical 7-day period of the participant. Rate of occurrence for more than 15 minutes daily of strenuous exercises (running, vigorous cycling, or soccer), moderate exercises (fast walking, tennis, or easy swimming), and mild exercises (yoga, easy walking, or golf) were assessed in the questionnaire. Additionally, participants were asked to provide the rate of occurrence (often, sometimes, or never/rarely) of physical activity long enough to work up a sweat.

3.6.5 Perceived Stress Scale

The Perceived Stress Scale from the American Sociological Association (Cohen S, Kamarck T, & Mermelstein R, 1983) is a 10-item questionnaire that is used to measure the self-perception of stress in the past month. Participants were asked to self-report their perception of their level of stress by responding to questions regarding stress-related emotions including: being upset from unexpected events, inability to have control, feeling nervous, not being able to cope, feeling irritable, etc. The participants were asked to respond to the questions with the rate of occurrence (never, almost never, sometimes, fairly often, or very often) of these emotions.

3.6.6 Food Frequency Questionnaire

The Food Frequency Questionnaire from Nutrition Quest (Fruit/Vegetable/Fiber Screener) is a 10-item questionnaire used to assess fruit, vegetable, and fiber/grains intake of participants in the past 6 months. The consumption of fruits, vegetables, their products, and foods high in fiber was assessed. The occurrence of consumption was classified by frequencies including: less than 1 time per week, 1 time per week, 2-3 times per week, 4-6 times per week, once a day, or 2 or more times per day. This questionnaire suggested possible diet deficiencies.

4. Results

4.1 Demographics

There was a total of 82 (n=82) study participants (27.5% of possible total). Every study participant was a female undergraduate student at the University of Arizona and a current active member of the sorority Kappa Alpha Theta. The average age of the study participant was 19.7 years old, the most represented level of education was junior, the most represented ethnicity was White/Caucasian, and the most represented living situation was the sorority house.

4.2 Weight Change

As seen in Graph 1, the majority, 59% (48 participants), reported that they have gained weight during their college career. Comparably, 17% (14 participants), reported that they lost weight and 24% (20 participants), reported that their weight had stayed the same throughout college. When asked how much their weight fluctuated, 35% (29 participants) reported that their weight fluctuated between 0 to 5 pounds and 37% (30 participants) reported that their weight fluctuated between 5 to 10 pounds; thus, the majority (72%) had weight that fluctuated between 0 and 10 pounds (Graph 2). There was a 100% (n=82) response rate among study participants for both questions below.

4.3 Alcohol Consumption

As seen in Table 2, the most represented frequency of alcohol consumption is once a week at 28%. Alcohol consumption was also reported at a frequency of twice a week for 24% of the study population and more than three times a week for 23% of the participants; therefore, 74% of the study population consumes alcohol at minimum once per week. The study participants reported consuming, on average, 5.1 drinks in one sitting of alcohol consumption. Additionally,

study participants reported, on average, consuming more than five drinks in one sitting 2.5 times in a two-week period. There was a 97.5% (n=80) response rate among study participants.

4.4 Physical Activity Assessment

As seen in Table 3, in a typical 7-day period, 51% of the study population reported that they often participate in regular activity that works up a sweat, with 10% reporting never participating in regular activity. The study participants reported engaging in strenuous activity such as running, on average, 2.8 times a week. Comparably, study participants reported, on average, engaging in moderate activity such as fast walking 3.1 times per week and mild exercises such as yoga 3.6 times per week (Table 3). There was a 97.5% (n=80) response rate among participants.

4.5 Perceived Stress Scale:

Table 4 presents the data from the Perceived Stress Scale Questionnaire. The majority of respondents (69%) reported feeling nervous or stressed “fairly often” or “very often”. Many respondents (58%) also reported feeling confident about their ability to handle personal problems “sometimes” or “fairly often”. 43% of respondents also reported feeling upset “sometimes” because of something that happened unexpectedly. There was a 94% (n=77) response rate among participants.

4.6 Food Frequency Questionnaire

The study population responded to the Food Frequency Questionnaire regarding fruit, vegetable, and fiber intake. The frequencies correspond to the number of servings consumed per week by study participants. There was a 91.4% (n=75) response rate among participants. Study participants reported low daily consumption of fruits, vegetables, and fiber; the most reported frequencies for most questions were “less than 1 time per week”, as seen in Table 5.

