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Promoting Heart Healthy Behavior in Adolescents at the Boys and Girls Club

Morgan Brianna Tomasiewicz

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Promoting Heart Healthy Behavior in Adolescents at the Boys and Girls Club

by

Morgan Brianna Tomasiewicz

An Honors Capstone

submitted in partial fulfillment of the requirements

for the Honors Diploma

to

The Honors College

of

The University of Alabama in Huntsville

April 27, 2020

Honors Capstone Director: Dr. Thuy Lynch

Assistant Professor of Nursing

Student

Date

Director

Date

Department Chair

Date

Honors College Dean

Date

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___________________________
Student Name (printed)

[Signature]

Student Signature

4-23-2020

Date
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Abstract

**Background:** Among adults, stress has been correlated with an increased blood pressure. High blood pressure for an extended time can be life threatening due to the sequelae of this condition. Less studied is the relationship of stress on blood pressure in adolescents. Since adolescence can be a stressful time, the purposes of this study were to determine blood pressure and perceived stress levels of adolescents and identify, if possible, a correlation between blood pressure and perceived stress levels. The study also examined the success of a teaching resource manual to promote heart healthy behaviors to the adolescents enrolled in this study.

**Methods:** A convenience sample of 3 adolescents between the ages of 12 and 18 years were recruited from the James A. Lane Boys and Girls Club in Huntsville, Alabama. On day 1 of data collection, each participant had their blood pressure measured with the GE® Dinamap Pro 100 series, then completed the PROMIS Psychological Stress Experiences questionnaire. On day 2 of data collection, the participants were asked to complete a Hypertension Pre-Test, then educated by the researcher on Hypertension with a resource manual, and finally asked to complete a Hypertension Post-Test.

**Results:** Elevations in blood pressure were found in 33% of participants and defined as Prehypertension by the American Academy of Pediatrics (AAP). 100% of participants had higher than average stress levels, ranging from 1 standard deviation to 2 standard deviations higher than the PROMIS mean.

**Discussion:** A correlation between blood pressure and perceived stress levels in adolescents was not identified. The author did not find participant recruitment feasible and recognizes the small sample size as a significant limitation.
Introduction

Stress is a common occurrence in humans that can result in negative side effects to the body (Giddens, 2017). Whether it is eustress — stress that results from positive situations (e.g., planning a wedding), or distress — stress that results from unwanted scenarios (e.g., failing a test), stress stimulates responses in the human body that can either be helpful or detrimental to one’s health (Le Fevre, Matheny, & Kolt, 2003). An important response that activates and increases due to stress is blood pressure (BP), i.e. the force of blood pushing against blood vessel walls (Jarvis, 2016). Although a slight increase in BP for a short time period is helpful in combating the stressor, high BP for an extended time can cause life threatening conditions, such as arteriosclerosis, blood clots, and/or strokes (Giddens, 2017).

Since adolescents undergo stressful situations (e.g., peer pressure, emerging autonomy), it may be vital to determine the effect of their perceived stress level on their BP. According to the American Psychological Association (2014), adolescents reported their stress level as a 5.8 on a 10-point scale, which was higher than the adolescents believed to be healthy.

The purposes of this study are to determine BP of adolescents, ages 12-18 years-old, and create a teaching resource manual during the project to promote heart healthy behaviors in this age group at a local Boys and Girls Club. These purposes are designed to answer the research question: Is BP in 12-18-year-olds affected by lifestyle factors of stress?

Review of Literature

To guide the project, a review of the literature was performed on previous studies of the same or similar nature. Not much research has been conducted on the topic in adolescents, particularly those in the age group of 12 to 18-year-olds. Of those available, the studies focused on specific
stressors and their effect on BP. To conduct the search the PI utilized UAH’s Primo Pathfinder Advanced Search and searched with the terms “blood pressure” and stress and adolescent was searched and limited by the filters of “Material Type: Articles,” “Language English,” and “Publication Date: Last 5 Years.” This search yielded 4,621 results and the articles “School Performance Affects Adolescent Blood Pressure” and “The Relationship Between Autonomy and Relatedness and Adolescents’ Adrenocortical and Cardiovascular Stress Response” were selected. Next, to find results more specifically related to my topic, I edited the search parameters. In UAH’s Primo Pathfinder Advanced Search, “blood pressure,” and “perceived stress” and adolescents was searched and limited by the filters of “Material Type: Articles,” “Language English,” and “Publication Date Last 5 Years.” This search yielded 495 results. To limit the search even further, in the “Subjects” section, “Stress,” “Stress, Psychological,” “Stress (Psychology),” “Blood Pressure,” and “Adolescents” were activated. Also, the filter of “Full Text Online” was selected. This search yielded 228 results and the article “Perceived Stress Scores Among Saudi Students Entering Universities: A Prospective Study During the First Year of University Life” was selected.

