

ASSESSING TYPE 2 DIABETES RISK PERCEPTION AMONG COLLEGE  
STUDENTS AND CREATING HEALTH EDUCATION TOOLS USING THE  
HEALTH BELIEF MODEL

by

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fulfillment of the requirements for graduation from the University Honors College

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## ABSTRACT

**Background:** Studies (Amuta et al., 2016; Reyes-Velazquez et al., 2011) have shown that male and female students differ in health behaviors and have low perceptions of type 2 diabetes (T2D), although illness prevalence is rising within this age group (CDC, 2017). **Objective:** To understand MTSU students' view of T2D and to provide relevant health education tools to students. **Questions:** This project asked, '*Are any specific health behaviors associated with low risk perceptions of T2D?*' and '*Does college students' responsiveness to gender-based health education tools differ by gender?*'. **Methodology:** a) illustrating eight gender-based health education tools and b) administering an electronic survey. **Results:** Fast food intake was significantly associated with low risk perceptions of T2D. Posters 5-8 found significance in responses among male and female students. **Conclusion:** MTSU students have relatively low health behavior and risk perceptions of T2D. Results should be used to target specific genders and their health behaviors.

**Word Count:** 150

**Keywords:** *college students, type 2 diabetes, health belief model, graphic design, health communication*

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## **I. LITERATURE REVIEW**

Studies (Amuta et al., 2016; Reyes-Velazquez et al., 2011) have shown that college students engage in poor health behaviors and have relatively low perceptions of type 2 diabetes, although the number of disease cases are rising within this age group (CDC, 2017). Type 2 diabetes is characterized as insulin resistance. High blood sugar levels in people with type 2 diabetes are caused by the cells' inability to respond to regular insulin production, which causes the pancreas to overproduce insulin. Prediabetes is the stage "where blood sugar levels are higher than normal, but not high enough yet to be diagnosed as type 2 diabetes" (CDC, 2017). Most people with type 2 diabetes and prediabetes go undiagnosed.

### **CDC 2017 National Diabetes Report**

The Centers for Disease Control and Prevention identifies that some risk factors for developing prediabetes or type 2 diabetes are being physically active for less than three times a week, having a family member with type 2 diabetes or belonging to one of these ethnicities: African American, Hispanic, American Indian, Alaska Native, Pacific Islander or Asian American (CDC, 2017). According to the CDC's 2017 National Diabetes Statistics Report, type 2 diabetes affects 30.3 million Americans (CDC, 2017). This figure was obtained from data collected in 2015 and represents adults over the age of 18. Of the 30.3 million Americans with type 2 diabetes, ages 18 to 44 make up 4.6 million citizens with type 2 diabetes, while citizens between the ages of 45 to 64 comprise 14.3 million and those older than 65 years old represent close to 12 million. The CDC's report (2017) noted that "132,000 children and adolescents younger than age 18 years" and "193,000 children and adolescents younger than age 20 years" were among

the citizens diagnosed with type 2 diabetes (p.3). The report also found that among minorities, “American Indians/Alaska Natives had the highest prevalence of diagnosed diabetes for both men and women” (p.3). Other ethnicities with high prevalence include non-Hispanic blacks, Mexicans, Puerto Ricans, Asian Indians and Filipinos. Data collected from 2011 to 2014 show that some common risk factors for type 2 diabetes complications are smoking, being overweight or obese and lack of physical activity (CDC, 2017).

### **MTSU Student Demographics**

Based on the Middle Tennessee State University (MTSU) 2016 Fact Book, the student population totals 22,050. Information was gathered on the top five ethnicities with the most students. White students accounted for the largest percentage of 65.8%, or 14,511, of students. Black students represented 20.1%, or 4,425, of students. Asian and Hispanic students ranked close with 5.0% and 4.9%, or 1,094 and 1,084, respectively. The last ranking comes from the American Indian students who make up 0.3%, or 59 students of all the students at MTSU.

Although a small percentage of the MTSU population, American Indians rank the highest in prevalence of type 2 diabetes in the United States. Black Americans, Hispanics, and Asians follow closely in high occurrences of type 2 diabetes within their ethnic groups. Minority students at MTSU account for less than half of the total student population. However, minority groups in the United States have some of the highest occurrences of type 2 diabetes. Data about type 2 diabetes usually focuses on adults. College students are often the focus of health behavior studies, but there should be more

research seeking to understand how college students perceive type 2 diabetes and what type 2 diabetes health promotion materials would be beneficial to this age group.

Student health behaviors were the focus of a 2013 survey conducted at MTSU.

The American College Health Association's National College Health Assessment reported data on 1,274 MTSU students. The data concluded that:

- 45.5% of MTSU students meet the American College of Sports Medicine's and the American Heart Association's recommendations for physical activity (moderate-intensity cardio or aerobic exercise for at least 30 minutes on five or more days per week or vigorous-intensity cardio or aerobic exercise for at least 20 minutes on three or more days per week).
- 65.7% of MTSU students eat only 1 or 2 servings of fruits and vegetables a day
- 3.2% of MTSU students eat 5 or more servings of fruits and vegetables a day

According to this data, less than half of MTSU students exercise at least three times a week. More than half of the students eat at least one serving of fruits and vegetables, however, only three percent of students eat five or more servings a day. The CDC noted that increasing physical activity and fruit and vegetable consumption are beneficial to reducing risk of developing type 2 diabetes (2017). Since MTSU students do not engage heavily in the CDC's recommendations, health promotion should focus on eating-related information as well as fun ways to stay active on campus.

### **College Students' Perceptions of Type 2 Diabetes**

In a study of thirty students from Sam Houston State University in Texas, Reyes-Velazquez and Hoffman (2011) found that college students were either unknowledgeable or nonchalant in their attitudes towards type 2 diabetes. Reyes-Velazquez and Hoffman

noted that “it is necessary to identify whether [the] person considers him- or herself to be at risk for diabetes because it has been found that college students are more likely to think their peers are at risk for type 2 diabetes than to see themselves as being at risk” (Reyes-Velazquez and Hoffman 2011, 166). Many of the study’s participants were female (73.3%), African American (47%) or senior level (33.3%) students (163). Equally divided into three focus groups, the students were asked a series of questions about type 2 diabetes including what the disease is, did they have concerns about the disease and what were examples of type 2 diabetes symptoms. Also, the students reviewed prevention materials using a fear appeal, positive affect appeal or gender-based message. A fear appeal was described as having “a threat, evidence suggesting that a person is specifically vulnerable to the threat, and solutions that are easy to perform and are effective,” while a positive affect appeal expects readers to “comply with the message to obtain the benefits of the information presented” (Reyes-Velazquez and Hoffman 2011, 162). Most participants spoke of their thoughts that type 2 diabetes was simply hereditary, and they either were concerned about the disease because a family member also had it or were not concerned about the disease at all.

### **Fast Food Consumption among College Students**

One negative health behavior that college students often engage in is fast food consumption. Fast food products have low nutritional value, and in high rates of consumption, can negatively impact general health and increase risk for type 2 diabetes. East Carolina University conducted a survey in 2012 that compared the amount spent on fast food with the amount of calories consumed among male and female college students. Significance was found between the overall monthly fast food expenses and calories

consumed. Male students were revealed to spend more money and consume more calories on fast food than female students in this study. A trend the study noticed is that most students who belonged to the obese weight category spent close to \$40 more and consumed an additional 5,000 calories than students in other weight categories (Heidal et al., 2012).

### **Health Behavior and the Influence of Gender**

A 2016 study by Amuta, et al. found that gender does play a role in health behavior. College students from four different universities in Texas were the focus of this study. All participants were either overweight or obese college students, and participant demographics included White (56.4%), Hispanic (30.7%) and Black (11.9%) students with majority of the students being female (71.5%) and having a family history of type 2 diabetes (57.7%). The study looked to understand gender influenced health behavior and perception among college students.

Participants were asked a series of questions surrounding the topics of their perceptions, attitudes, overall fruits and vegetable consumption, use of calorie information and vigorous and moderate physical activity behavior related to type 2 diabetes. The study found that male and female college students' overall thoughts toward type 2 diabetes differed greatly. Females showed more willingness to try healthy foods and eat fruits and vegetables. Male participants had more favorable attitudes towards engaging in physical activities. When trying to create more relevant health promotion material, gender differences should be considered.

## **II. SURVEY DETAILS**

### **Significance**

This paper is intended to help understand the perception of type 2 diabetes among college students to create more relevant prevention and education materials for this age range. College is a crucial time in students' lives, and many students go through several health changes. College students often juggle school, work and home responsibilities. During college, students may begin or continue engaging in unhealthy behaviors such as increased fast food consumption and low physical activity. As described by the CDC, the risk factors for developing type 2 diabetes and prediabetes are poor eating practices and physical activity habits. College students in the United States may be more at risk for developing type 2 diabetes or prediabetes because of their lifestyles. Understanding college students' health backgrounds, perceptions of type 2 diabetes and prediabetes, and health behaviors allows for an in-depth analysis for creating the best health education materials for this age group. As type 2 diabetes cases rises in the United States and also among this age population, a focus on college students' perception, health behaviors and potential risk of type 2 diabetes or prediabetes is necessary for working towards a healthier environment for students.

### **Research Questions**

1. Are any specific health behaviors associated with low risk perceptions of type 2 diabetes?
2. Does college students' responsiveness to gender-based health education tools differ by gender?

## **Important Terms**

Type 1 Diabetes – a condition characterized by high blood glucose levels caused by a total lack of insulin. Occurs when the body's immune system attacks the insulin producing beta cells in the pancreas and destroys them (“Common Terms”).

Type 2 Diabetes – a condition characterized by high blood glucose levels caused by either a lack of insulin or the body's inability to use insulin efficiently. Type 2 diabetes develops most often in middle-aged and older adults but can appear in young people (“Common Terms”).

Perceived susceptibility - beliefs about the likelihood of getting a disease or condition (Glanz, et al. 2008, 47).

Perceived severity – beliefs about the seriousness of contracting a disease or condition, including consequences (Glanz et al., 2008, 47).

Perceived benefits – beliefs about the positive aspects of adopting a health behavior (Glanz et al., 2008, 47).

Perceived barriers – beliefs about obstacles to performing a behavior, and the negative aspects of adopting a health behavior (Glanz et al., 2008, 47).

Cues to action – internal or external factors that could trigger the health behavior (Glanz et al., 2008, 48).

Self-efficacy – beliefs that one can perform the recommended health behavior (Glanz et al., 2008, 48).

### **III. Methodology**

This project used the Health Belief Model as the foundation for the survey and the gender-based health education tools. The survey was created and conducted with Qualtrics.com. The survey consisted of seven survey topics, which included demographics, health behavior, health material relevance and four Health Belief Model constructs: perceived susceptibility, perceived severity, perceived benefits and perceived barriers.

