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Testing Health and Exercise Knowledge of Bowling Green State University Students

Veronica Rasicci

Paper submitted in partial fulfillment of the requirements for HNRS 4990
Obesity has reached epidemic proportions and the problem is only continuing to grow (Flegal, 2006). Young adult college students are at a time in their lives where behaviors can more easily change than during other ages. They -also are at a point in their lives where their current behaviors will influence the habits that they continue into later adulthood (Racette, Deusinger, Strube, & Highstein, 2012). Education is one way to promote healthy changes by college students. It is important to find out what knowledge of health and exercise college students already have. I developed a questionnaire with content-related validity and distributed it to 100 college students at Bowling Green State University (BGSU), who ranged from freshmen to graduate students, between the ages of 19 and 33. I calculated the percentage of the participants who chose the correct answer of each item on the questionnaire. A majority of the participants selected the right answer for three out of the five general health and wellness questions, two out of the four nutrition and all four of the exercise-related questions. The results illustrated that a certain number of the BGSU students who completed the questionnaire lacked accurate nutrition and general health and wellness knowledge. A majority of these same BGSU students were well informed on knowledge of certain exercise topics.
Introduction

One’s health and wellness is extremely important because without health, one cannot live life to the fullest. One of the latest major health concerns for the United States is the epidemic of obesity afflicting all age groups (Flegal, 2006). According to the Mayo Clinic (Nelson and Zerasky, 2012), 35.7% of American adults and 16.9 percent of children are obese which was defined by Nelson and Zeratsky (2012) as have a Body Mass Index [BMI] greater than 30. If the current increasing rate of obesity isn’t stopped, nation-wide obesity rates could top 44 percent by 2030, with obesity rates exceeding 50% in some states (Nelson & Zeratsky, 2012).

Obesity is a serious problem because obesity can lead to increased incidence of Type 2 diabetes, coronary heart disease and stroke, hypertension, and certain types of cancer. As of 2012, just under ten percent of the American adult population suffered from Type 2 diabetes, which cost more than $245 billion dollars in health care related costs (American Diabetes Association, 2014). Nelson and Zeratsky (2012) estimated that if the average body mass index was reduced by just five percent, thousands of Americans could save billions of dollars in health care costs as well as avoid other obesity-related diseases.

In order to slow and stop the rapid increase in obesity, lifestyle changes need to be made in general health, nutrition, and exercise behaviors. Tackling obesity should be treated using a team comprised of exercise physiologists, registered dieticians, and health promotion professionals in order to best educate and prepare individuals to make the necessary life adjustments (National Institutes of Health & National Heart, Lung, and Blood Institute, 2000). According to the NIH for Heart, Lung, and Blood (2000) a multistep approach is needed that includes an initial assessment of one’s current degree
of obesity and risk status along with a management phase, which focuses on weight
to achieve weight loss. NIH also advises an ongoing therapy phase, which
includes behavior therapy, diet therapy, pharmacological therapy, and aerobic physical
activities to create the necessary behavioral changes (National Institutes of Health, &
National Heart, Lung, and Blood Institute, 2000). Another way to help curb the increases
in obesity is to educate the at-risk population of the consequences of being overweight
and/or obese.

While a multifocal approach is effective, on a smaller scale, education can be
provided in an effort to deter people from making unhealthy choices. As seen with the
decrease in cigarette smoking among the U.S. population that correlates to educational
programs, a similar effect could occur with an increase of education on obesity (Pierce,
Fiore, Novotny, Hatzianfreu, & Davis, 1989). Before effective educational efforts can be
introduced, it seems logical to learn how typical college-age students would fare on
answering a questionnaire that tested their knowledge on basic health and wellness,
nutrition, and exercise topics. By identifying in what areas college students lacked
accurate knowledge, more effective educational information can be targeted at this
susceptible age group. Because young adult college-aged students are at a time in their
lives when lifestyle changes can be made effectively (Racette, Deusinger, Strube, &
Highstein, 2010), I have chosen typical college-age young adult students as my targeted
population.