Xu and colleagues (2014) may have identified the pressure to perform well in school as a stressor. Their study attempted to demonstrate a correlation between students aged 14-18 years with higher exam averages and higher BP, which resulted in a positive correlation. This finding suggests the possibility that the students with the higher exam averages and systolic BP may have endured pressure to achieve those higher exam grades. However, the authors did not specifically measure perceived stress to perform well on the exams as a factor affecting BP, which may be a factor worthy of further research. The strengths of this study consisted of averaging three BP measurements for a final result and confirming any abnormal results by re-
measuring the BP. Limitations of this study were that the students self-reported their exam scores and that the location of the study being in Tibet may make the results not generalizable to other populations.

Conversely, Al-Daghri and associates (2014) examined the correlation of perceived stress with numerous anthropometrics in preliminary year university students. One of the physiological measurements obtained was BP. BP and perceived stress were measured at the beginning and the end of the preliminary year and had surprising results. While perceived stress had stayed approximately the same, BP had improved. One explanation for these results may be that university students experience more autonomy, compared to when they recently lived at home. An important strength of this study was the use of a pre-designed questionnaire that was pre-tested and validated. Conversely, limitations of the study were the location of Saudi Arabia making the study less generalizable to other populations and the sample size was small.

In contrast, Cook, Chaplin, and Stroud (2015) investigated adolescents in grades ninth through eleventh who still live at home and whose choices are approved or disapproved by their parents. In the experiment, the adolescents endured a negative interaction with their mother in which their autonomy and relatedness to their mother was challenged. Interestingly, only those adolescents who perceived to have daily stress experienced an increase in BP after the intervention of the negative interaction. A strength of this study is that before initiating the negative interaction, the researchers obtained a baseline BP with which to compare future results against. Limitations of this study may be due to the lack of fathers involved, the sample consisting mostly of Caucasian middle-class families, and the participants experiencing the Hawthorne effect due to the researcher and video camera being present to record the experiment.
The aforementioned studies focused on specific situations that may have caused an increase in BP. Due to the limited studies available and the specificity of those available on this subject, this project focused on observing the effects of stress in general on BP. Before we can begin to pinpoint what stressors may be causing high BP in adolescents, we need to determine if stress in general can result in adolescents having high BP. If that is determined, then healthcare providers can attempt to identify specific stressors and provide individualized care to their patient regarding the stressor.

**Theoretical Framework**

Since it appears there has not been a significant amount of research on this topic, it is prudent to identify how an adolescent’s perceived stress affects their BP. If it is found that stress does have a notable impact on BP, then healthcare providers can target the stressors in hopes of reducing high BP. One method for doing this is to incorporate Nola Pender’s Health Promotion Model (HPM), which considers factors (e.g., interpersonal, situational, social) that may affect the patients desire to engage in healthy behaviors (Srof & Velsor-Friedrich, 2006). The HPM identifies positive factors and uses them to motivate the patient to participate in healthy lifestyle choices aimed at reducing the condition of interest (Pender, 1987). Healthcare providers who encounter an adolescent with high BP can employ the HPM by encouraging stress reducing activities. Varvogli and Darviri (2011) reviewed numerous stress management techniques, of which the majority show results of decreasing or controlling high BP. Thus, it should be determined if an adolescent’s high BP is caused by stress through a survey or questionnaire. If the results find the high BP to be stress induced, the adolescent should be encouraged by his/her healthcare professional to engage in healthy, stress eliminating activities, such as the ones examined by Varvogli and Darviri (2011). The PI of this study, “Promoting Heart Healthy
Behavior in Adolescents at the Boys and Girls Club,” implemented the process of assessing the adolescents’ stress level via a questionnaire and educating the adolescents regarding factors that may contribute to or reduce high BP.

**Methods**

**Population, Sample, and Setting**

Prior to recruitment of participants, IRB approval was obtained for study (see Appendix A). In addition, the administrator from the Boys and Girls Club provided a letter of approval (see Appendix B). The individuals sought out to be included in the study were healthy 12-18-year old adolescents, both males and females of any race and ethnicity group. The sample consisted of three African American adolescents between the ages of 12 and 14, two of whom were males and one a female.

**Research Design**

This was a correlational study to investigate the relationship between BP measurements and stress levels in adolescents using statistical data. No variables were manipulated because participants were identified and observed in their natural setting.

**Instruments**

**PROMIS Psychological Stress Experiences**

The PROMIS Psychological Stress Experiences is an 8-item self-report questionnaire that allows participants to rate frequency of self-reported stress. The questionnaire utilizes a Likert scale, in which participants rate the frequency of a statement regarding a recent stressful situation on a 5-point scale with 1 representing “never” to 5 representing “always.” This questionnaire
assesses stress levels in adolescents over the past seven days (See Appendix C). Scores from this questionnaire were recorded on the data collection form (See Appendix D).