There were eight gender-based health education tools created with Adobe Illustrator. Male and female designs were illustrated for each of the four Health Belief Model constructs. Four Serif fonts and four color schemes were used to understand if different fonts and color schemes work better with different images. The posters that shared the same fonts were 1 and 6, 2 and 5, 3 and 8 and 4 and 7. The posters that shared the same color schemes were 1 and 8, 2 and 7, 3 and 4 and 5 and 6.

Posters one through four received a generic message about type 2 diabetes such as awareness, possible development risk, eye sight risk and bleeding gum risk. Posters five through eight received a more gender-focused message about type 2 diabetes. The messages of posters five through eight reversed the research (Amuta, et al. 2016) found about male students engaging in physical activity and female students engaging in fruit and vegetable consumption. These posters switched the health behaviors resulting in female posters five and seven having messages about physical activity and male posters six and eight having messages about fruit and vegetable consumption. All posters were placed in the Qualtrics survey, and students rated the poster on its font, color scheme, impact on future behavior and whether the message applied to their lifestyles.



## **Health Belief Model Framework**

This project was framed around the Health Belief Model (HBM). Created in the 1950s, HBM aimed to “explain the widespread failure of people to participate in programs to prevent and detect disease” (Glanz et al., 2008, 45-46). HBM is rooted in the cognitive theory, which has value-expectancy models. The value-expectancy models define value as “avoiding illnesses and staying or getting well” and expectancy as “a specific health action may prevent (or ameliorate) an illness or condition for which people believe they might be a risk” (Glanz et al., 2008, 46). The cognitive theory was developed to help explain behavior and believes that “reinforcements [operate] by influencing expectations rather than by influencing behavior directly” (Glanz et al., 2008, 46).

HBM’s constructs are: perceived susceptibility, perceived severity, perceived benefits and barriers. The constructs are observed to understand participants’ own levels of self-efficacy and potential cues to action. The model points out that “gender may moderate the effects of perceived susceptibility and benefits on HPV vaccination because females are more aware of the link between HPV infection and cervical cancer, whereas males may not know that HPV infection can lead to cancers that affect males, such as anal, penile, and oropharyngeal cancers” (Glanz, et al. 50). To produce effective interventions or, in this project’s case, health education tools, importance lies in learning specific perceptions within the HBM constructs.

This framework was used to generate the survey questions and health design posters. Survey topics were based on the model, and most questions will revolve around the participant’s perceptions. The health design posters were gender-based (male and

female) and based on the four constructs: perceived susceptibility, perceived severity, perceived benefits and perceived barriers.

### **Survey Recruitment**

Survey recruitment involved creating a recruitment letter to professors (*See Appendix B*) and to students (*See Appendix C*). Sixty-five professors were contacted through email and served in the College of Basic and Applied Sciences, College of Behavioral and Health Sciences, College of Business, College of Education, College of Liberal Arts or the College of Media and Entertainment. Professors were sent the recruitment letter to distribute the survey information to their students. If professors agreed to distribution, an email was sent with the IRB informed consent form, IRB exempt approval form (*See Appendix A*) and student recruitment letter. If professors did not agree to distribution, an email thanking them was sent. If professors did not respond, a follow email was sent asking if they were interested in distribution.

The student recruitment letter provided students with information about the survey's title, purpose, anonymity and age requirement. Also, in the letter, the survey's deadline and anonymous link were provided to students. Professors were sent emails starting February 3, 2018. The survey ended on February 28, 2018.

### **Survey Validation**

This section provides the survey validation that was submitted to MTSU's IRB. All survey topics below are described and are provided with the source that helped generate the survey questions. Some verb tenses have been changed.

## Demographics

Most surveys begin with demographic-related questions. Questions asked are: their gender, their age, the college of their major, their race and classification. The demographic questions were used to understand if specific genders, ages, colleges, races and/or classifications at MTSU have knowledge about type 2 diabetes and examine their responses to certain health education tools. Available answers to choose from were either custom multiple choice, multiple choices generated by Qualtrics.com or text entry.

## Health Behavior

The questions asked in this section were based on the 2013 MTSU health survey conducted by American College Health Association's National College Health Assessment. The survey found that students did not meet exercise requirements, did not eat many fruits and vegetables and engaged in smoking tobacco ("Tobacco" and "Weight Management"). The exact questions asked in this section were: "Do you smoke?", "How often do you smoke?", "How often do you exercise?", "How often do you eat fruits?", "How often do you eat vegetables?", "How often do you dine in at a restaurant?", and "How often do you eat fast food?". A Likert Scale ranging from strongly disagree to strongly agree was used for this section.

## Susceptibility

Perceived susceptibility is one construct of the Health Belief Model (HBM). The term is defined as the "belief about getting a disease or condition" (Glanz et al., 2008, 47). A 2011 survey by Reyes-Velazquez, et al. (2011) found that students had little to no knowledge about type 2 diabetes. Questions were asked if they had type 2 diabetes, if a

family member or friend has type 2 diabetes and if they feel they're at risk for developing the disease.

### Severity

Perceived severity, another HBM construct, is defined as the “belief about the seriousness of the condition or leaving it untreated and its consequences” (Glanz et. al, 2008, 47). Questions were asked whether they think type 2 diabetes is a serious disease, if type 2 diabetes is an issue in the U.S. and if college students are at risk. Participants chose from the answers of yes, no or not sure for this section.

### Benefits

Perceived benefits, the third HBM construct, is defined as the “belief about the potential positive aspects of a health action” (Glanz, et. al, 2008, 47). Questions were asked if there is benefit in exercising, eating fruits, eating vegetables and monitoring their blood sugar levels. A Likert Scale ranging from strongly disagree to strongly agree was used for this section.

### Barriers

A perceived barrier is described as the “belief about the potential negative aspects of a particular health action” (Glanz, et. al 2008, 47). This section of survey questions asked students about whether they have a car and if they use it on or off campus. These questions were used to determine if transportation is an issue for students to get healthier food options. Other questions asked are the students' work schedules and their agreement with whether eating healthy is expensive, exercising is time consuming, it is difficult to eat healthy and that there are no healthy food options near them. Available answers to

choose from were either yes, no, custom multiple choice or a Likert Scale ranging from strongly disagree to strongly agree.

### **Poster Validation**

This section provides the poster validation that was submitted to MTSU's IRB. The gender-based health designs used in the survey are described and are provided with the source that helped generate the survey questions. Some verb tenses have changed.

To gauge poster effectiveness, students were asked to rate eight gender-based health designs that correspond with the four Health Belief Model constructs: perceived (p.) susceptibility, p. severity, p. benefits and p. barriers. Gender-based health designs were created based on a survey that found male and female college students practice different health behaviors related to eating and exercising (Amuta, et. al, 2016). The eight health designs were placed in the survey for students to rate. Students were asked their agreement with the statements that the designs' fonts, color schemes and message positively affect them. A Likert Scale ranging from strongly disagree to strongly agree was used for this section.

## Posters Used in Survey

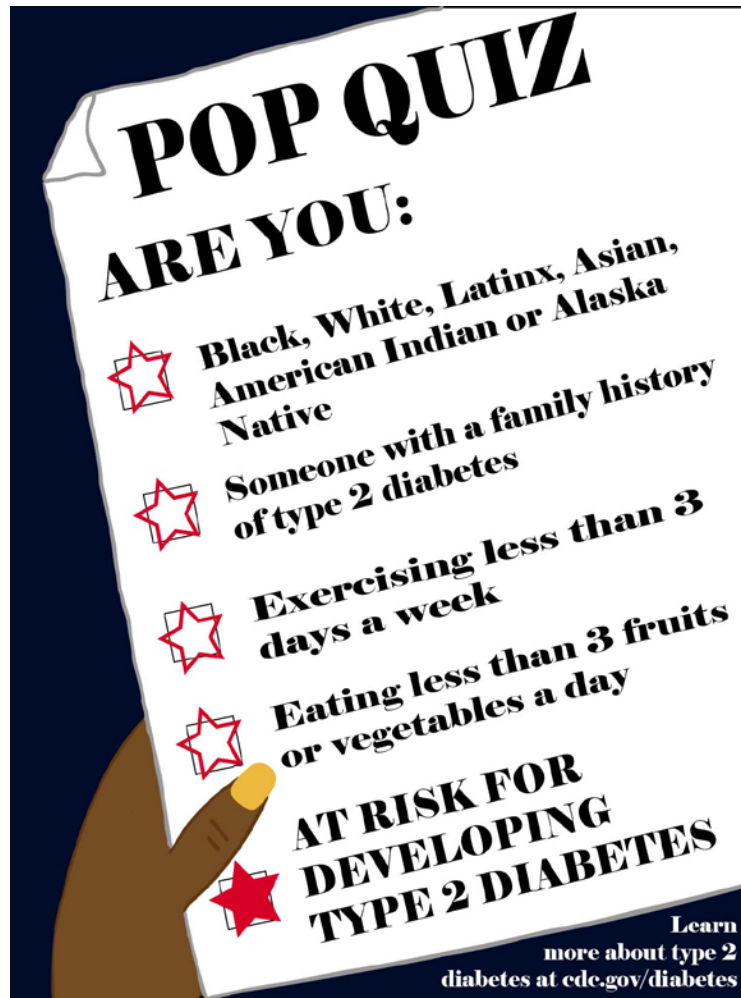


Figure 1. Poster One: Female Susceptibility

Table 1.1. Poster One's hex codes and color descriptions.

Font: <b>Elephant</b>		
	HEX COLOR CODE	COLOR DESCRIPTION
<b>Paper outline</b>	#999999	Medium gray

<b>Background</b>	#000B29	Midnight blue
<b>Stars</b>	#D70026	Red
<b>Nail polish</b>	#EDB83D	Mustard yellow
<b>Hand outline</b>	#603813	Dark brown
<b>Skin color</b>	#754C24	Medium brown
<b>Text on paper</b>	#000000	Black
<b>Text in lower right corner</b>	#FFFFFF	White
<b>Paper</b>	n/a	Default white background



Figure 2. Poster Two: Male Susceptibility

Table 1.2. Poster two's hex codes and color descriptions.

<b>Font: Lucida Fax</b>		
	<b>HEX CODE</b>	<b>COLOR DESCRIPTION</b>
<b>Background</b>	#4D648D	Light navy
<b>Skin outline</b>	#8C6239	Light Brown
<b>Skin</b>	#C69C6D	Tan
<b>Shirt</b>	#1E1F26	Black
<b>Cloud outline</b>	#D0E1F9	Periwinkle blue
<b>Cloud</b>	n/a	Default white background
<b>Clouds' eyes and mouth</b>	#283655	Dark navy
<b>Text in cloud</b>	#283655	Dark navy
<b>Text in bottom right corner</b>	#FFFFFF	White





Figure 3. Poster Three: Female Severity

Table 1.3. Poster three's hex codes and color descriptions.