The purposes of my study were to identify in what areas of health and wellness
a sample of Midwestern college students lacked accurate knowledge and to propose
educational strategies that would reinforce choosing healthy decisions, since “college
Habits highlight adverse behavior that may contribute to overweight during adulthood" (Racette, Deusinger, Strube, & Highstein, 2010, pg 250). I hypothesized that the participants who completed my questionnaire would, on average, select the correct answer less than 33% of the time for questions across all categories, except for the questions referring to a Nutrition Facts food label and the MyPlate nutrition guide, where I believe the participants will choose the correct answer at least 75% of the time.

Method

In order to gain insight into some of the knowledge that typical college-age young adult students have regarding health and wellness, I developed a questionnaire, with the help of different professors who specialize in each of the three categories. I presume the questionnaire has adequate levels of content validity due to the review and suggestions of these content experts. This questionnaire allowed me to discover typical areas of health and wellness in which students may possess or lack adequate knowledge or possess false and inaccurate information.

Participants

The survey was submitted to, and approved by, the Human Subjects Review Committee. A total of 100 participants completed the questionnaire I developed; 56 males and 44 females, who ranged from freshmen in their post-secondary education to graduate students, were included in my sample. There were ten freshman, 11 sophomores, 17 juniors, 37 seniors, and 25 graduate students. The mean age of the participants was 22.3 years old and a median age of 23. According to academic area of study, 37 students from the College of Arts and Sciences, 15 from the College of Business Administration, 24
from the College of Education and Human Development, 15 from the College of Health and Human Services, one student from the College of Musical Arts, and nine students from the College of Technology, Architecture, and Applied Engineering. The ethnic origin of participants in the sample was comprised of 13 African Americans, four Asian Americans, 62 European Americans, three Latino/Hispanic Americans, two Native Americans, and 16 international students (refer to Table 1 for all demographic statistics).

**Development and Administration of Questionnaire**

After meeting with my advisors, Dr. Mary-Jon Ludy and Dr. Stephanie Langendorfer, we decided that a questionnaire of 20 or fewer items (including the demographic information items) would be short enough to get students to complete the questionnaire without getting bored or spending too much time, but still presented enough questions to get an accurate recording of information. The survey was broken down into four categories, with each category ranging from four to six questions. The four item topical categories were general health and wellness knowledge, nutrition-related knowledge, exercise and fitness-related knowledge, and descriptive demographic information items. Each question was carefully worded so that it did not seem like a loaded question, and each answer was arranged in either alphabetical or numerical order, so it did not seem like one answer should be selected more than the others.

I chose questions that related to hydration, sleep, stress, and an application question in each topical category. I felt that those topics are areas that, in general, many adults do not possess adequate knowledge. For example, it is documented that many young adults do not get the recommended amount of sleep each night (Jones, 2013; Reddy, 2014; How much sleep do adults need each night?, 2014). As another example,
there is a common misconception about how much water is needed in order to stay properly hydrated (Valtin, 2002; Mayo Clinic Staff, 2011). When speaking to nutrition expert, Dr. Mary-Jon Ludy, she advised that it would be beneficial for questions pertaining to fad diets and diet misconceptions. She also thought it would be useful to ask questions that would be useful to know in everyday life. Therefore, two facts were asked relating to accurately reading a Nutrition Facts label (i.e., What is the Percent Daily Value caloric value based on?) and understanding MyPlate nutrition guide (i.e., What portion of each meal should consist of fruits and vegetables?). One question was asked about fad diets (i.e., Is a gluten free diet recommended as healthy for everyone?), and one question was asked about common diet misconceptions (i.e., Does eating too much sugar cause diabetes?). The exercise and fitness-related questions asked were based on the American College of Sports Medicine’s current recommendations for adequate physical activity to promote health-related fitness (Gerber et. Al, 2011). The questions asked were how frequent, at what intensity, for how long, and what type of exercise mode is recommended.

In order to get students to participate in my study, I went to various buildings on campus and asked the students who walked by if they would be willing to take a quick survey. I relayed the information to them that this survey was for my Honors project, and upon the completion of the survey, they would receive a complementary water bottle. If the students were interested, they were first handed the informed consent document that they were required to read through and then sign the back of the form. Once they signed the form, they returned the informed consent document to me, and I then handed them the
survey. The instructions were to circle the most correct choice and once all questions
have been answered, to return the survey to me.

After I had collected over 100 surveys, I tallied the number of answers for each question
choice.