**GE® Dinamap Pro 100 Series**

Blood pressure: Blood pressure was measured with the GE® Dinamap Pro 100 series, which is an oscillometric blood pressure device. Blood pressure was obtained with an appropriately sized blood pressure cuff on the adolescents’ upper left arm. Blood pressure results were recorded on the data collection form (See Appendix D).

**Demographic Questionnaire**

Parents completed the demographic questionnaire (included with the parent information packet). Information collected from parents included the adolescent’s age, gender, and race/ethnicity (See Appendix E).

**Hypertension Pre-Test**

This is a 5-question pre-test that adolescents will fill out to determine their understanding of blood pressure and elements that affect blood pressure (See Appendix F).

**Hypertension Resource Manual**

This resource manual briefly teaches adolescents about blood pressure, normal levels, factors that may affect blood pressure, and how to maintain blood pressure at a healthy level. This manual was used to educate the adolescents on these topics (See Appendix G).

**Hypertension Post-Test**

This is a 5-question posttest that adolescents filled out to determine the adolescent’s knowledge of blood pressure and factors that affect blood pressure after a brief teaching session with the Hypertension Resource Manual (See Appendix H).
Procedure

Participants were selected based on the desired population criteria explained above. Participants were recruited using a convenience sampling method. The principal investigator (PI) presented the project to parents at a Family Orientation Day at the James A. Lane Boys and Girls Club. Interested parents received an information packet that contained an information letter (Appendix I) explaining the study and its expectations, risk, & benefits; a parent/guardian consent form (Appendix J); and a demographic questionnaire (Appendix E) in an envelope. The adolescent’s parent/guardian was asked to consent for the adolescent to participate. If parents had questions or concerns about the study, they were able to contact the PI (phone number and email address provided in information letter and consent form). Parents were instructed to return the signed consent form and demographic questionnaire to the PI or a Boys and Girls Club employee in a sealed envelope that was provided. To obtain the adolescent’s assent (Appendix K), the PI identified the adolescents whose parents signed their consent form. On the day of data collection, adolescents whose parents had signed the consent form had the study (purpose, procedure, and time) explained to them. The PI observed for nonverbal behaviors of dissent (e.g., no eye contact, non-interest) that indicated the adolescent did not want to participate in the study. The subject pool then consisted of adolescents whose parents had signed the consent forms and the adolescents that gave proper assent after proper procedural explanation of the study.

After the consent form and assent process from parents and adolescents, respectively, were completed, data collection was conducted in a designated office in the James A. Lane Boys and Girls Club. On day 1 of data collection, the PI obtained one BP measurement individually from each participant. The BP measurements were obtained in a private location. The PI notified any adolescent with elevated blood pressure readings. The Unit Director of the James A. Lane Boys
and Girls club assisted in informing parents of BP measurements by passing this information to parents via a sealed envelope that contained the Adolescent’s Blood Pressure Measurement Form (see Appendix L). After the BP measurement, adolescents completed the PROMIS Psychological Stress Experiences questionnaire (see Appendix C) individually and manually by paper and pencil. The Unit Director or parents were notified of any adolescent with high stress levels.

On day 2 of data collection, there was a brief teaching session conducted by the PI. A Hypertension Pre-Test (see Appendix F) was administered prior to any teaching for adolescents to complete. Then the PI utilized the Hypertension Resource Manual (see Appendix G) to teach the adolescents about the subject. Finally, a Hypertension Post-Test (see Appendix H) was administered for adolescents to complete.

**Results**

The results indicated that 33% of the participants had Prehypertension as defined by the American Academy of Pediatrics (2017) and 100% of the participants had higher than average stress levels. The stress levels ranged from 1 standard deviation to 2 standard deviations higher than the mean.

**Limitations**

A significant limitation to the study was the small sample size, which was due to the lack of age appropriate participants, lack of participation, and scheduling conflicts. Recommendations for future studies involving Boys and Girls Club consist of data collection at multiple locations and more interaction with the parents/guardians.
Discussion

Implications to Nursing Practice

Although the sample size was small, the results showed that all participants had higher than average stress scores and one participant had higher than normal BP. Given the small sample size, establishing a correlation between the two variables in this study was not suitable. However, if a strong positive correlation of high BP and stress levels had been identified, it could have suggested that stress-relieving activities, in addition to pharmaceuticals, could aid in lowering BP. A recommendation for future researchers interested in studying adolescents’ stress levels and BPs would be to expand the location of recruiting participants. This study was limited in that it only recruited at one location; however, recruiting at multiple schools, doctor’s offices, and possibly recreational centers could aid in producing an adequate sample size with great diversity.

Conclusions

After obtaining BP measurements and stress levels of adolescents, 33% of the sample had prehypertension. Since it is known that, in adults, stress leads to elevated BP measurements, it is important to investigate the possibility of this relationship occurring in adolescents. Identifying a positive correlation between BP measurements and stress levels could emphasize the importance of stress modification and lifestyle changes in adolescents to decrease BP without or in addition to pharmaceuticals to prevent further complications of elevated BP.