Font: <b>Cooper Black</b>		
	HEX CODE	COLOR DESCRIPTION
Background	#D4DDE1	Gray-white, opacity 26%
Stripe 1	#335252	Forest green
Stripe 2	#AA4B41	Reddish brown
Text	#000000	Black



Figure 4. Poster Four: Male Severity

Table 1.4. Poster four's hex codes and color descriptions.

Font: Modern No. 20		
	HEX CODE	COLOR DESCRIPTION
Background	#D4DDE1	Gray-white, opacity 26%
Beard hairs	#2D3033	Black
Lip outline	#754C24	Dark brown
Lip	#754C24	Dark brown, opacity 65%

<b>Blood outline</b>	#AA4B41	Reddish brown
<b>Blood</b>	#AA4B41	Reddish brown, opacity 56%
<b>Text</b>	#335252	Forest green

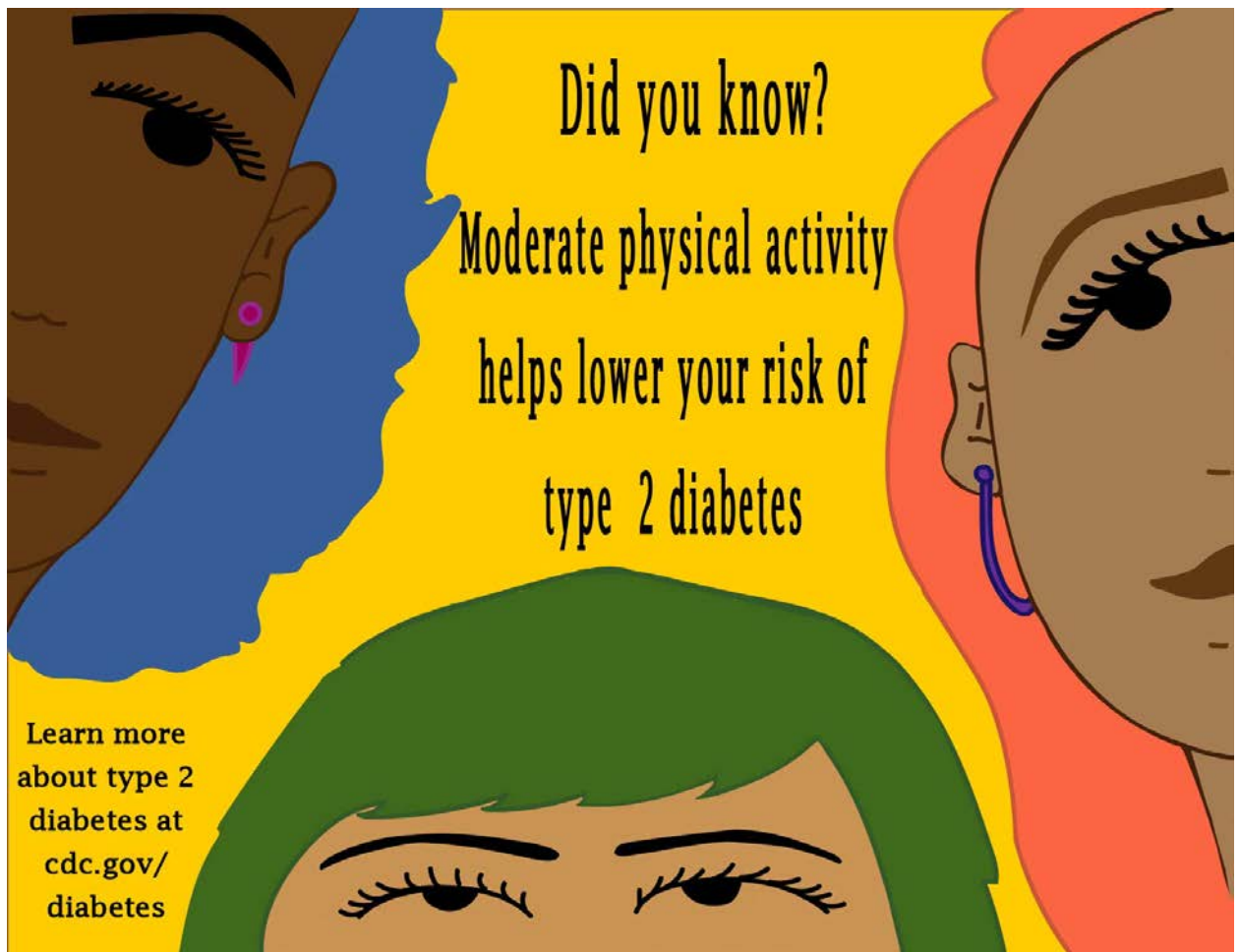


Figure 5. Poster Five: Female Benefits

Table 1.5. Poster five's hex codes and color descriptions.

<b>Font: Lucida Fax (both)</b>		
	<b>HEX CODE</b>	<b>COLOR DESCRIPTION</b>
<b>Background</b>	#FFCC00	Mustard yellow
<b>GIRL #1 (LEFT)</b>		
<b>Skin outline</b>	#42210B	Dark brown
<b>Skin</b>	#603813	Brown
<b>Eyebrows, eyes, eyelashes</b>	#000000	Black
<b>Hair</b>	#375E97	Blue
<b>Earring outline</b>	#93278F	Pink-Purple
<b>Earring</b>	#9E005D	Magenta
<b>Lips</b>	#42210B	Dark brown
<b>Nose</b>	#42210B	Dark brown
<b>GIRL #2 (MIDDLE)</b>		
<b>Skin</b>	#CA9455	Sand brown
<b>Eyebrows, eyes, eyelashes</b>	#000000	Black

<b>Hair outline</b>	#345A29	Forrest green
<b>Hair</b>	#3F681C	Green
<b>GIRL #3 (RIGHT)</b>		
<b>Skin outline</b>	#42210B	Dark brown
<b>Skin</b>	#A67C52	Light brown
<b>Eyebrows</b>	#603813	Brown
<b>Lips</b>	#603813	Brown
<b>Nose</b>	#603813	Brown
<b>Eyes, Eyelashes</b>	#000000	Black
<b>Earring outline</b>	#1B1464	Indigo
<b>Earring</b>	#662D41	Purple
<b>Hair outline</b>	#CB5539	Dark orange
<b>Hair</b>	#FB6542	Red-orange



Figure 6. Poster Six: Male Benefits

Table 1.6. Poster six's hex codes and color descriptions.

Font: <b>Elephant</b>		
	HEX CODE	COLOR DESCRIPTION
<b>Background</b>	#375E97	Cobalt blue
<b>Table</b>	#FB6542	Red-orange
<b>Bottom of table</b>	#B64B31	Reddish brown

<b>Knife and fork</b>	#CCCCCC	Light gray
<b>Hands and legs outline</b>	#A67C52	Tan
<b>Hands and legs</b>	#C69C6D	Sand brown
<b>Leg hairs</b>	#603813	Brown
<b>Nail outline</b>	#8C6239	Dark tan
<b>Shorts outline</b>	#EFB146	Yellow-tan
<b>Shorts</b>	#FFBB00	Yellow
<b>Plate circles with default white center</b>	#3F681C	Green
<b>Grape outline</b>	#1B1464	Dark purple
<b>Grapes</b>	#662D91	Purple
<b>Apple outline</b>	#96272D	Dark red
<b>Apple skin</b>	#C1272D	Red
<b>Apple core</b>	#C7BC99	Off white
<b>Orange outline</b>	#F15A24	Dark orange
<b>Orange skin</b>	#F7931E	Orange, opacity 81%
<b>Orange lines (inside)</b>	#F7731E	Dark orange
<b>Text above table</b>	#FFFFFF	White
<b>Text along shorts</b>	#000000	Black

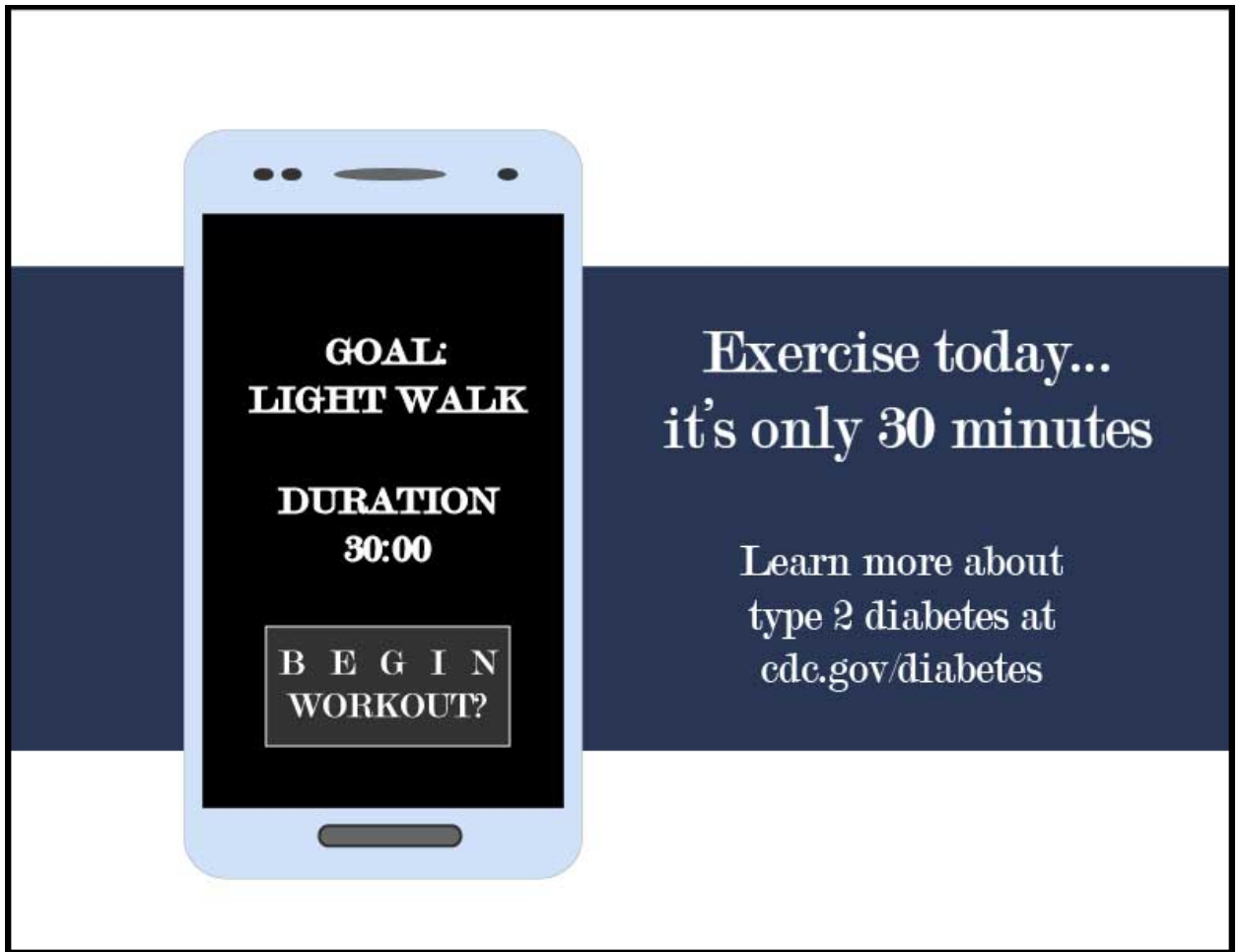


Figure 7. Poster Seven: Female Barriers

Table 1.7. Poster seven's hex codes and color descriptions.