**Questionnaire Validity and Reliability**

This questionnaire is considered **content** valid because it was created in conjunction with
professors who are considered to have “expert” knowledge in the areas that this
questionnaire tested. The **convenience** sample size of 100 college students from BGSU
was large enough to create an **accurate representation of BGSU college students** and
potentially allow inference to other young adult students across the nation. BGSU has
students from all 50 states and over 70 countries, with approximately 20% of the students
coming from a racial and ethnic minority group, similar to the **proportion of minorities**
who participated in this questionnaire (BGSU at a glance, 2013) and exist nationally.

**Results**

For the general health and wellness questions, only one question was answered correctly
more than 50% of the time by participants. This was for the true or false question about
whether there is such a thing as good stress for which 72.7% of participants chose
correctly (see Figure 9). In contrast, for how much water should an adult male drink, only
24.5% chose the correct answer (refer to Figure 1). For how much water should an adult
female drink, only 36.6% chose the correct answer (refer to Figure 2) and for how much
sleep should an adult get, only 27.6% chose the correct answer (refer to Figure 3). Lastly,
the application question was answered correctly by 44.4% of the participants (refer to Figure 5).

Out of the nutrition questions, two out of the four questions had more than 50% of the participants choosing the correct answer. 73.7% chose the answer 2,000 calories when asked what a nutrition label’s Percent Daily Value was based off of, and 88.9% agreed that a gluten free diet is not recommended as healthy for everybody (refer to Figure 6 and 12, respectively). However, 54.5% believed that eating too much sugar causes diabetes and that only 22.2% knew that one half of the MyPlate nutrition guide is the recommended portions of fruit and vegetables (refer to Figure 8 and 14, respectively).

The results of the exercise-related questions yielded much greater accurate answers with all four questions having the correct answer chosen more than 50% of the time. When asked how many minutes a week an adult should exercise, 55.4% responded with the correct answer of 150 minutes (refer to Figure 10). 68% said that an adult should exercise three to five days a week, and 90.9% agreed that the exercise should be done at a moderate intensity (Figure 11 and 17, respectively). Finally, 78% of the participants agreed that a balanced combination of cardiovascular, strength, and yoga/Pilates exercises is most beneficial for one’s health (Figure 13).
Table 1: Demographics

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<td>62</td>
<td>3</td>
<td>2</td>
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Figure 1: **Question One:** How much water should an adult male drink each day? Correct answer (in red) is 125 + ounces.
**Figure 2:** **Question Two:** How much water should an adult female drink each day?  
*Correct answer* (in red) is 75 – 99 ounces.

**Figure 3:** **Question Three:** How much sleep should an adult get each night?  
*Correct answer* (in red) is 7 hours.
Figure 4: **Question Four:** True or false, there is such a thing as “good” stress?  
Correct answer (in red) true, there is such a thing as “good” stress.

**True or false, there is such a thing as "good" stress?**

![Bar Chart](chart.png)

Figure 5: **Question Five:** Application: Jimmy participates in cardiovascular exercises five times a week, and strength trains three times a week. His diet consists mainly of fast food and premade meals. Phillip never can find the time to exercise but takes pride in his all-organic, whole-foods diet. Between Jimmy and Phillip, who lives a healthier lifestyle? Correct answer (in red) is neither Jimmy nor Phillip have a healthier lifestyle.

**Application: Who lives a healthier lifestyle?**

![Bar Chart](chart.png)
**Figure 6:** **Question 6:** When looking at a Nutrition Facts label, the Percent Daily Value is based on what calorie diet? **Correct answer** (in red) is 2,000 calories.

**Figure 7:** **Question 7:** Is a gluten free diet recommended as healthy for everyone? **Correct answer** (in red) is no, a gluten free diet is not recommended as healthy for everyone.
Question 8: Does eating too much sugar cause diabetes? Correct answer (in red) is no, eating too much sugar does not cause diabetes.

Figure 8: Does eating too much sugar cause diabetes?

Yes: 55
gNo: 40

Question 9: Based on the MyPlate nutrition guide, what portion of each meal should consist of fruits and vegetables? Correct answer (in red) is one half of each meal should consist of fruit and vegetables.

Figure 9: Based on the MyPlate nutrition guide, what portion of each meal should consist of fruits and vegetables?