Dissemination of Scholarly Work

This study was presented as the project “Promoting Heart Healthy Behavior in Adolescents at the Boys and Girls Club” in poster format (see Appendix M) at the Research and Creative Experience for Undergraduates Program (RCEU) in Summer 2019.
References


doi:10.1177/0894318406292831

that reduce stress and promote health. *Health Science Journal, 5*(2), 74-89.

affects adolescent blood pressure. *Cardiology in the Young, 24*(3), 459-463.
doi:10.1017/S1047951113000619
Appendix A
IRB Approval

Date: 18 July 2019
PI: Morgan Tomasiewicz
PI Department: College of Nursing
The University of Alabama in Huntsville

Dear Morgan,

The UAH Institutional Review Board of Human Subjects Committee has reviewed your proposal titled: Promoting Heart Healthy Behaviors in Adolescents at the Boys and Girls Club and found it meets the necessary criteria for approval. Your proposal seems to be in compliance with these institutions Federal Wide Assurance (FWA) 00019998 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Please note that this approval is good for one year from the date on this letter. If data collection continues past this period, you are responsible for processing a renewal application a minimum of 60 days prior to the expiration date.

No changes are to be made to the approved protocol without prior review and approval from the UAH IRB. All changes (e.g. a change in procedure, number of subjects, personnel, study locations, new recruitment materials, study instruments, etc) must be prospectively reviewed and approved by the IRB before they are implemented. You should report any unanticipated problems involving risks to the participants or others to the IRB Chair.

If you have any questions regarding the IRB’s decision, please contact me.

Sincerely,

Ann L. Bianchi
IRB Chair
Associate Professor, College of Nursing
**Expedited:**

- Clinical studies of drugs and medical devices only when condition (a) or (b) is met. (a) Research on drugs for which an investigational new drug application (21 CFR Part 312) is not required. (Note: Research on marketed drugs that significantly increases the risks or decreases the acceptability of the risks associated with the use of the product is not eligible for expedited review. (b) Research on medical devices for which (i) an investigational device exemption application (21 CFR Part 812) is not required; or (ii) the medical device is cleared/approved for marketing and the medical device is being used in accordance with its cleared/approved labeling.

- Collection of blood samples by finger stick, heel stick, ear stick, or venipuncture as follows: (a) from healthy, nonpregnant adults who weigh at least 110 pounds. For these subjects, the amounts drawn may not exceed 550 ml in an 8 week period and collection may not occur more frequently than 2 times per week; or (b) from other adults and children, considering the age, weight, and health of the subjects, the collection procedure, the amount of blood to be collected, and the frequency with which it will be collected. For these subjects, the amount drawn may not exceed the lesser of 50 ml or 3 ml per kg in an 8 week period and collection may not occur more frequently than 2 times per week.

- Prospective collection of biological specimens for research purposes by noninvasive means. Examples: (a) hair and nail clippings in a nondisfiguring manner; (b) deciduous teeth at time of exfoliation or if routine patient care indicates a need for extraction; (c) permanent teeth if routine patient care indicates a need for extraction; (d) excreta and external secretions (including sweat); (e) uncannulated saliva collected either in an unstimulated fashion or stimulated by chewing gumbase or wax or by applying a dilute citric solution to the tongue; (f) placenta removed at delivery; (g) amniotic fluid obtained at the time of rupture of the membrane prior to or during labor; (h) supra- and subgingival dental plaque and calculus, provided the collection procedure is not more invasive than routine prophylactic scaling of the teeth and the process is accomplished in accordance with accepted prophylactic techniques; (i) mucosal and skin cells collected by buccal scraping or swab, skin swab, or mouth washings; (j) sputum collected after saline mist nebulization.

- Collection of data through noninvasive procedures (not involving general anesthesia or sedation) routinely employed in clinical practice, excluding procedures involving x-rays or microwaves. Where medical devices are employed, they must be cleared/approved for marketing. (Studies intended to evaluate the safety and effectiveness of the medical device are not generally eligible for expedited review, including studies of cleared medical devices for new indications).

- Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis).

- Collection of data from voice, video, digital, or image recordings made for research purposes.

- Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.
Exempt

☐ Research conducted in established or commonly accepted educational settings, involving normal educational practices, such as (a) research on regular and special education instructional strategies, or (b) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods. The research is not FDA regulated and does not involve prisoners as participants.

☐ Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interviews, or observation of public behavior in which information is obtained in a manner that human subjects cannot be identified directly or through identifiers linked to the subjects and any disclosure of the human subject’s responses outside the research would NOT place the subjects at risk of criminal or civil liability or be damaging to the subject’s financial standing, employability, or reputation. The research is not FDA regulated and does not involve prisoners as participants.

☐ Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement) survey procedures, interview procedures, or observation of public behavior if (a) the human subjects are elected or appointed public officials or candidates for public office, or (b) Federal statute(s) require(s) without exception that the confidentiality of the personally identifiable information will be maintained throughout the research and thereafter. The research is not FDA regulated and does not involve prisoners as participants.