5. Discussion

The results of this study show that weight gain occurred in a large portion of University of Arizona sorority women. Over half, 59%, of the study population reported gaining weight during their college career. This supports the hypothesis that there is a high potential for college students to gain weight during their undergraduate education. This study is particularly relevant as it shows that weight gain can occur throughout the entire college experience as each grade level was well represented in the study population; weight gain is not limited to freshmen. Previous literature has placed an emphasis on freshmen only populations, so this study provides the basis of research on weight gain in every level of education in college. This weight fluctuation varied from one to ten pounds for 72% of the study population; only 18% of the population had a weight fluctuation from 10 to 20 pounds. Thus, it can be concluded that weight gain, for the majority of the population, does not support the common “Freshmen 15” notion. Weight gain and weight fluctuation for college students more typically varies from zero to ten pounds, rather than 15 pounds. The results of this study, furthermore, support the hypothesis that there are certain lifestyle factors that have a relationship with weight gain.

The first lifestyle behavior that appears to have a relationship with the weight gain of the study population is excessive alcohol consumption. 74% of the study population reported consuming alcohol at least once a week with an average of over 5 drinks per one sitting of alcohol consumption. The Department of Health and Human Services has provided dietary guidelines on the consumption of alcohol and have deemed high-risk drinking to be the consumption of four or more drinks in one sitting for women (Dietary Guidelines for Americans, 2010). Therefore, it can be concluded that those in the study population who consume alcohol are participating in high-risk drinking that can have potential negative health effects.

Furthermore, the dietary guidelines have provided caloric information regarding alcohol and have reported that, on average, one drink of pure alcohol is equivalent to approximately 98 calories, which should be considered in the daily caloric intake of the individual. The increased caloric intake of the study population weekly can play a significant role in the weight gain. A study by Fazzino (2017), et al. reported that “regular heavy episodic drinking in young adulthood is associated with higher risk of gaining excess weight and transitioning to overweight/obesity”. Therefore, the study population’s heavy drinking habits can be associated with increased caloric intake, which can be a predictor for the weight gain seen and shows the relationship that exists between the two.

The second lifestyle behavior that can be recognized to have a relationship with weight gain is the lack of physical activity. Although 51% of the study population reported participating in physical activity “often”, the study participants reported only participating in strenuous physical activity such as running, on average, 2.7 times per week. The Department of Health and Human Services has set forth standards of physical activity for weight maintenance and beneficial health outcomes. It is recommended that young adults participate in strenuous activity a minimum of 3 times weekly (Recommendations for Physical Activity); signifying that the study population is not meeting this recommendation. A general rule set forth by the department also recommends that if strenuous activity is not met, the frequency of moderate exercise should be doubled. However, the study population is only participating in moderate activity slightly over 3 times per week; therefore, the study population is not meeting this recommendation as well. Although most of the population is physically active “often”, it can be concluded that the study population is not meeting the recommendations for physical activity due to the lack of strenuous activity and low frequency for moderate activity. Therefore, in terms of physical activity, the study

population is at risk for gaining weight and poor weight maintenance, which signifies the relationship that exists between physical activity and weight gain in this population.

The results from the Perceived Stress Scale also shows the relationship that exists between stress, lifestyle behaviors, and weight gain. The most notable result from this questionnaire is the response to the question: “in the last month, how often have you felt nervous or stressed?”; 69% reported they felt nervous/stressed “fairly often” or “very often”, 0% reported that they never felt stressed. It can be concluded that every study participant has felt stressed during their college education. For many of the other questions, “sometimes” was the most common frequency, signifying that most of the study population experiences feelings of perceived stressed “sometimes”. Mayo Clinic provides the health effects of stress on the body including overeating, anxiety, exercising less often, alcohol and drug abuse, and the potential for weight gain and obesity, with Dr. Edward T. Creagan discussing stress-induced weight gain. He discusses that reduced stress can lead to more control, better eating habits, and increased exercise habits, which can all help an individual maintain a healthy weight (Creagan 2014). However, the study population is experiencing stress at a constant frequency, and therefore, might not be able to control the stress-induced health effects with healthy lifestyle behaviors, which could explain the reduced physical activity, increased alcohol consumption, and weight gain. The stress of the study population explains in part the lifestyle behaviors seen at alarming rates and frequencies, which supports that the stress the participants experience is a predictor for weight gain.