One Eighth: 0
One Fourth: 20
One Third: 30
One Half: 50
Figure 10: **Question 10:** How many minutes a week should an adult exercise? Correct answer (in red) is 150 minutes a week.

![Bar chart showing the distribution of minutes a week an adult should exercise. The correct answer is 150 minutes.](chart10)

Figure 11: **Question 11:** How many days a week should an adult perform physical activity? Correct answer (in red) is 3 – 5 days a week.

![Bar chart showing the distribution of days a week an adult should perform physical activity. The correct answer is 3 – 5 days.](chart11)
Figure 12: **Question 12:** At what intensity should most of an adult’s physical activity be? Correct answer (in red) is at a moderate intensity.

![Bar chart showing intensity levels for adult physical activity](chart12.png)

Figure 13: **Question 13:** What types of exercise are most beneficial for one’s health? Correct answer (in red) is a balanced combination of cardiovascular, strength training, and yoga/Pilates.

![Bar chart showing types of exercise](chart13.png)
Discussion

Overall, my hypothesis of the participants selecting the correct answer only 33% of the time, with the exception of questions six and nine, was proven incorrect. For question one (Figure 1), the correct answer of 125 + ounces was chosen only 23% of the time. With less than one out of every four students choosing the correct answer, hydration needs should have more emphasize in education programs. Question two (Figure 2) had the correct answer of 75 – 99 ounces chosen 37% of the time, which was one question that disproved my hypothesis. Comparing Figure 1 to Figure 2 allows one to notice that when one chose was selected for male hydration intake, a lesser or different value was chosen for female hydration intake. This allows one to see that most of the participants realize that males and females have different hydration needs. Question three (Figure 3) interestingly enough showed a very common misconception of the number of hours of sleep recommended for adults each night. More than two thirds of the participants thought that adults needed eight hours of sleep each night, when the actual answer is only seven hours of sleep, which was chosen 28% of the time (How much sleep do adults need each night?, 2014; Reddy, 2014). 73% answered correctly when ask if there was such a thing as “good” stress, known as eustress, and 44% answered the application question correctly be choosing “neither are healthy”, both of which disproved my hypothesis. Overall, general health and wellness need to be reinforced throughout the college years.
because as you can see from the results of each of the questions under that category, only
one question was answered correctly more than 50% of the time.

Out of the nutrition questions, two of the questions have the participants choose
the correct answer more than half of the time, and two questions did not receive that
erating. The first nutrition question (Figure 6) had 74% of the participants chose the
correct answer of a Nutrition fact Percent Daily Value being based off of a 2,000 calorie
diet which means a majority of the participants know how to read a Nutrition Facts label
properly. Figure 7 also shows that 89% of the participants know that a gluten free diet is
not recommended as healthy for everyone, meaning that a majority of the participants are
aware of fad diets. However, 55% of the participants are under the assumption that eating
too much sugar causes diabetes when that is not the case. Diabetes, depending on the
type, is either the pancreas cannot produce enough insulin (Type 1), or the pancreas
develops a resistance to insulin (Type 2) (Marx, 2002). Also, only 22% of the participants
knew that, according to the MyPlate guidelines, one half of a meal should consist of fruits
and vegetables. A majority (45%) of the participants thought that fruits and vegetables
should make up one third of the plate. At first, I thought that a majority of the participants
would answer this question correctly, but then I realized that MyPlate only became public
in 2011, and unless students took a health or nutrition class since the release, they may
not be familiar with what MyPlate is (About us: MyPlate, 2011). Since only the half of
the nutrition questions were answered correctly, I would suggest further nutrition
education for entering college students.

The exercise questions resulted in better results than the general health and
wellness and the nutrition classes, all four of the questions having the majority of the
participants choosing the correct answer each time, again, disproving my hypothesis.

When you refer to Figure 10, 16, and 17, you can see that 55% of the participants are aware that adults should exercise at least 150 minutes each week, 68% know that the physical activity should be performed at least three to five days a week, at a moderate intensity (chosen 91% of the time). Also, 78% of the participants in this study selected the correct mode of exercise – a balance of strength training, cardiovascular exercise, and yoga/Pilates. Overall, I do not believe there needs to be any changes made to the current education of exercise because a vast majority of the students seem to understand the basic guidelines behind how physical activity.