☐ Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. The research is not FDA regulated and does not involve prisoners as participants.

☐ Research and demonstration projects which are conducted by or subject to the approval of department or agency heads, and which are designed to study, evaluate, or otherwise examine: (i) public benefit or service programs; (ii) procedures for obtaining benefits or services under those programs; (iii) possible changes in or alternatives to those programs or procedures; or (iv) possible changes in methods or levels of payment for benefits or services under those programs. The protocol will be conducted pursuant to specific federal statutory authority; has no statutory requirement for IRB review; does not involve significant physical invasions or intrusions upon the privacy interests of the participant; has authorization or concurrent by the funding agency and does not involve prisoners as participants.

☐ Taste and food quality evaluation and consumer acceptance studies, (i) if wholesome foods without additives are consumed or (ii) if a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture. The research does not involve prisoners as participants.

1 Surveys, interviews, or observation of public behavior involving children cannot be exempt.
April 22, 2019

Morgan Tomasiewicz
UAH Honors College Nursing Student
The University of Alabama in Huntsville
301 Sparkman Drive
Huntsville, AL 35899

Dear Ms. Tomasiewicz:

This letter is in support of your Honors College project entitled “Promoting Heart Healthy Behaviors in Adolescents at the Boys and Girls Club.” I understand that your faculty advisor, Dr. Thuy Lynch, will help provide guidance with your project.

I am granting you access to the attendees (children and adolescents and their parents/guardians) beginning May 16, 2019 and ending August 1, 2019 in order to recruit participants and collect data for your project. The participants will include children and adolescents, ages 12-18, whom participate at the James A. Lane Boys and Girls Club.

Sincerely,

Ms. Liz Clemens, MSW
Ms. Liz Clemens, MSW
Unit Director
James A. Lane Boys & Girls Club

GREAT FUTURES START HERE.
Appendix C

PROMIS Pediatric Item Bank v1.0 – Psychological Stress Experiences – Short Form 8a

Psychological Stress Experiences – Short Form 8a

Please respond to each question or statement by marking one box per row.

<table>
<thead>
<tr>
<th>Question</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>I felt stressed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I felt that my problems kept piling up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt overwhelmed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>I felt unable to manage things in my life</td>
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<tr>
<td>Everything bothered me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I felt under pressure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>I had trouble concentrating</td>
<td></td>
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<tr>
<td>I felt I had too much going on</td>
<td>1</td>
<td>2</td>
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</tbody>
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Appendix D

Data Collection Form

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<th>Participant #</th>
<th>Blood Pressure</th>
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<th>PROMIS Scale Score</th>
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Appendix E

Demographic Questionnaire

Please fill out the following information as part your participation in the Promoting Heart Healthy Behavior at the Boys and Girls Club study. It should take approximately 2 minutes to complete this questionnaire. Please remember your answers will be confidential.

1. Name: _______________________________________

2. Age: __________

3. Gender: M_______ F_______

4. Race:
   __________ African American/Black
   __________ Asian/Pacific Islander
   __________ Caucasian/White
   __________ Multiracial
   __________ Other, please indicate

5. Ethnicity:
   __________ Latino/Hispanic
   __________ Non-Latino/Non-Hispanic
Appendix F

Hypertension Pre-Test

1. Eating foods high in salt will help raise my blood pressure  True / False
2. I should not work out if I have high blood pressure (hypertension)  True / False
3. Using tobacco/alcohol products will lower my blood pressure  True / False
4. The recommended amount of time to work out is 30 minutes for 1 week  True / False
5. Eating foods high in potassium will help lower my blood pressure  True / False
Appendix G

Hypertension Resource Manual
Quick Facts

- Hypertension is also known as High Blood Pressure
- Hypertension occurs when your blood pushes against your blood vessel walls at a higher pressure than it should
- Having high blood pressure increases your risk for heart disease, heart attack, stroke, & kidney disease

Risk Factors

- Diet high in salt and low in potassium
- Not getting enough physical activity
- Obesity
- Smoking tobacco
- Drinking too much alcohol
- Diabetes

Signs and Symptoms

- Usually has no warning signs
- It is called the “silent killer”
- Only one clear way to know if you have it, by measuring your blood pressure with a sphygmomanometer
**Blood Pressure Numbers**

- Once you get your blood pressure measured, your result will be in a number form, such as 120/80
- The first number is the systolic pressure and it measures the pressure in your blood vessel when your heart beats
- The second number is the diastolic pressure and it measures the pressure in your blood vessel when your heart rests

**Blood Pressure Levels**

<table>
<thead>
<tr>
<th>Normal</th>
<th>Systolic: less than 120 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diastolic: less than 80 mmHg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prehypertension (at risk for high blood pressure)</th>
<th>Systolic: 120-139 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diastolic: 80-89 mmHg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hypertension (high blood pressure)</th>
<th>Systolic: 140 mmHg or higher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diastolic: 90 mmHg or higher</td>
</tr>
</tbody>
</table>
Controlling High Blood Pressure