Font: <b>Modern No. 20</b>		
	HEX CODE	COLOR DESCRIPTION
<b>Background</b>	n/a	Default white background
<b>Stripe</b>	#283655	Navy blue



<b>Phone</b>	#D0E1F9	Light Blue
<b>Top middle button outline</b>	#4D4D4D	Medium gray
<b>Top middle button</b>	#666666	Gray
<b>Three top buttons (small)</b>	#333333	Dark gray
<b>Bottom button outline</b>	#333333	Dark gray
<b>Bottom button</b>	#666666	Gray
<b>Phone Screen</b>	#000000	Black
<b>“Begin Workout” button outline</b>	#FFFFFF	White
<b>“Begin Workout” button</b>	#333333	Dark Gray
<b>Text</b>	#FFFFFF	White
<b>Photo Border</b>	#000000	Black



Figure 8. Poster Eight: Male Barriers

Table 1.8. Poster eight's hex codes and color descriptions.

Font: <b>Cooper Black</b>		
	HEX CODE	COLOR DESCRIPTION
Background	#000B29	Midnight blue
Top text	#F8F5F2	Snow white
Middle text	#EDB83D	Mustard yellow
Bottom text	#D70026	Red

<b>Thin bar outline</b>	#EDB83D	Mustard yellow
<b>Thin bar</b>	#FBB03B	Dark yellow-orange
<b>Burger bun outline</b>	#8C6239	Light brown
<b>Burger bun</b>	#A67C52	Tan
<b>Burger Meat</b>	#42210B	Dark brown
<b>Cheese</b>	#FCEE21	Yellow
<b>Sesame seeds</b>	#8C6239	Light brown
<b>Fry box outline</b>	#ED4A24	Dark red-orange
<b>Fry box</b>	#F15A24	Dark orange
<b>Fry outline</b>	#F7931E	Medium yellow-orange
<b>Fry</b>	#FBB03B	Mustard yellow
<b>Stripe (on fry box and cup)</b>	#9E005D	Magenta
<b>Cup outline</b>	#999999	Light Gray
<b>Cup</b>	#E6E6E6	White-Gray
<b>Straw outline</b>	#29ABE2	Baby Blue
<b>Straw</b>	#67FFFF	Light Blue
<b>Stem (for all fruits)</b>	#42210B	Dark Brown
<b>Leaf outline (for all fruits)</b>	#006837	Forrest Green
<b>Leaf (for all fruits)</b>	#00AB37	Green
<b>Apple outline</b>	#C1272D	Dark Red
<b>Apple</b>	#ED1C24	Red, opacity 81%
<b>Grape outline</b>	#1B1464	Indigo
<b>Grape</b>	#662D91	Purple

<b>Carrot outline and three lines</b>	#F15A24	Dark orange
<b>Carrot</b>	#F7931E	Medium yellow-orange
<b>Pear outline</b>	#39B54A	Light Green
<b>Pear</b>	#8CC63F	Green-yellow

#### IV. Results

**NOTE:** The percentages used in the results tables were calculated through Qualtrics.com and may total slightly above or below 100%. This section contains the results of each survey topic: demographics, health behavior, perceived susceptibility, perceived severity, perceived benefits, perceived barriers and health material relevance. The data identified in this section represents majority and/or significant findings from the results. The tables will represent all responses by the participants. To aid in interpreting the survey results, the next section gives information on how to understand each of the data tables.

#### **Interpreting the Survey Results**

The survey results for each topic were separated by gender into a table. Characteristics and/or exact survey questions and answers were placed in the table. This section is reserved to help interpret the survey results and percentages that are in the table. An excerpt of the survey is below (see Figure 9).

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>Race/Ethnicity</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Asian	1 (1.39)	0 (0)	1 (100)	0 (0)
American Indian	1 (1.39)	0 (0)	1 (100)	0 (0)
Black/Afro-American	17 (23.61)	2 (11.76)	15 (88.24)	0 (0)
Other**	5 (6.94)	2 (40)	3 (60)	0 (0)
Pacific Islander	1 (1.39)	0 (0)	1 (100)	0 (0)
White/Caucasian	52 (72.22)	9 (17.31)	42 (80.77)	1 (1.92)

Figure 9. How to Interpret Results Table Example 1

The pink diamond, blue circle, red rectangle and orange pentagon represent different data information. The pink diamond highlights percent of males. The bolded numbers in the row represent the number of males that answered the corresponding bolded question/characteristic. The non-bolded numbers in the row represent the number of males that responded to the corresponding non-bolded question/characteristic's answer. This applies to the female and other categories on all other tables as well. The blue circle represents the total number of females who answered the survey question about race/ethnicity. This information could be interpreted with statements such as: '83.33% of the participants were female' OR 'Out of seventy-two participants, sixty were female' OR 'most participants were female'. The red rectangle represents the total number of black participants. This information could be interpreted with statements such as: '23.61% of participants were Black' OR 'Seventeen Black students participated in this survey'. The orange pentagon represents the total number of Pacific Islandic-female participants. This information could be interpreted with statements such as: 'The sole Pacific Islandic participants were female' OR 'One Pacific Islandic female participated in this survey'.

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (%)</i>	<i>Female Students n (%)</i>	<i>Other Students n (%)</i>
<b>Do you have type 2 diabetes?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	0 (0)	0 (0)	0 (0)	0 (0)
No	66 (91.67)	11 (16.67)	54 (81.82)	1 (1.52)
Not Sure	6 (8.33)	0 (0)	6 (100)	0 (0)

Figure 10. How to Interpret Results Table Example 2

Using Figure 10, another excerpt from the survey will be used to help with building interpretation statements from the data table. The purple circle and green rectangle represent different data information. The purple circle represents the number of participants who chose 'not sure'. This information could be interpreted with statements such as: 'When participants were asked whether they had type 2 diabetes, 8.33% were reported as not sure OR 'Six participants were reported to be not sure if they had type 2 diabetes'. The green rectangle represents the number of male participants that chose 'no'. This information could be interpreted with statements such as: 'All male participants reported they did not have type 2 diabetes' OR '16.67% of participants who responded to not having type 2 diabetes were male' OR 'Eleven male participants stated they did not have type 2 diabetes'. Refer back to this section if any interpretation issues arise.

### **Demographics**

On the demographics results table on page 38, there is a blue rectangle around the 'Other' option for Race/Ethnicity. The blue rectangle represents participants that chose from the multiple races in addition to the 'Other' option. Qualtrics.com treated the 'Other' option as an individual response even if students selected another ethnicity. Excluding the 'Other' option from this section will produce a total of 100% or 72 participants.

The majority of our participants (n=72) were female (83.33%) and White (67.5%). Many participants were over twenty-two years old (38.89%) and were either Sophomores or Juniors (30.56%). Most students' major fell within the College of

Behavioral and Health Sciences (40.28%). *For full demographic results, see Table 2.1 on page 39.*

### **Health Behavior**

Sixty-seven students (93.06%) identified themselves as non-smokers. The remaining five students that indicated having smoking habits reported smoking 1-3 times a week. When asked ‘How often do you exercise?’, nearly half (48.61%) of all students reported exercising at least 1-3 times a week. When asked ‘How often do you eat fruits’ and ‘How often do you eat vegetables’, 77.78% of all students reported fruit intake of at least 1-3 times a day, and 76.39% of all students reported vegetable intake of at least 1-3 times a day. Male and female students consistently reported eating fruits and vegetables 1-3 times a day. When asked ‘How often do you dine in at a restaurant’, the majority of male students noted eating at a dine-in restaurant 1-3 times a month; several female students stated eating at a dine-in restaurant 1-3 times a month and 4-6 times a month. When asked ‘How often do you eat fast food’, most participants stated they ate fast food at least 1-3 times a month. The majority of female participants ate fast food 4-6 times a month, which male participants ate 1-3 times a month. *For full health behavior results, see Table 2.2 on page 40.*

### **Perceived Susceptibility**

Sixty-six participants (91.67%) reported themselves as not having type 2 diabetes, and most male and female participants (48.61%) did not believe they were at risk for developing type 2 diabetes. However, many participants (41.67%) had family members



with type 2 diabetes, and some participants (31.94%) had a friend with type 2 diabetes.

*For full perceived susceptibility results, see Table 2.3 on page 41.*

### **Perceived Severity**

Using a Likert Scale ranging from Strongly Disagree to Strongly Agree, participants were asked for their range of agreement with the statements: 'Type 2 diabetes is a serious disease', 'College students are at risk for developing type 2 diabetes' and 'Type 2 diabetes is a serious health issue in the United States'. The majority of male and female students strongly agreed that type 2 diabetes is a serious disease (51.39%) and that type 2 diabetes is a serious health issue in the United States (52.78%). However, students (52.78%) simply agreed that college students are at risk for developing type 2 diabetes. *For full perceived severity results, see Table 2.4 on page 42.*

### **Perceived Benefits**

Using a Likert Scale ranging from Strongly Disagree to Strongly Agree, participants were asked for their range of agreement with the statements: 'It is beneficial to exercise more than 3 days a week', 'It is beneficial to eat fruits and vegetables more than 3 times a day', 'It is beneficial to not engage in smoking' and 'It is beneficial to monitor your blood sugar levels'. Male and female students (58.33%) strongly agreed that it was beneficial to exercise more than 3 days a week and they (50%) also strongly agreed there was benefit in eating fruits and vegetables more than 3 times a day. 79.17% of students strongly agree that smoking was not beneficial but only 41.67% of students thought that there was benefit in monitoring blood sugar levels. *For full perceived benefits results, see Table 2.5 on page 43.*

## **Perceived Barriers**

Most students (80.56%) did not live on campus, and 91.67% of participants reported they did have cars that they used on and/or off campus. The majority of students (73.61%) work during the academic year at least 11-20 hours a week (33.96%) or 21-30 hours a week (33.96%). Many participants (40.28%) currently are enrolled in 14-16 credit hours.