Furthermore, results of the study population’s eating habits from the Food Frequency Questionnaire show a relationship with weight gain. In this study, fruit, vegetable, and fiber intake were used as predictors of overall food consumption quality. MyPlate has set forth dietary guidelines regarding fruit, vegetable, and fiber intake among women age 19-30. For this

population, 2 cups of fruit are recommended daily. One cup of fruit can include 1 serving of fruit juice, 1 small apple, 1 small banana, etc. (MyPlate - Build a Healthy Eating Style). 4% of the study population reports consuming fruit juices 1 time daily and 0% of the population reports consumption at 2 times daily; therefore, the study population is not consuming sufficient fruit servings from fruit juices. 67% of the study population reports consuming fruit, fresh or canned, 2-6 times per week and only 4% of the population consumes fruits 2 or more times a day. From this, it can be concluded that only 4% of the study population is meeting the dietary recommendation, while the other 96% of the population is not consuming the recommended daily intake of fruit.

For vegetables, it is recommended that this population consumes 1.5 cups dark green vegetables, 5.5 cups red/orange vegetables, 1.5 cups beans/peas, 5 cups starchy vegetables, and 4 cups other vegetables equating to 17.5 servings of vegetables weekly or approximately 2.5 servings daily (MyPlate - Build a Healthy Eating Style). Only 4% of the participants report consuming green salad twice a day and only 7% report consuming other vegetables twice a day. The most reported frequencies for the various vegetable options for many participants is 1 time per week or 2-3 times per week. Therefore, it can be concluded that the study population is significantly lacking in adequate vegetable consumption weekly. This inadequate fruit and vegetable intake can have serious health implications. Rolls, et al. (2004), found that “the increase in fiber intake associated with increased consumption of fruits and vegetables could help reduce energy intake and body weight”. However, the study population is significantly lacking in fruit and vegetable consumption, and are therefore, at risk for gaining weight.

Regarding fiber intake, the study population also displays low daily intake. Although grams of fiber were not collected, fiber intake can be estimated from the reported fruit, vegetable,

legume, and high fiber cereal intake of the participants. According to Mayo Clinic, fruits can contain between 1.0 to 8.0 grams of fiber per serving, vegetables can contain between 1.7 to 16.3 grams of fiber per serving, and legumes can contain 10.4 to 15.6 grams per servings (High fiber foods). Therefore, fruits, vegetables, and legumes are sources of high fiber. However, these food groups are significantly lacking in the study population. 84% of the study population consumes legumes 1 time or less than 1 time per week, 87% consumes high fiber cereals 1 time per week or less than 1 time per week, 96% of the population does not meet the recommendation for fruits, and the participants are significantly lacking in vegetable consumption. Therefore, the low vegetable intake, low fruit intake, low legume intake, and low intake of high fiber cereals suggests that the study population is significantly lacking in daily fiber consumption as well.

6. Conclusion

From the results of this study, it can be concluded that stress has a significant relationship between the lifestyle behaviors and the weight gain reported. As mentioned above, stress can cause significant health implications such as exercising less often, alcohol abuse, weight gain, and obesity. These possible negative health effects were seen in the study population, a population in which stress is very prominent. This study is relevant to current literature as it shows how various lifestyle behaviors are linked to weight gain. The high stress of the population may explain the high-risk drinking behavior, the lack of physical activity, and the poor eating habits and ultimately the resulting weight gain. This study is particularly relevant as it incorporates every level of education and provides insight into the common issues college women face that can have health implications.

This study shows the relationship between lifestyle behaviors, stress, and weight change in college women. This study found that many of these women have gained between 0 to 10 pounds

throughout their college career. There were a number of lifestyle behaviors identified that could be predictors for weight gain. In this study population, high alcohol consumption and low physical activity were the two factors that had the potential to affect weight change. Moderate stress was also seen in the study population and could explain the lifestyle factors that are influencing weight gain. Therefore, it has been determined that there is a relationship between low physical activity, high alcohol consumption, stress, poor consumption of fruits and vegetables, and weight gain in college sorority women at the University of Arizona.

The limitations of this study include the study population used. The use of a specific population comprising of only sorority college women limits its use for generalizability. The representation of primarily Caucasian individuals also limits its generalizability. However, the relatively equal representation between all levels of education in the study population provides insight into weight change throughout the college career rather than freshmen year alone.

This study also provides a good foundation for future studies. Future studies should continue to research weight change and its factors throughout the college years, but can also focus on pre and post undergraduate career with an emphasis on the young adult population as a whole. This includes male and female populations representing all ethnic groups equally, as well as female only populations due to the limitation of using a female-only sorority as a study population. Future studies should also research interventional methods to decrease alcohol consumption, reduce stress, increase physical activity, and enhance diet quality to limit weight gain.