The 3 A's

~A Healthy Diet~
- Eat foods low in salt
  - Buy packages labeled “low sodium,” “reduced sodium,” or “no salt added”
  - Buy fresh poultry, fish, and pork, rather than cured, salted, smoked, or processed
- Eat foods high in potassium
  - Examples: potatoes, tomatoes, leafy greens, sweet potatoes, beans, bananas, yogurt, salmon, clams

~Activity~
- Get active!
- Try to get 1 hour (60 minutes) of physical activity daily

~Avoid Substance Use~
- Don’t smoke
- Don’t drink alcohol
# Resources

**Information Resources**

- About High Blood Pressure (Hypertension). (n.d.). Retrieved from [https://www.cdc.gov/bloodpressure/about.htm](https://www.cdc.gov/bloodpressure/about.htm)
- Preventing High Blood Pressure (Hypertension); Healthy Living Habits. (n.d.). Retrieved from [https://www.cdc.gov/bloodpressure/healthy_living.htm](https://www.cdc.gov/bloodpressure/healthy_living.htm)
- The Role of Potassium and Sodium in Your Diet | CDC. (n.d.). Retrieved from [https://www.cdc.gov/salt/potassium.htm](https://www.cdc.gov/salt/potassium.htm)

**Picture Resources**

Appendix H

Hypertension Post-Test

1. When shopping for food, I should choose “low sodium” or “reduced sodium options”  True / False

2. The normal blood pressure level is 120/80  True / False

3. I should avoid tobacco/alcohol products to keep my blood pressure low  True / False

4. The recommended amount of time to work out is 60 minutes every day  True / False

5. Eating foods high in potassium will help lower my blood pressure  True / False
Appendix I

Information Letter to Parents

Dear Parents of James, A Lane Boys and Girls Club Members,

My name is Morgan Tomasiewicz, and I am a nursing student the University of Alabama in Huntsville College of Nursing. I am conducting a research study in Summer 2019.

I am inviting your adolescent to participate in the research study. This research study involves looking at how your adolescent’s behaviors affect their health. This research study will examine the effects of stress on blood pressure in adolescent ages 12-18 years. This study will enroll approximately 30 participants from the James A. Lane Boys and Girls Club.

The study procedures are described in the attached parent/guardian consent document. We will also ask your adolescent to sign an assent form, to make sure your adolescent wants to participate. Parental consent and adolescent assent are required if your adolescent is to participate. If you agree for your adolescent to be in the study, please sign the enclosed parent/guardian consent document and the enclosed Demographic Questionnaire and return them to the James A. Lane Boys and Girls Club in an enclosed envelope. The second copy of the consent document is for you to keep.

Your adolescent may choose not to be in the study or you or your adolescent may stop participation in the study at any time. This will not affect your adolescent’s participation at the James A. Lane Boys and Girls Club. There will be no cost to you for your adolescent taking part in the study.

If you have questions about the study, I will be available at the James A. Lane Boys and Girls Club from June 23rd to June 28th from 8 am to 2 pm. I will be more than happy to answer your questions. Please return the consent document and Demographic Questionnaire by July 8, 2019.

I want to thank you in advance for your consideration in this matter. Please feel free to contact me with any questions or concerns at (815) 641 3087 or by email at mbt0010@uah.edu or contact the project advisor, Dr. Thuy Lynch at (256) 479-0240 or by email at Thuy.Lynch@uah.edu

Thank you for your time and consideration,

Morgan Tomasiewicz

Please remember to return the parent/guardian consent document and the Demographic Questionnaire in the enclosed envelope by Monday, July 8th, 2019
Appendix J

Parental Consent Form

You are invited to participate in a research study about how adolescent’s behaviors and stress levels affect their health. This study is designed to help us to better understand the effects of psychological stress, eating habits, and physical activity on blood pressure in adolescent’s ages 12 to 18 years.

The primary investigator is Morgan Tomasiewicz, from the University of Alabama in Huntsville College of Nursing. Please be advised that if the participant is under the age of 18, parental consent is required.

PROCEDURE TO BE FOLLOWED IN THE STUDY: Participation in this study is completely voluntary. Once written consent is given, you will be asked to provide demographics information about your adolescent. The demographics questionnaire will take approximately 2 minutes to complete. Your adolescent’s blood pressure will be measured at three time points over a span of 2 months. The measurement will be conducted in a private room and written on an information sheet. Your adolescent will complete a questionnaire that asks about his/her self-perception of psychological stress at the same three time points as the blood pressure measurements.

All data collection with your adolescent will occur at the James A. Lane Boys and Girls Club. All information from your adolescent will be collected during your adolescent’s free time. It will take approximately 30 minutes to get all this information.