Using a Likert Scale ranging from strongly disagree to strongly agree, participants were asked their agreement with the statements: 'Exercising is time consuming', 'Eating healthy is too costly', 'There are little to no healthy food options near me' and 'It is difficult to eat healthy'. Students (40.28%) somewhat agreed that exercising is time consuming. There was somewhat agreement among the students (27.78%) that eating healthy is too costly; however, many students (32.39%) disagreed that there are little to no healthy food options near them. Students (30.56%) somewhat agreed that it is difficult to eat healthy. *For full perceived barriers results, see Table 2.6 on page 44.*

## **Health Material Relevance**

Using a Likert Scale ranging from strongly disagree to strongly agree, students were asked their agreement with the statements: 'This font is appealing', 'These colors are appealing', 'This message applies to my lifestyle' and 'This poster will positively affect my future behavior'. These statements were asked for all eight gender-based health education tools.

The common fonts used in posters 1 and 6, 2 and 5, 3 and 8 and 4 and 7 received different responses from students. Most students agreed to the font's appeal in poster one

but only somewhat agreed to it in poster six. In poster two, most students agreed to the font's appeal but in poster five, male students disagreed with its appeal while female students maintained agreeance. The majority of both genders disagreed with the font used in poster three, but female students agreed to its appeal in poster eight. Female participants disagreed with finding the font used in poster four as appealing but agreed with its appeal in poster seven.

The common color schemes used in posters 1 and 8, 2 and 7, 3 and 4 and 5 and 6 found commonalities and differences among student responses. Most males disagreed with the appeal of the color scheme used in poster one while females maintained agreement with its appeal for posters one and eight. Both genders were agreement with the color scheme used in posters two and seven. In posters three and four, males maintained their agreement while females maintained their disagreement of the color scheme used. The majority of female and male students somewhat agreed with the color scheme of posters six while in poster five, most females agreed to the color scheme's appeal and male students either somewhat or strongly agreed to its appeal.

No significant differences in responses by genders were found in posters one, two, three and four. For poster one: female susceptibility, most female students agreed that the font and colors were appealing and that the message applied to their lifestyle. Males students disagreed that the poster was appealing or applicable to their lifestyles. Both genders disagreed that the poster would positively affect their future behavior. For poster two: male susceptibility, most male students agreed that the font and colors were appealing and that the message applied to their lifestyle. Half of the male participants somewhat agreed that poster two would positively affect their future behaviors. Many

female students disagreed that the poster's message applied to their lifestyle. For poster three: female severity, female students disagreed that that the fonts and colors were appealing and that the poster's message applied to their lifestyle. Both genders disagreed that the poster would positively affect their future behaviors. For poster four: male severity, male students either disagreed or somewhat agreed that the fonts and colors were appealing, the message applied to their lifestyle and the poster would positively affect their affect their future behavior. Female students disagreed with the posters' design, messages and future impact.

Significant differences in responses by genders were found in posters five, six, seven and eight. In poster 5: female benefits, female students agreed with the design's appeal but somewhat agreed in the message's applicability and future impact on behavior. Male students either disagreed, somewhat agreed or strongly agreed that the poster's fonts and colors were appealing, the message applied to their lifestyle or the poster would positively affect their future behavior. For poster 6: male benefits, male students somewhat agreed with the design's appeal, applicability to lifestyle and future impact on behavior. Female students agreed that the poster applied to their lifestyle and had potential to positively affect their future behavior. For poster 7: female barriers, female students agreed with the poster's appeal, message and potential impact, while male students only somewhat agreed with the poster's appeal, message and potential impact. For poster eight: male barriers, male students somewhat agreed with the poster's appeal, message and potential impact to future behavior. Female students agreed that the font and colors were appealing, the message applied to their lifestyles and the poster

would positively impact their future behavior. *For full health material relevance results, see Tables 2.7-2.14 on pages 46-53.*

## **Research Questions' Findings**

### **RQ1**

Research question one asked: 'Are any specific health behaviors associated with low risk perceptions of type 2 diabetes'. To answer this question, Qualtrics.com was used to run a cross tabulation with all the health behaviors and the question: 'Do you believe you are risk for developing type 2 diabetes'. The six health behaviors included in the cross tabulation to determine significance were smoking, exercising, fruit intake, vegetable intake, dine-in intake and fast food intake. The only specific health behavior found to be significantly related to low risk perceptions of type 2 diabetes was fast food intake,  $X^2(8, N = 73) = 16.60, p < .05$ .

### **RQ2**

Research question two asked: 'Does college students' responsiveness to gender-based health education tools differ by gender'. To answer this question, Qualtrics.com was used to run a cross tabulation of all questions related to each poster and the question: 'What is your identified gender?'. The only posters that revealed significance were posters five, six, seven and eight. There was a significant difference in how appealing the font was perceived to be between genders in poster 5,  $X^2(8, N = 72) = 21.20, p = .01$ . There was a significant difference in how impact on future behavior was perceived between genders in poster 6,  $X^2(8, N = 72) = 16.93, p = .03$ . There was a significant difference in how appealing the font was perceived to be between genders in poster 7,  $X^2$

(8, N = 72) = 17.93,  $p=.02$ . There was a significant difference in how messages applied to lifestyles in poster 8,  $X^2$  (8, N = 72) = 20.80,  $p=.01$ .

Table 2.1. Demographic Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>Race/Ethnicity</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Asian	1 (1.39)	0 (0)	1 (100)	0 (0)
American Indian	1 (1.39)	0 (0)	1 (100)	0 (0)
Black/Afro-American	17 (23.61)	2 (11.76)	15 (88.24)	0 (0)
Other**	5 (6.94)	2 (40)	3 (60)	0 (0)
Pacific Islander	1 (1.39)	0 (0)	1 (100)	0 (0)
White/Caucasian	52 (72.22)	9 (17.31)	42 (80.77)	1 (1.92)
<b>Are you Spanish, Hispanic, or Latino or none of these?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	5 (6.94)	0 (0)	5 (100)	0 (0)
No	67(93.06)	11 (16.42)	55 (82.09)	1 (1.49)
<b>Age</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
18	8 (11.11)	1 (12.50)	7 (87.50)	0 (0)
19	13(18.06)	1 (7.69)	12 (92.31)	0 (0)
20	17(23.61)	2 (11.76)	15 (88.24)	0 (0)
21	6 (8.33)	2 (33.33)	4 (66.67)	0 (0)
22+	28(38.89)	5 (17.86)	22 (78.57)	1 (3.57)
<b>Classification</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Freshman	11(15.28)	0 (0)	11 (100)	0 (0)
Sophomore	22(30.56)	2 (9.09)	19 (86.36)	1 (4.55)
Junior	22(30.56)	7 (31.82)	15 (68.18)	0 (0)
Senior	11(15.28)	0 (0)	11 (100)	0 (0)
Graduate	5(6.94)	1 (20)	4 (80)	0 (0)
Other	1 (1.39)	1 (100)	0 (0)	0 (0)
<b>College (Major)</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
College of Basic and Applied Sciences	13(18.06)	2 (15.38)	11 (84.62)	0 (0)
College of Behavioral and Health Sciences	29(40.28)	7 (24.14)	22 (75.86)	0 (0)
College of Business	15(20.83)	2 (13.33)	13 (86.67)	0 (0)
College of Education	1 (1.39)	0 (0)	1 (100)	0 (0)
College of Liberal Arts	6 (8.33)	0 (0)	6 (100)	0 (0)
College of Media and Entertainment	7 (9.72)	0 (0)	6 (85.71)	1 (14.29)
University College	1 (1.39)	0 (0)	1 (100)	0 (0)

Table 2.2. Health Behavior Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>Do you smoke?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	5(6.94)	0 (0)	5 (100)	0 (0)
No	67(93.06)	11 (16.42)	55 (82.04)	1 (1.49)
<b>Smoking Habits</b>	<b>5 (100%)</b>	<b>0 (0%)</b>	<b>5 (100%)</b>	<b>0 (0%)</b>
Never	0 (0)	0 (0)	0 (0)	0 (0)
1-3 times a week	5 (100)	0 (0)	5 (100)	0 (0)
4-6 times a week	0 (0)	0 (0)	0 (0)	0 (0)
7-9 times a week	0 (0)	0 (0)	0 (0)	0 (0)
10+ times a week	0 (0)	0 (0)	0 (0)	0 (0)
<b>Exercise Habits</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Never	15 (20.83)	1 (6.67)	14 (93.33)	0 (0)
1-3 times a week	35 (48.61)	5 (14.29)	29 (82.86)	1 (2.86)
4-6 times a week	21 (29.17)	5 (23.81)	16 (76.19)	0 (0)
7-9 times a week	1 (1.39)	0 (0)	1 (100)	0 (0)
10+ times a week	0 (0)	0 (0)	0 (0)	0 (0)
<b>Fruit Intake</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Never	12 (16.67)	1 (8.33)	11 (91.67)	0 (0)
1-3 times a day	56 (77.78)	9 (16.07)	46 (82.14)	1 (1.79)
4-6 times a day	3 (4.17)	1 (33.33)	2 (66.67)	0 (0)
7-9 times a day	1 (1.39)	0 (0)	1 (100)	0 (0)
10+ times a day	0 (0)	0 (0)	0 (0)	0 (0)
<b>Vegetable Intake</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Never	10 (13.89)	1 (10.00)	8 (80.00)	1 (10.00)
1-3 times a day	55 (76.39)	9 (16.36)	46 (83.64)	0 (0)
4-6 times a day	5 (6.94)	1 (20.00)	4 (80.00)	0 (0)
7-9 times a day	2 (2.78)	0 (0)	2 (100)	0 (0)
10+ times a day	0 (0)	0 (0)	0 (0)	0 (0)
<b>Dine-In Intake</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Never	1 (1.39)	0 (0)	1 (100)	0 (0)
1-3 times/month	36 (50.00)	4 (11.11)	31 (86.11)	1 (2.76)
4-6 times/month	19 (26.39)	3 (15.79)	16 (84.21)	0 (0)
7-9 times/month	7 (9.72)	1 (14.29)	6 (85.71)	0 (0)
10+ times/month	9 (12.50)	3 (33.33)	6 (66.67)	0 (0)
<b>Fast Food Intake</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39)</b>
Never	5 (6.94)	2 (40.00)	3 (60.00)	0 (0)
1-3 times/month	23 (31.94)	5 (21.74)	17 (73.91)	1 (4.35)
4-6 times/month	20 (27.78)	1 (5.00)	19 (95.00)	0 (0)
7-9 times/month	12 (16.67)	1 (8.33)	11 (91.67)	0 (0)
10+ times/month	12 (16.67)	2 (16.67)	10 (83.33)	0 (0)