**Conclusion**

Based off of the results, college students at Bowling Green State University are well informed of basic exercise knowledge. However, that is not the case with general health and wellness knowledge or knowledge about nutrition. Therefore, there needs to be more of a focus on nutrition and other health and wellness topics because they are just as important as exercise in living a healthy lifestyle. Since college habits are the foundation for lifelong habits, perhaps a possible solution to this lack of accurate information is to offer a class to all incoming freshmen that touches upon basic health, wellness, and exercise information, as well as how to make healthy lifestyle choices (Racette, Deusinger, Strube, & Highstein, 2012).

**Limitations**

One limitation to this study was that the survey was conducted on campus during the summer class session. This is a limitation because a majority of the freshman and
sophomore students chose to move back home to their hometown during the summertime, therefore, both the freshman and sophomore class are underrepresented in their study. Another limitation to this study was again due to the timing of the study.

During the summertime, the number of people who either live on campus or visit campus declines. While that number declines, the percent of international students increases, showing that the international student population may be over represented in this study.

Another limitation to this study is the location of where participants were recruited. One recruitment site was at BGSU’s temporary student recreation center. Since these participants were either leaving a workout session, or just about to begin working out, they may possess health and exercise knowledge that the general population may not have. One way to solve these limitations is to either administer this survey during the academic school year in either the fall or spring semester, or to do an electronic version of the questionnaire, allowing to reach a greater majority of the student body population, no matter where the students reside in the summer, or what their workout habits are.
References


Appendix

By completing this survey, you are verifying that you have already submitted the informed consent document to the principal investigator and that you understand the risks and benefits associated with your participation in this study. Your responses to this survey will remain anonymous. This survey should take no longer than ten minutes to complete.

Please circle the most correct answer to each question. When you are finished, please turn the survey in to the principal investigator.

**General Health and Wellness:**

How much water should an adult male drink each day?
- 50 – 74 ounces
- 75 – 99 ounces
- 100 – 124 ounces
- 125 + ounces

How much water should an adult female drink each day?
- 50 – 74 ounces
- 75 – 99 ounces
- 100 – 124 ounces
- 125 + ounces

How much sleep should an adult get each night?
- 6 hours
- 7 hours
- 8 hours
- 9 hours

True or false, there is such a thing as “good” stress?
- True
- False

Application: Jimmy participates in cardiovascular exercises five times a week, and strength trains three times a week. His diet consists mainly of fast food and premade meals. Phillip never can find the time to exercise but takes pride in his all organic, whole-foods diet. Between of Jimmy and Phillip, who lives a healthier lifestyle?
- Jimmy
- Phillip
- Both are healthy
- Neither are healthy

**Nutrition:**

When looking at a Nutrition Facts food label, the Percent Daily Value is based on a calorie diet.
- 1,500
- 2,000
- 2,500
- 3,000

Is a gluten free diet recommended as healthy for everyone?
- Yes
- No

Does eating too much sugar cause diabetes?
- Yes
- No
Based on the MyPlate nutrition guide, what portion of each meal should consist of fruits and vegetables?

- 1/8
- ¼
- 1/3
- ½

**Exercise:**
How many minutes a week should an adult exercise?

- 50
- 100
- 150
- 300

How many days a week should an adult perform physical activity?

- 1 – 2
- 3 – 5
- 5 – 7

At what intensity should most of an adult’s physical activity be?

- Light
- Moderate
- Vigorous

What types of exercises are most beneficial for one’s health?

- Mainly cardiovascular
- Mainly strength training
- Mainly yoga/Pilates
- Mainly a balanced combination

**Demographics:**
In which college is your major?

- Arts and Sciences
- Education and Human Development
- Musical Arts
- Business Administration
- Health and Human Services
- Technology, Architecture, and Applied Engineering

Your age (in years):

- 18
- 19
- 20
- 21
- 22
- 23
- Other:____

Your gender:

- Male
- Female
- Rather Not Say

Year in school:

- Freshman
- Sophomore
- Junior
- Senior
- Grad

Race/ethnicity:

- African American
- Asian American
- European American
- Latino/Hispanic American
- Native American
- International

Height: _______ (in inches)
Weight: _______ (in pounds)