Your adolescent will be asked to complete a Hypertension Pre-Test to determine their understanding of blood pressure and elements that affect it. Your adolescent will then sit through a brief teaching session where they will be allowed to read a Hypertension Resource Manual explaining blood pressure and elements that affect it. Your adolescent will finally be asked to complete a Hypertension Post-Test to assess their level of understanding regarding blood pressure and the elements that affect it after the teaching session on these topics.

DISCOMFORTS AND RISKS FROM PARTICIPATING IN THIS STUDY: No major complications are anticipated as risks to the participants. No physical risks are expected with participation. Mild discomfort may occur during blood pressure measurement. Your adolescent may experience some psychological discomfort during the completion of stress questionnaires; however, the risk involved is minimal. A James A. Lane Boys and Girls Club representative will
be available should your adolescent experience any emotional upset during measurement. If your adolescent becomes upset during completion of any of the questionnaires, your adolescent may stop at any time. If your adolescent’s responses to the questionnaires indicate a high level of stress, then the Unit Director will be notified.

EXPECTED BENEFITS: Results from this study can benefit society by helping health professionals to develop better programs to promote healthy outcomes for adolescents. Please see the section below for incentives and compensation for participation in this study.

INCENTIVES AND COMPENSATION FOR PARTICIPATION: Your adolescent will not receive an incentive for participating in the study.

CONFIDENTIALITY OF RESULTS: Participant numbers will be used to record your adolescent’s data, and these numbers will be made available only to those researchers directly involved with this study, thereby ensuring strict confidentiality. This consent form will be destroyed after 3 years. The data from the study will only be released to those individuals who are directly involved in the research and only using the adolescent’s participant number.

FREEDOM TO WITHDRAW: Your adolescent is free to withdraw from the study at any time. Your adolescent will not be penalized because of withdrawal in any form. The decision to participate or not participate in the study will have no effect on your adolescent’s relations with or ability to participate in the James A. Lane Boys and Girls Club. Investigators reserve the right to remove any participant from the session without regard to the participant’s consent.

CONTACT INFORMATION: If you have any questions, please ask them now. If you have questions later on, you may contact the Principal Investigator, Morgan Tomasiewicz at the University of Alabama in Huntsville College of Nursing, at 815.641.3087 or at mbt0010@uah.edu or the project advisor, Dr. Thuy Lynch at 256.824.4880 or at Thuy.Lynch@uah.edu. If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact the Office of the IRB (IRB) at 256.824.2465 or email the IRB chair Dr. Ann Bianchi at irb@uah.edu.

If you agree for your adolescent to participate in our research, please sign and date below.

This study was approved by the Institutional Review Board at UAH and will expire in one year from June 4th, 2019.
Name (Please Print)  Adolescent’s Name (Please Print)

Parent/Guardian Signature
Appendix K
Child Assent Form

Title: Promoting Heart Healthy Behavior at the Boys and Girls Club
IRB Protocol No.: E201976
Sponsor: The University of Alabama in Huntsville
Investigator: Morgan Tomasiewicz

The investigator named above is doing a research study.

These are some things we want you to know about research studies:
I am asking you to be in a research study. Research is a way to test new ideas. Research helps us learn new things.

Whether or not to be in this research is your choice. You can say Yes or No. Whatever you decide is OK.

Why am I being asked to be in this research study?
You are being asked to be in the study because I want to know how behaviors affect your health. I am trying to find out how 12-18-year old adolescent’s eating habits, physical activity, & stress levels affect their blood pressure (how hard blood pumps through your body).

What is the study about?
The study is about how eating habits, physical activity, & stress levels affect adolescent’s health. The study will be checking your blood pressure and stress levels at three different points throughout the summer. This research is important because it can help researchers understand the health of adolescents. All of the study activities will take about 30 minutes to complete. The study will take place in an office in your James A. Lane Boys and Girls Club.

What will happen during this study?
If you agree to be in this study, you will:

- Be escorted by a Boys A. Lane Boys and Girls Club representative to an office where the study activities will take place.
- Have your blood pressure measured.
- Answer questions about your feelings and stress levels. You will answer questions about what kind of things cause you to feel stressed and how often they occur (called the PROMIS Psychological Stress Experiences).

Will the study hurt?
Taking part in these tests will not hurt. If you do not want to do any of the tests, you do not have to participate.

**What else should I know about the study?**
You do not have to answer any questions that are asked of you. There may be potential risk of becoming upset or emotional when you complete the questionnaires. You do not have to answer any questions, and you may stop at any time. If you want to see a James A. Lane Boys and Girls Club representative, you may do so. You do not have to continue in the study if you do not want to. Researchers will provide for your privacy by conducting the study in a separate office.

**What are the good things that might happen or benefits?**
People may have good things happen to them because they are in a research study. These are called “benefits”. You will probably not receive any specific benefits from being in this research study. However, researchers may learn important facts about adolescents that are not already known.