The data presented from this study supports the hypothesis that alcohol consumption, physical activity, stress, and food consumption all have a role in the weight gain seen in college students. The study population reported excessive alcohol consumption, decreased physical activity, high stress, and poor food group consumption, all of which play a role in weight gain.

These four lifestyle behaviors are predictors for weight gain and provide insight into the need for intervention strategies to decrease the number of college students who gain weight during their college career. Future studies should focus on the type and amounts of interventional strategies that could be used to decrease the predictors seen in this study to ultimately help college students maintain a healthy weight.

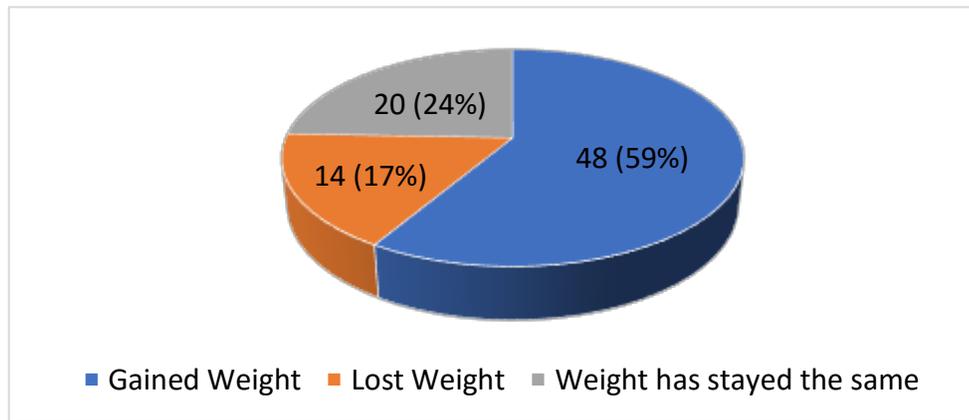
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Appendix

Graph 1: Weight Fluctuation Throughout College of Study Population; n = (80).



Graph 2: Amount of Weight Fluctuation in Study Population; n = (80).

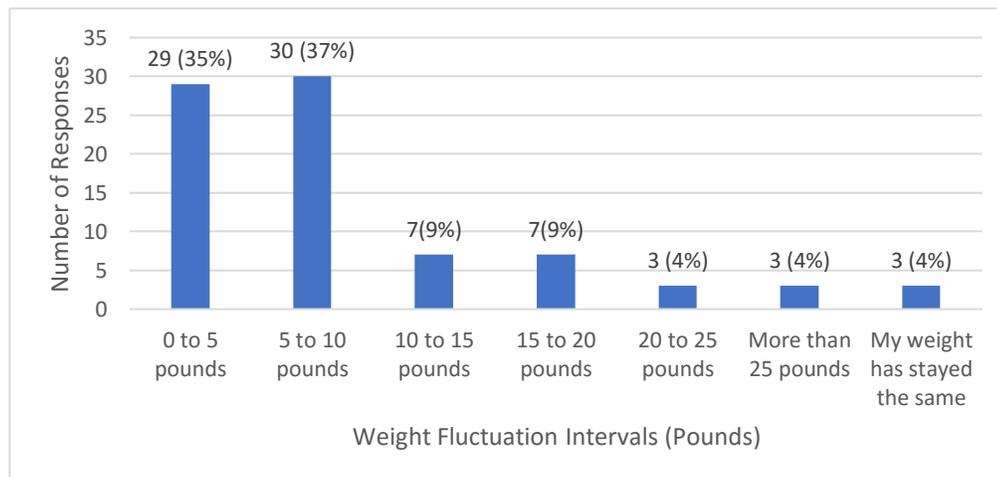


Table 1: Demographics: age, gender, ethnicity, level of education, and living situation.

	n (%)
Age	
18	15 (18%)
19	18 (22%)
20	25 (30%)
21	21 (26%)
22	3 (4%)
23 or older	0 (0%)
Gender	
Female	82 (100%)
Male	0 (0%)
Ethnicity	
American Indian or Alaskan Native	2 (2%)
Asian or Pacific Islander	4 (5%)
Black or African American	1 (1%)
Hispanic or Latino	8 (10%)
White/Caucasian	75 (91%)
Other	1 (1%)
Level of Education	
Freshmen	21 (26%)
Sophomore	16 (20%)
Junior	25 (30%)
Senior	20 (24%)
Living Situation	
Dorm	22 (27%)
Sorority House	26 (32%)
Off-campus apartment	20 (25%)
Off-campus house	12 (15%)
Home with parents	0 (0%)
Other	1 (1%)