Table 2.3. Perceived Susceptibility Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (%)</i>	<i>Female Students n (%)</i>	<i>Other Students n (%)</i>
<b>Do you have type 2 diabetes?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes		0 (0)	0 (0)	0 (0)
No	0 (0)	11 (16.67)	54 (81.82)	1 (1.52)
Not Sure	66 (91.67)	0 (0)	6 (100)	0 (0)
<b>Do you believe you are at risk for developing type 2 diabetes?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	19 (26.39)	3 (15.79)	15 (78.95)	1 (5.26)
No	35 (48.61)	5 (14.29)	30 (85.71)	0 (0)
Not Sure	18 (25.00)	3 (16.67)	15 (83.33)	0 (0)
<b>Do you have a family member with type 2 diabetes?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes		4 (13.33)	26 (86.67)	0 (0)
	30 (41.67)			
No	30 (41.67)	4 (13.33)	25 (83.33)	1 (3.33)
Not Sure	12 (16.67)	3 (25.00)	9 (75.00)	0 (0)
<b>Do you have a friend with type 2 diabetes?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes		8 (34.78)	15 (65.22)	0 (0)
No	23 (31.94)	1 (2.33)	41 (95.35)	1 (2.33)
Not Sure	43 (59.72)	2 (33.33)	4 (66.67)	0 (0)
	6 (8.33)			

Table 2.4. Perceived Severity Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of males)</i>	<i>Female Students n (% of females)</i>	<i>Other Students n (% of Oth.)</i>
<b>Type 2 diabetes is a serious disease.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	3 (4.17)	1 (33.33)	2 (66.67)	0 (0)
Disagree	1 (1.39)	1 (100)	0 (0)	0 (0)
Somewhat Agree	3 (4.17)	0 (0)	3 (100)	0 (0)
Agree	28 (38.89)	2 (7.14)	26 (92.86)	0 (0)
Strongly Agree	37 (51.39)	7 (18.92)	29 (78.38)	1 (100)
<b>College students are at risk for developing type 2 diabetes.</b>	<b>72(100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	2 (2.78)	1 (50.00)	1 (50.00)	0 (0)
Disagree	3 (4.17)	0 (0)	3 (100)	0 (0)
Somewhat Agree	13 (18.06)	3 (23.08)	10 (76.92)	0 (0)
Agree	38 (52.76)	3 (7.89)	35 (92.11)	0 (0)
Strongly Agree	16 (22.22)	4 (25.00)	11 (68.75)	1 (6.25)
<b>Type 2 diabetes is a serious health issue in the United States.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	3 (4.17)	1 (33.33)	2 (66.67)	0 (0)
Disagree	0 (0)	0 (0)	0 (0)	0 (0)
Somewhat Agree	1 (1.39)	0 (0)	1 (100)	0 (0)
Agree	30 (41.67)	3 (10.00)	27 (90.00)	0 (0)
Strongly Agree	38 (52.78)	7 (18.42)	30 (78.95)	1 (2.63)

Table 2.5. Perceived Benefits Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of males)</i>	<i>Female Students n (% of females)</i>	<i>Other Students n (% of Oth.)</i>
<b>It is beneficial to exercise more than 3 days a week.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree		1 (3.33)	2 (66.67)	0 (0)
Disagree	3 (4.17)	0 (0)	1 (100)	0 (0)
Somewhat Agree	1 (1.39)	0 (0)	4 (100)	0 (0)
Agree	4 (5.56)	3 (13.64)	18 (81.82)	1 (4.55)
Strongly Agree	22 (30.56)	7 (16.67)	35 (83.33)	0 (0)
<b>It is beneficial to eat fruits and vegetables more than 3 times a day.</b>	<b>42 (58.33)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
	<b>72 (100%)</b>			
Strongly Disagree	1 (1.39)	0 (0)	1 (100)	0 (0)
Disagree	1 (1.39)	0 (0)	1 (100)	0 (0)
Somewhat Agree	8 (11.11)	3 (37.50)	5 (62.50)	0 (0)
Agree	26 (36.11)	1 (3.85)	25 (96.15)	0 (0)
Strongly Agree	36 (50.00)	7 (19.44)	28 (77.78)	1 (2.78)
<b>It is beneficial to not engage in smoking.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree		2 (66.67)	1 (33.33)	0 (0)
	3 (4.17)			
Disagree	1 (1.39)	0 (0)	1 (100)	0 (0)
Somewhat Agree	0 (0)	0 (0)	0 (0)	0 (0)
Agree	11 (15.28)	2 (18.18)	9 (81.82)	0 (0)
Strongly Agree	57 (79.17)	7 (12.28)	49 (85.96)	1 (1.75)
<b>It is beneficial to monitor your blood sugar levels.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	1 (1.39)	0 (0)	1 (100)	0 (0)
Disagree	0 (0)	0 (0)	0 (0)	0 (0)
Somewhat Agree	19 (26.39)	4 (21.05)	15 (78.95)	0 (0)
Agree	22 (30.56)	4 (18.18)	17 (77.27)	1 (4.55)
Strongly Agree	30 (41.67)	3 (10.00)	27 (90.00)	0 (0)

Table 2.6. Perceived Barriers Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of males)</i>	<i>Female Students n (% of females)</i>	<i>Other Students n (% of Oth.)</i>
<b>Do you live on campus?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	14 (19.44)	2 (14.29)	12 (85.71)	0
No	58 (80.56)	9 (15.52)	48 (82.76)	1 (1.72)
<b>Do you have a car that you use on and/or off campus?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	66 (91.67)	10 (15.15)	55 (83.33)	1 (1.52)
No	6 (8.33)	1 (16.67)	5 (83.33)	0 (0)
<b>Do you work during the academic year?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Yes	53 (73.61)	9 (16.98)	44 (83.02)	0 (0)
No	19 (26.39)	2 (10.53)	16 (84.21)	1 (5.26)
<b>How often do you work during the academic year?</b>	<b>53 (100%)</b>	<b>9 (16.98%)</b>	<b>44 (83.02%)</b>	<b>0 (0%)</b>
0-10 hrs a week	5 (9.43)	2 (40.00)		0 (0)
11-20 hrs a week	18 (33.96)	3 (16.67)	3 (60.00)	0 (0)
21-30 hrs a week	18 (33.96)	3 (16.67)	15 (83.33)	0 (0)
31-40 hrs a week	7 (13.21)	1 (14.29)	15 (83.33)	0 (0)
40+ hrs a week	5 (9.43)	0 (0)	6 (85.71)	0 (0)
<b>How many credit hours are you currently taking?</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Under 10 credit hours	9 (12.50)	3 (33.33)	5 (55.56)	1 (1.11)
11-13 credit hours	23 (31.94)	5 (21.74)	18 (78.26)	0 (0)
14-16 credit hours	29 (40.28)	2 (6.90)	27 (93.10)	0 (0)
17-19 credit hours	11 (15.28)	1 (9.09)	10 (90.91)	0 (0)
20+ credit hours	0 (0)	0 (0)	0 (0)	0 (0)

Table 2.6. Perceived Barriers Results (*cont'd*)

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of males)</i>	<i>Female Students n (% of females)</i>	<i>Other Students n (% of Oth.)</i>
<b>Exercising is time consuming.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	7 (9.72)	3 (42.86)	4 (57.14)	0 (0)
Disagree	8 (11.11)	2 (25.00)	6 (75.00)	0 (0)
Somewhat Agree	13 (18.06)	1 (7.69)	11 (84.62)	1 (7.69)
Agree	29 (40.28)	2 (6.90)	27 (93.10)	0 (0)
Strongly Agree	15 (20.83)	3 (20.00)	12 (80.00)	0 (0)
<b>Eating healthy is too costly.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	5 (6.94)	2 (40.00)	3 (60.00)	0 (0)
Disagree	16 (22.22)	3 (18.75)	13 (81.25)	0 (0)
Somewhat Agree	20 (27.78)	3 (15.00)	17 (85.00)	0 (0)
Agree	20 (27.78)	3 (15.00)	16 (80.00)	1 (5.00)
Strongly Agree	11 (15.28)	0 (0)	11 (100)	0 (0)
<b>There are little to no healthy food options near me.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	16 (22.54)	5 (31.25)	11 (68.75)	0 (0)
Disagree	23 (32.39)	4 (17.39)	19 (82.61)	0 (0)
Somewhat Agree	14 (19.72)	1 (7.14)	12 (85.71)	1 (7.14)
Agree	13 (18.31)	1 (7.69)	12 (92.31)	0 (0)
Strongly Agree	5 (7.04)	0 (0)	5 (100)	0 (0)
<b>It is difficult to eat healthy.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	12 (16.67)	3 (25.00)	9 (75.00)	0 (0)
Disagree	12 (16.67)	3 (25.00)	9 (75.00)	0 (0)
Somewhat Agree	22 (30.56)	2 (9.09)	20 (90.91)	0 (0)
Agree	19 (26.39)	3 (15.79)	15 (78.95)	1 (5.26)
Strongly Agree	7 (9.72)	0 (0)	7 (100)	0 (0)

Table 2.7. Poster 1 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>72(100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	3 (4.17)	0 (0)	3 (100)	0 (0)
Disagree	14 (19.44)	4 (28.57)	10 (71.43)	0 (0)
Somewhat Agree	18 (25.00)	2 (11.11)	15 (83.33)	1 (5.56)
Agree	28 (38.89)	3 (10.71)	25 (89.29)	0 (0)
Strongly Agree	9 (12.50)	2 (22.22)	7 (77.78)	0 (0)
<b>These colors are appealing.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	4 (5.63)	0 (0)	4 (100)	0 (0)
Disagree	16 (22.54)	4 (25.00)	12 (75.00)	0 (0)
Somewhat Agree	11 (15.49)	2 (18.18)	9 (81.82)	0 (0)
Agree	32 (45.07)	3 (9.38)	28 (87.50)	1 (3.13)
Strongly Agree	8 (11.27)	2 (25.00)	6 (75.00)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	7 (9.86)	2 (28.57)	5 (71.43)	0 (0)
Disagree	18 (25.35)	3 (16.67)	15 (83.33)	0 (0)
Somewhat Agree	18 (25.35)	2 (11.11)	15 (83.33)	1 (5.56)
Agree	20 (28.17)	2 (10.00)	18 (90.00)	0 (0)
Strongly Agree	8 (11.27)	2 (25.00)	6 (75.00)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>70 (100%)</b>	<b>11 (15.71%)</b>	<b>58 (82.86%)</b>	<b>1 (1.43%)</b>
Strongly Disagree	10 (14.29)	1 (10.00)	9 (90.00)	0 (0)
Disagree	25 (35.71)	5 (20.00)	20 (80.00)	0 (0)
Somewhat Agree	20 (28.57)	3 (15.00)	16 (80.00)	1 (5.00)
Agree	10 (14.29)	1 (10.00)	9 (90.00)	0 (0)
Strongly Agree	5 (7.14)	1 (20.00)	4 (80.00)	0 (0)