**What if I don’t want to be in this study?**
Even though your parents have given us permission to contact you about this project, you do not have to participate if you don’t want to. This is completely up to you. If you decide not to participate in the study, it will not affect your relations or ability to participate in the James A. Lane Boys and Girls Club.

**Who should I ask if I have any questions?**
If you have any questions about this study, you or your parents can call Ms. Morgan Tomasiewicz at (815) 641 3087; the project advisor, Dr. Thuy Lynch at (256) 479-0240; or the IRB Chair, Dr. Ann Bianchi at (256) 824-2465 or email at irb@uah.edu.

**Do I have to be in the study?**
No, you do not have to be in the study. Even if you say yes now, you can change your mind later. It is up to you. No one will be mad at you if you don’t want to do this.

Now that I have asked my questions and think I know about the study and what it means, here is what I decided:

_________ OK, I’ll be in the study. _________ No, I do not want to be in the study.

The researcher has told me about the research. I had a chance to ask questions. I know I can ask questions at any time. I want to be in the research.

If you sign your name below, it means that you agree to take part in this research study.

_____________________________   ____  _______________
Your Name (Printed)     Age   Date
<table>
<thead>
<tr>
<th>Signature of Person Obtaining Consent</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature of Witness</td>
<td>Date</td>
</tr>
<tr>
<td>Your Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>
Appendix L

Adolescent’s Blood Pressure Measurement Form

The table below categorizes the Center for Disease Control and Prevention’s classification of blood pressure levels. I have checked the category that your adolescent’s blood pressure falls in and have marked their measurement below.

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Blood Pressure Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Blood Pressure</td>
<td>Less than 120/80 mmHg</td>
</tr>
<tr>
<td>At Risk for High Blood Pressure (Prehypertension)</td>
<td>Between 120/80 mmHg and 129/80 mmHg</td>
</tr>
<tr>
<td>Stage 1 High Blood Pressure (Hypertension)</td>
<td>Between 130/80 mmHg and 139/89 mmHg</td>
</tr>
<tr>
<td>Stage 2 High Blood Pressure (Hypertension)</td>
<td>Greater than 140/90 mmHg</td>
</tr>
</tbody>
</table>

Blood Pressure Measurement: _________

______________________________________
Signature of PI, Morgan Tomasiewicz

Reference:
Appendix M
Poster Dissemination

Research and Creative Experience for Undergraduates Program (RCEU)
Summer 2019

Promoting Heart Healthy Behavior in Adolescents at the Boys and Girls Club

Morgan Tomasiewicz, Thuy Lynch, College of Nursing

INTRODUCTION

- Blood pressure (BP) is the force of blood pushing against blood vessel walls. B
- High BP for an extended time can cause life threatening conditions, such as heart disease and stroke.
- Stress triggers certain bodily responses that may result in high BP.
- Adolescents tend to be a stressful time due to peer pressure and emerging autonomy.

LIMITATIONS

- Small sample size due to:
  - Lack of age appropriate participants.
  - Lack of participation.
  - Scheduling conflicts.

RESULTS

- 33% had Prehypertension as defined by the AAP.
- In regards to the feasibility of the study, the author did not find the study feasible to perform.
- 100% of participants had higher than average stress levels, ranging from 1 standard deviation to 2 standard deviations higher than the mean.

METHODOLOGY

- A correlational study with convenience sampling (n=20).

STEP 1

- Data collection consisted of:
  - BP measurements with the GE® Dinamap Pro 100 series BP device.
  - Perceived stress levels measured with the PROMIS stress survey.

STEP 2

- Teaching session consisted of:
  - Hypertension Pre Test.
  - Hypertension Post Test.

RECOMMENDATIONS

- Recommendations for future studies involving Boys and Girls Clubs:
  - Data collection at multiple locations.
  - More interaction with parents/guardians.

SIGNIFICANCE

- If a positive correlation of high BP and stress levels was identified, it could have suggested that stress-relieving activities as well as pharmaceuticals could aid in lowering BP.

Table 1: See reference 3.

Figure 1: The GE® Dinamap Pro 100 series BP device.

Figure 2: Primary investigator with subject.

References


Acknowledgements

This study was completed with funding from the RCEU program at UAH. UAH Office of the Provost, UAH Office of the Vice President for Research and Economic Development, and the Alabama Space Grant Consortium. The author would like to thank Dr. Bernard Vogler, Mr. David Geck, and Dr. Ann Blenner for their guidance with the RCEU.
Dear Everyone,

This email serves as a confirmation that student Morgan Tomasiewicz has successfully completed her Honors Capstone Thesis.

Please let me know if you have any questions.

Best,
Thuy

Thuy L. Lynch, Ph.D., RN
Assistant Professor
College of Nursing- Office NUR 209B
The University of Alabama in Huntsville
301 Sparkman Dr.
Huntsville, AL 35899
256-824-4880