Table 2: Alcohol Consumption of Study Population (n=80)

	n (%)
How often do you consume alcohol?	
I do not drink alcohol	2 (2%)
Only special occasions	6 (8%)
1 to 3 times a month	13 (16%)
Once a week	22 (28%)
Twice a week	19 (24%)
More than 3 times a week	18 (23%)
	Average n
How many drinks do you have during one sitting?	5.13 drinks
In the last two weeks, how many times have you consumed more than 5 drinks in one sitting?	2.22 times

Table 3: Physical Activity Level of Study Population in a 7-day period (n=80)

	n (%)
During a typical 7-day period, how often do you engage in regular activity long enough to work up a sweat (heart beats rapidly)?	
Often	41 (51%)
Sometimes	31 (39%)
Never/Rarely	8 (10%)
During a typical 7-day period, how many times on average do you do the following kinds of exercise for more than 15 minutes during your free times?	
Strenuous (heart beats rapidly)	2.77 times/week
Moderate (not exhausting)	3.11 times/week
Mild (minimal effort)	3.63 times/week

Table 4: Perceived Stress Scale Frequency Responses to Questionnaire. Percentages of respondents per each frequency; (n)=77.

Question	Never	Almost Never	Sometimes	Fairly Often	Very Often
In the last month, how often have you been upset because of something that happened unexpectedly?	9%	26%	43%	9%	13%
In the last month, how often have you felt that you were unable to control the important things in your life?	23%	25%	18%	21%	13%
In the last month, how often have you felt nervous or stressed?	0%	8%	23%	31%	38%
In the last month, how often have you felt confident about your ability to handle your personal problems?	1%	13%	28%	32%	26%
In the last month, how often have you felt that things were going your way?	3%	17%	39%	32%	9%
In the last month, how often have you found that you could not cope with all the things that you had to do?	19%	34%	26%	15%	5%
In the last month, how often have you been able to control irritations in your life?	4%	18%	41%	22%	14%
In the last month, how often have you felt that you were on top of things?	4%	9%	38%	35%	14%
In the last month, how often have you been angered because of things that were outside your control?	9%	26%	31%	21%	13%

Table 5: Food Frequency Responses to Questionnaire analyzing fruits, vegetables, and fiber intake weekly. (n)=75.

Food Group	Less than 1 time per week	1 time per week	2-3 times per week	4-6 times per week	Once a day	2 or more times per day
Fruit juice, like orange, apple, grape, fresh, frozen or canned. (Not sodas or other drinks)	61%	11%	19%	5%	4%	0%
Fruit, fresh or canned (not counting juice?)	4%	13%	35%	32%	12%	4%
Vegetable juice, like tomato juice, V-8, carrot	89%	4%	2%	2%	1%	0%
Green Salad	4%	16%	39%	31%	5%	4%
Vegetable soup, or stew with vegetables	45%	42%	14%	0%	0%	0%
Any other vegetables, including string beans, peas, corn, broccoli or any other kind	3%	6%	40%	27%	17%	7%
Fiber cereals like Raisin Bran, Shredded Wheat or Fruit-n-Fiber	76%	11%	11%	1%	1%	0%
Potatoes, any kind, including baked, mashed or french fried	9%	24%	45%	20%	1%	0%
Beans such as baked beans, pinto, kidney, or lentils (not green beans)	45%	39%	8%	7%	1%	0%
Dark bread such as whole wheat or rye	45%	39%	11%	3%	3%	0%

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Questions?

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I am in the Honor's College and part of the requirement to graduate with Honor's is the completion of a thesis research project. I am a Nutritional Sciences major, so I have decided to conduct my Honor's thesis on researching factors that might influence diet quality and body weight change of sorority women like ourselves. The title of my project is "Relationships between lifestyle behaviors, stress, and weight in University of Arizona Sorority Women". Thus my study aims to determine associations between certain lifestyle behaviors and circumstances and diet quality and body weight change in sorority women on the University of Arizona campus, specifically the women of the Kappa Alpha Theta Chapter at the University of Arizona. My study consists of an online survey generated by Survey Monkey. An Institutional Review Board responsible for human subjects research at The University of Arizona reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research. The completion of the survey will take approximately 10-15 minutes to complete. It will be open for the next three weeks, will be completely anonymous, and can be completed in a setting decided upon by the study participant. Participation in the study is completely voluntary and there will be no repercussions for not completing the survey. If you have any questions regarding the survey, my contact information is included at the top of this screen.