Table 2.8. Poster 2 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	1 (1.39)	0 (0)	1 (100)	0 (0)
Disagree	8 (11.11)	1 (12.50)	5 (75.00)	1 (12.50)
Somewhat Agree	18 (25.00)	3 (16.67)	15 (83.33)	0 (0)
Agree	33 (45.38)	5 (18.18)	27 (81.82)	0 (0)
Strongly Agree	12 (16.67)	1 (8.33)	11 (91.67)	0 (0)
<b>These colors are appealing.</b>	<b>70 (100%)</b>	<b>11 (15.71%)</b>	<b>59 (82.86%)</b>	<b>1 (1.43%)</b>
Strongly Disagree	1 (1.43)	0 (0)	1 (100)	0 (0)
Disagree	6 (9.57)	1 (16.67)	5 (83.33)	0 (0)
Somewhat Agree	11 (15.71)	2 (18.18)	9 (81.82)	0 (0)
Agree	39 (55.71)	6 (15.38)	32 (82.05)	1 (2.56)
Strongly Agree	13 (18.57)	2 (15.38)	11 (84.62)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	5 (7.04)	1 (20.00)	4 (80.00)	0 (0)
Disagree	23 (32.39)	2 (8.70)	21 (91.30)	0 (0)
Somewhat Agree	16 (22.54)	2 (12.50)	14 (87.50)	0 (0)
Agree	19 (26.76)	6 (31.58)	12 (63.16)	1 (5.26)
Strongly Agree	8 (11.27)	0 (0)	8 (100)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>71 (100%)</b>	<b>10 (14.08%)</b>	<b>60 (84.51%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	7 (9.86)	0 (0)	7 (100)	0 (0)
Disagree	29 (40.85)	4 (13.79)	25 (86.21)	0 (0)
Somewhat Agree	20 (28.71)	5 (25.00)	14 (70.00)	1 (5.00)
Agree	8 (11.27)	0 (0)	8 (100)	0 (0)
Strongly Agree	7 (9.86)	1 (14.29)	6 (85.71)	0 (0)

Table 2.9. Poster 3 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	10 (14.08)	3 (30.00)	7 (70.00)	0 (0)
Disagree	17 (23.94)	1 (5.88)	16 (94.12)	0 (0)
Somewhat Agree	16 (22.54)	1 (6.25)	15 (93.75)	0 (0)
Agree	15 (21.13)	5 (3.33)	9 (60.00)	1 (6.67)
Strongly Agree	13 (18.31)	1 (7.69)	12 (92.31)	0 (0)
<b>These colors are appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	9 (12.50)	3 (33.33)	6 (66.67)	0 (0)
Disagree	21 (29.17)	2 (9.52)	19 (90.48)	0 (0)
Somewhat Agree	12 (16.67)	1 (8.33)	11 (91.67)	0 (0)
Agree	18 (25.00)	4 (22.22)	13 (72.22)	1 (5.56)
Strongly Agree	12 (16.67)	1 (8.33)	11 (91.67)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	6 (8.45)	2 (33.33)	4 (66.67)	0 (0)
Disagree	25 (35.21)	2 (8.00)	23 (92.00)	0 (0)
Somewhat Agree	13 (18.31)	2 (15.38)	11 (84.62)	0 (0)
Agree	16 (22.54)	3 (18.75)	12 (75.00)	1 (6.25)
Strongly Agree	11 (15.49)	2 (18.18)	9 (81.82)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	10 (14.08)	2 (20.00)	8 (80.00)	0 (0)
Disagree	25 (35.21)	3 (12.00)	22 (88.00)	0 (0)
Somewhat Agree	12 (16.90)	3 (25.00)	9 (75.00)	0 (0)
Agree	14 (19.72)	2 (14.29)	11 (78.57)	1 (7.14)
Strongly Agree	10 (14.08)	1 (10.00)	9 (90.00)	0 (0)



Table 2.10. Poster 4 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>72(100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	5 (6.94)	1 (20.00)	4 (80.00)	0 (0)
Disagree	22 (30.56)	2 (9.09)	20 (90.91)	0 (0)
Somewhat Agree	21 (29.17)	4 (19.05)	16 (76.19)	1 (4.76)
Agree	16 (22.22)	3 (18.75)	13 (81.25)	0 (0)
Strongly Agree	8 (11.11)	1 (12.50)	7 (87.50)	0 (0)
<b>These colors are appealing.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	6 (8.45)	1 (16.67)	5 (83.33)	0 (0)
Disagree	30 (42.25)	1 (3.33)	28 (93.33)	1 (3.33)
Somewhat Agree	15 (21.13)	4 (26.67)	11 (73.33)	0 (0)
Agree	13 (18.31)	4 (30.77)	9 (69.23)	0 (0)
Strongly Agree	7 (9.86)	1 (14.29)	6 (85.71)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	7 (9.86)	0 (0)	7 (100)	0 (0)
Disagree	37 (52.11)	5 (13.51)	31 (83.78)	1 (2.70)
Somewhat Agree	17 (23.94)	5 (29.41)	12 (70.59)	0 (0)
Agree	8 (11.27)	1 (12.50)	7 (87.50)	0 (0)
Strongly Agree	2 (2.82)	0 (0)	2 (100)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	8 (11.27)	0 (0)	8 (100)	0 (0)
Disagree	29 (40.85)	5 (17.24)	23 (79.31)	1 (3.45)
Somewhat Agree	16 (22.54)	3 (18.75)	13 (81.25)	0 (0)
Agree	9 (12.68)	2 (22.22)	7 (77.78)	0 (0)
Strongly Agree	9 (12.68)	1 (11.11)	8 (88.89)	0 (0)

Table 2.11. Poster 5 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	4 (5.56)	1 (25.00)	2 (50.00)	1 (25.00)
Disagree	17 (23.61)	3 (17.65)	14 (82.35)	0 (0)
Somewhat Agree	13 (18.06)	3 (23.08)	10 (76.92)	0 (0)
Agree	24 (33.33)	1 (4.17)	23 (95.83)	0 (0)
Strongly Agree	14 (19.44)	3 (21.43)	11 (78.57)	0 (0)
<b>These colors are appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	4 (5.56)	1 (25.00)	3 (75.00)	0 (0)
Disagree	10 (13.89)	2 (20.00)	8 (80.00)	0 (0)
Somewhat Agree	12 (16.67)	3 (25.00)	9 (75.00)	0 (0)
Agree	28 (38.89)	2 (7.14)	25 (89.29)	1 (3.57)
Strongly Agree	18 (25.00)	3 (16.67)	15 (83.33)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	3 (4.23)	1 (33.33)	2 (66.67)	0 (0)
Disagree	15 (21.13)	2 (13.33)	13 (86.67)	0 (0)
Somewhat Agree	23 (32.39)	3 (13.04)	19 (82.61)	1 (4.35)
Agree	21 (29.58)	3 (14.29)	18 (85.71)	0 (0)
Strongly Agree	9 (12.68)	2 (22.22)	7 (77.78)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	5 (6.94)	1 (20.00)	4 (80.00)	0 (0)
Disagree	18 (25.00)	2 (11.11)	15 (83.33)	1 (5.56)
Somewhat Agree	24 (33.33)	6 (25.00)	18 (75.00)	0 (0)
Agree	17 (23.61)	0 (0)	17 (100)	0 (0)
Strongly Agree	8 (11.11)	2 (25.00)	6 (75.00)	0 (0)

Table 2.12. Poster 6 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	4 (5.56)	1 (25.00)	3 (75.00)	0 (0)
Disagree	9 (12.50)	1 (11.11)	8 (88.89)	0 (0)
Somewhat Agree	25 (34.72)	5 (20.00)	19 (76.00)	1 (4.00)
Agree	18 (25.00)	2 (11.11)	16 (88.89)	0 (0)
Strongly Agree	16 (22.22)	2 (12.50)	14 (87.50)	0 (0)
<b>These colors are appealing.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	5 (7.04)	1 (20.00)	4 (80.00)	0 (0)
Disagree	5 (7.04)	0 (0)	5 (100)	0 (0)
Somewhat Agree	24 (33.80)	5 (20.83)	19 (79.17)	0 (0)
Agree	21 (29.58)	2 (9.52)	18 (85.71)	1 (4.76)
Strongly Agree	16 (22.54)	3 (18.75)	13 (81.25)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>70 (100%)</b>	<b>11 (15.71%)</b>	<b>58 (82.86%)</b>	<b>1 (1.43%)</b>
Strongly Disagree	5 (7.14)	1 (20.00)	4 (80.00)	0 (0)
Disagree	9 (12.86)	0 (0)	9 (100)	0 (0)
Somewhat Agree	22 (31.43)	5 (22.73)	16 (72.73)	1 (4.55)
Agree	19 (27.14)	2 (10.53)	17 (89.47)	0 (0)
Strongly Agree	15 (21.43)	3 (20.00)	12 (80.00)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>50 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	5 (7.04)	1 (20.00)	4 (80.00)	0 (0)
Disagree	15 (21.13)	0 (0)	15 (100)	0 (0)
Somewhat Agree	22 (30.99)	8 (36.36)	13 (59.09)	1 (4.55)
Agree	20 (28.17)	0 (0)	20 (100)	0 (0)
Strongly Agree	9 (12.68)	2 (22.22)	7 (77.78)	0 (0)