By clicking "Next", you are agreeing to voluntary participation in this study. Please answer all questions to the best of your ability and be as accurate as possible.

Demographics

1. What is your age?

- 18
- 19
- 20
- 21
- 22
- 23 or older

2. What is your gender?

- Female
- Male

3. What is your ethnicity? (Please select all that apply.)

- American Indian or Alaskan Native
- Asian or Pacific Islander
- Black or African American
- Hispanic or Latino
- White / Caucasian
- Prefer not to answer
- Other (please specify)

4. What is your current level of education?

5. What is your major(s)?

6. What is your height in feet and inches? For example, if you are 5 feet and 4 inches, write 5'4".

7. How has your weight fluctuated since you have been in college?

- Gained weight
- Lost weight
- Weight has stayed the same

8. How much has your weight fluctuated since you have been in college?

- 0 to 5 pounds
- 5 to 10 pounds
- 10 to 15 pounds
- 15 to 20 pounds
- 20 to 25 pounds
- More than 25 pounds
- My weight has stayed the same since starting college

9. What is your current living situation?

- Dorm
- Sorority house
- Off-campus apartment
- Off-campus house
- Home with parents
- Other (please specify)

10. Which of the following nutritional resources have you used on campus?

- Individual counseling with a dietician/nutritionalist at Campus Health
- UA Cooking on Campus (cooking classes)
- "Ask a Dietician at the Rec"
- Nutrinews in the Daily Wildcat
- I knew there were nutritional resources, but I have not used any of them
- I did not know there were resources on campus
- Other (please specify)

Alcohol Consumption and Physical Activity

One drink of alcohol is equivalent to one 12-ounce beer, 5 ounces of wine, and 1.5 ounces of distilled spirits.

11. How often do you consume alcohol?

- I do not drink alcohol
- Only special occasions
- 1 to 3 times a month
- Once a week
- Twice a week
- More than 3 times a week

12. How many drinks do you have during one sitting of alcohol consumption? (answer only one number)

13. In the last two weeks, how many times have you consumed more than 5 drinks in one sitting? (answer only one number)

14. During a typical 7-day period, how many times on average do you do the following kinds of exercise for more than 15 minutes during your free time? (write on each line the appropriate number)

Strenuous exercise - heart
beats rapidly (e.g. running,
jogging, soccer,
basketball, roller skating,
vigorous swimming,
vigorous long distance
bicycling)

Moderate exercise - not
exhausting (e.g. fast
walking, baseball, tennis,
easy bicycling, volleyball,
easy swimming)

Mild exercise - minimal
effort (e.g. yoga, archery,
bowling, golf, easy
walking, fishing)

15. During a typical 7-day period, how often do you engage in regular activity long enough to work up a sweat (heart beats rapidly)

- Often
- Sometimes
- Never/rarely

Perceived Stress Scale

0 = Never

1 = Almost Never

2 = Sometimes

3 = Fairly Often

4 = Very Often

16. In the last month, how often have you been upset because of something that happened unexpectedly?

17. In the last month, how often have you felt that you were unable to control the important things in your life?

18. In the last month, how often have you felt nervous or stressed?

19. In the last month, how often have you felt confident about your ability to handle your personal problems?

20. In the last month, how often have you felt that things were going your way?

21. In the last month, how often have you found that you could not cope with all the things that you had to do?

22. In the last month, how often have you been able to control irritations in your life?

23. In the last month, how often have you felt that you were on top of things?

24. In the last month, how often have you been angered because of things that were outside your control?

25. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Food Frequency Questionnaire

Think about your eating habits over the past 3 months or so. About how often do you eat each of the following foods? Remember breakfast, lunch, dinner, snacks and eating out.

26. Fruit juice, like orange, apple, grape, fresh, frozen or canned. (Not sodas or other drinks)

27. How often do you eat any fruit, fresh or canned (not counting juice?)

28. Vegetable juice, like tomato juice, V-8, carrot

29. Green salad

30. Potatoes, any kind, including baked, mashed or french fried

31. Vegetable soup, or stew with vegetables

32. Any other vegetables, including string beans, peas, corn, broccoli or any other kind

33. Fiber cereals like Raisin Bran, Shredded Wheat or Fruit-n-Fiber

34. Beans such as baked beans, pinto, kidney, or lentils (not green beans)

35. Dark bread such as whole wheat or rye