Table 2.13. Poster 7 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	3 (4.23)	0 (0)	3 (100)	0 (0)
Disagree	7 (9.86)	1 (14.29)	5 (71.43)	1 (14.29)
Somewhat Agree	23 (32.39)	7 (30.43)	16 (69.57)	0 (0)
Agree	22 (30.99)	0 (0)	22 (100)	0 (0)
Strongly Agree	16 (22.54)	3 (18.75)	13 (81.25)	0 (0)
<b>These colors are appealing.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>59 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	3 (4.23)	0 (0)	3 (100)	0 (0)
Disagree	13 (18.31)	2 (15.38)	11 (84.62)	0 (0)
Somewhat Agree	17 (23.94)	6 (35.29)	10 (58.82)	1 (5.88)
Agree	23 (32.39)	0 (0)	23 (100)	0 (0)
Strongly Agree	15 (21.13)	3 (20.00)	12 (80.00)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>71 (100%)</b>	<b>11 (15.49%)</b>	<b>60 (83.10%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	5 (7.04)	0 (0)	5 (100)	0 (0)
Disagree	12 (16.90)	1 (8.33)	11 (91.67)	0 (0)
Somewhat Agree	22 (30.99)	8 (36.36)	13 (59.09)	1 (4.55)
Agree	19 (26.76)	0 (0)	19 (100)	0 (0)
Strongly Agree	13 (18.31)	2 (15.38)	11 (84.62)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>71 (100%)</b>	<b>10 (14.08%)</b>	<b>60 (84.51%)</b>	<b>1 (1.41%)</b>
Strongly Disagree	5 (7.04)	0 (0)	5 (100)	0 (0)
Disagree	15 (21.13)	2 (13.33)	13 (86.67)	0 (0)
Somewhat Agree	17 (23.94)	6 (35.29)	10 (58.82)	1 (5.88)
Agree	21 (29.58)	1 (4.76)	20 (95.24)	0 (0)
Strongly Agree	13 (18.31)	2 (15.38)	11 (84.62)	0 (0)

Table 2.14. Poster 8 Results

<i>Characteristics</i>	<i>Total n (%)</i>	<i>Male Students n (% of male)</i>	<i>Female Students n (% of female)</i>	<i>Other Students n (% of Oth.)</i>
<b>This font is appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	2 (2.78)	0 (0)	2 (100)	0 (0)
Disagree	7 (9.72)	1 (14.29)	6 (85.71)	0 (0)
Somewhat Agree	20 (27.78)	5 (25.00)	14 (70.00)	1 (5.00)
Agree	28 (38.89)	2 (7.14)	26 (92.36)	0 (0)
Strongly Agree	15 (20.83)	3 (20.00)	12 (80.00)	0 (0)
<b>These colors are appealing.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	2 (2.78)	0 (0)	2 (100)	0 (0)
Disagree	8 (11.11)	1 (12.50)	7 (87.50)	0 (0)
Somewhat Agree	19 (26.39)	6 (31.58)	12 (63.16)	1 (5.26)
Agree	28 (38.89)	1 (3.57)	27 (96.43)	0 (0)
Strongly Agree	15 (20.38)	3 (20.00)	12 (80.00)	0 (0)
<b>This message applies to my lifestyle.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	4 (5.56)	0 (0)	3 (75.00)	1 (25.00)
Disagree	13 (18.06)	3 (23.08)	10 (76.92)	0 (0)
Somewhat Agree	19 (26.39)	4 (21.05)	15 (78.95)	0 (0)
Agree	21 (29.17)	1 (4.76)	20 (95.24)	0 (0)
Strongly Agree	15 (20.83)	3 (20.00)	12 (80.00)	0 (0)
<b>This poster will positively affect my future behavior.</b>	<b>72 (100%)</b>	<b>11 (15.28%)</b>	<b>60 (83.33%)</b>	<b>1 (1.39%)</b>
Strongly Disagree	5 (6.94)	1 (20.00)	4 (80.00)	0 (0)
Disagree	16 (22.22)	3 (18.75)	12 (75.00)	1 (6.25)
Somewhat Agree	18 (25.00)	5 (27.78)	13 (72.22)	0 (0)
Agree	20 (27.78)	0 (0)	20 (100)	0 (0)
Strongly Agree	13 (18.06)	2 (15.38)	11 (84.62)	0 (0)

## **V. Discussion**

Most MTSU students do not feel that they are at risk for developing type 2 diabetes, but the majority of the participants have family or friends with the disease. Most students believe there is benefit to improving exercise habits and fruit and vegetable consumption, but they do not meet the standard recommendation set by the American Heart Association for healthy activity. Fast food consumption showed significance in relation to low risk perceptions of type 2 diabetes. Male and female students engage in similar health behaviors but do differ in responses to gender-based health education tools. Males responded only somewhat positively to male-focused posters. Females generally responded positively to most posters, with the exception of posters three and four. This study supports similar literature stating that college students engage in low health behavior and maintain low risk perceptions of type 2 diabetes.

### **Limitations**

Limitations of this project are present in the recruitment process. Sixty-five professors were emailed about their interest in distributing this survey and twenty-three professors responded. Some professors attached the student researcher to the email informing students about the survey for direct confirmation of distribution. However, there was no follow-up to confirm distribution by other professors that chose different distribution methods. All professors contacted came from all six colleges within MTSU.

Other limitations of this project are present in the gender and racial differences of the participants. The illustrations were created to represent minority male and female students, however most of the participants were White and female. More consideration

for non-POC students in the illustration could have been given. Also, there could have been more recruitment towards garnering male and minority participation to give a more level representation of MTSU students and their health behavior.

### **Future Work**

Results of MTSU students' current health behavior should be used to target specific genders and their health behaviors. Equal recruitment strategy should be provided to all students of differing genders, ethnicities, classifications and majors to gain a descriptive and diverse representation of MTSU students' health behavior. Inclusive illustrations should be designed to provide a more relatable image to students. Health design posters could also be strategically placed around campus to measure the possible impact to health behavior over time. Incorporating the Health Belief Model into survey questions and gender-based health education tools will be beneficial to further the research of college students' health behavior and perception of type 2 diabetes. More research should be conducted to understand risk factors for type 2 diabetes development among college students and what opportunities exist to create a healthier campus for not only students but also faculty and visitors to Middle Tennessee State University.

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## APPENDIX A

### *IRB Exemption Approval*

## IRB

### INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,  
010A Sam Ingram Building,  
2269 Middle Tennessee Blvd  
Murfreesboro, TN 37129



## IRBN007 – EXEMPTION DETERMINATION NOTICE

Tuesday, January 30, 2018

Investigator(s): Kyeesha M. Wilcox; Bethany Wrye  
Investigator(s) Email(s): kmw7e@mtmail.mtsu.edu; bethany.wrye@mtsu.edu  
Department: Health and Human Performance

Study Title: Assessing Type 2 Diabetes Risk Perception among College Students and Creating Health Education Tools using the Health Belief Model  
Protocol ID: **18-1134**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category (2) *Educational Tests*. A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	EXEMPT from further IRB review***
Date of expiration	<b>NOT APPLICABLE</b>
Participant Size	500 [Five Hundred]
Participant Pool	<b>Adults 18+</b>
Mandatory Restrictions	1. Participants must be age 18+ 2. Informed consent must be obtained 3. Identifiable information may not be collected
Additional Restrictions	<b>None at this time</b>
Comments	None at this time

Amendments	Date	Post-Approval Amendments
		None at this time

\*\*\*This exemption determination only allows above defined protocol from further IRB review such as continuing review. However, the following post-approval requirements still apply:

- Addition/removal of subject population should not be implemented without IRB approval
- Change in investigators must be notified and approved
- Modifications to procedures must be clearly articulated in an addendum request and the proposed changes must not be incorporated without an approval
- Be advised that the proposed change must comply within the requirements for exemption
- Changes to the research location must be approved – appropriate permission letter(s) from external institutions must accompany the addendum request form
- Changes to funding source must be notified via email ([irb\\_submissions@mtsu.edu](mailto:irb_submissions@mtsu.edu))

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Office of Compliance

Revision Date 03.08.2016 Institutional Review Board  
Middle Tennessee State University

- The exemption does not expire as long as the protocol is in good standing
- Project completion must be reported via email ([irb\\_submissions@mtsu.edu](mailto:irb_submissions@mtsu.edu))
- Research-related injuries to the participants and other events must be reported within 48 hours of such events to [compliance@mtsu.edu](mailto:compliance@mtsu.edu)

The current MTSU IRB policies allow the investigators to make the following types of changes to this protocol without the need to report to the Office of Compliance, as long as the proposed changes do not result in the cancellation of the protocols eligibility for exemption:

- Editorial and minor administrative revisions to the consent form or other study documents
- Increasing/decreasing the participant size

The investigator(s) indicated in this notification should read and abide by all applicable postapproval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website](#). Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident.

All of the research-related records, which include signed consent forms, current & past investigator information, training certificates, survey instruments and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity.

IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board  
Middle Tennessee State University

IRBN007 – Exemption Determination Notice

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## APPENDIX B

### *Professor Recruitment Letter*

[Professors] Contacted: 65 / Responded: 23

Hello (Dr./Professor),

I am a senior completing my thesis about type 2 diabetes using a survey. Would you be willing to distribute my survey to your students? The basis of the thesis and survey is gauging health behavior, type 2 diabetes risk perception and health material effectiveness. Any student over 18 would be eligible to take the survey. I cannot offer incentives for student participation in the survey, however any encouragement you could give to students towards completing the survey would be greatly appreciated. If you are able or interested, I can provide more details in the coming weeks.

Best,

Kyeesha M. Wilcox

Middle Tennessee State University

B.S. Global Studies, Senior

## APPENDIX C

### *Student Recruitment Letter*

Hello future participant!

Are you interested in taking a survey about your health as a college student? My name is Kyeesha Wilcox, and I'm in the process of finishing my senior thesis project on type 2 diabetes. My thesis project is titled *Assessing Type 2 Diabetes Risk Perception among College Students and Creating Health Education Tools using the Health Belief Model*. The project's purpose is to understand how MTSU students view type 2 diabetes and to assess their possible risk of developing the disease.

The survey does not ask for your name or any other personal information. As a survey participant, you will be asked questions about: your health behavior (smoking, eating and exercise habits), perceptions about type 2 diabetes and your opinion on eight health design illustrations. **You must be at least 18 years old to participate in this survey.**

Participation in this study would take approximately 15 minutes of your time. The survey participation is optional, therefore the final decision to participate is yours. There is no penalty to end the survey early. The survey will officially close on February 28, 2018. If you would like to take the survey, here's the link:

[https://qtrial2017q3az1.az1.qualtrics.com/SE/?SID=SV\\_3t0NnfuxyU0aTl3&Q\\_JFE=0](https://qtrial2017q3az1.az1.qualtrics.com/SE/?SID=SV_3t0NnfuxyU0aTl3&Q_JFE=0)

If you have any questions, feel free to email me at: [kmw7e@mtmail.mtsu.edu](mailto:kmw7e@mtmail.mtsu.edu).

Please use 'T2D survey question' in the email subject line.

Many thanks,

Kyeesha M. Wilcox

Middle Tennessee State University c/o 2018

B.S. Global Studies, Senior