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Comparative Study on Knowledge, Attitude, and Vaccination Intent Between Standard Care and Educational Intervention of HPV and the HPV Vaccine Among Somali Population in Columbus

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Running Head: HPV VACCINE EDUCATIONAL INTERVENTION AMONG SOMALI

COMPARATIVE STUDY ON KNOWLEDGE, ATTITUDE, AND VACCINATION INTENT
BETWEEN STANDARD CARE AND EDUCATIONAL INTERVENTION OF HPV AND
THE HPV VACCINE AMONG SOMALI POPULATION IN COLUMBUS

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Submitted in partial fulfillment of the requirements for
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Abstract

Somali mothers have a negative cultural association with Human Papillomavirus (HPV) vaccination and youth are failing to complete the HPV vaccination series. Somali immigrants and refugees are the fastest growing groups in the U.S. Somalia also has one of the highest cervical cancer mortality rates and U.S. Somali populations have lower screening completion rates. To prevent cross over disparities, efficient intervention strategies for the Somali population need to be explored. This research aims to identify strategies to combat HPV health disparities in the Somali community while promoting agency to make self-empowered health decisions. It is hypothesized that participants who undergo the educational intervention will improve their knowledge and behavioral intention towards the HPV vaccine. A pre-/post-test quasi-experimental design was performed to gauge differences between an educational intervention and standard care practice (HPV informational vaccine sheet). The study utilized the Health Belief Model and cultural competency values to create an educational intervention delivered at relocation sites frequented by Somali immigrants. A repeated measures ANOVA was examined utilizing SPSS. The study analyzed 69 participants. The participants' ages ranged from 13-50 years old. Participants in the experimental group gained a greater understanding of HPV and the vaccine when compared to the control group ($F_{(2, 1)} = 5.54, p = .002$). Both groups experienced an increase in knowledge but no variance in intentions to vaccinate was observed ($F_{(2, 1)} = 0.082, p = .776$). Overall, participants deemed each educational method as beneficial. Health care providers who disseminate information will increase knowledge either by standard care or intervention. Additional research is needed to connect knowledge with behavioral outcomes. This study provides a stepping-stone for healthcare providers who seek to equitably educate and reduce HPV in the Somali population.

Introduction

Across the United States, 79 million Americans are afflicted with the Human Papillomavirus and 14 million Americans contract this virus each year (National Cancer Institute, 2014). In 2000, 9.1 million or approximately 48% of persons ages 15-24 experienced new cases of HPV (Weinstock, Berman, Cates, 2007). Because of this issue, researchers developed a vaccine for this sexually transmitted infection (STI). According to the National Cancer Institute (2014), the HPV is 100% effective in preventing nine different strains of HPV for more than 10 years following vaccination (National Cancer Institute; Chatterjee, 2014). While the primary reason for the recipient to receive this vaccine is to stop the spread of HPV, this vaccine can also prevent the development of cancers associated with the virus such as cervical cancer, vaginal and vulvar cancers, and anal, throat, or penile cancers (Centers for Disease Control and Prevention, 2015).

The HPV vaccine decreases prevalence of HPV. Markowitz et al. (2013) analyzed HPV vaccine data during the vaccine era (2007-2010) and compared the data with pre-vaccine era data during (2003-2006). The Linear Array HPV Assay in cervico-vaginal swab samples from females 14-59 years of age determined HPV. The samples ranged from 4,150 provided samples in 2003-2006 to 4,253 provided samples in 2007-2010 (Markowitz, Hariri, Lin, Dunne, Steinau, McQuillan, Unger, 2013). The overall results found that among females 14-19 years of age HPV prevalence decreased by 56%. Across all other age groups, this was the only significant finding. Which indicates the importance of vaccinations between the ages of 14-19. Researchers concluded that the vaccination is most effective in ages 10-26. These data also suggested a decline in vaccine HPV prevalence for these ages (Markowitz et al, 2013). As this decline was higher than they expected they attributed this to be due to herd immunity. This type of herd

immunity is impressive considering the health and economic burdens associated with HPV cancers (Markowitz et al, 2013).

Bauer, Wright, and Chow (2012) examined the development of genital warts (GW). Genital Wart trends were used to try and provide early evidence of population HPV vaccine effectiveness. These trends were assessed utilizing the Public Family Planning Administrative data which illustrated a 35% and 19% decrease in GW for females and males, respectively, who were younger than 21 during the years between 2007- 2010 (Bauer, Wright, Chow, 2012). It was also found that females and males ages 21-25 reduced their development of GW by 10% and 11%, respectively. Overall, the study concluded that this vaccine primarily prevents GW among young women. Due to vaccination uptake there was an overall decrease in GW. Further indicating, that overall vaccination improves community health (Bauer et al., 2012). When individuals receive the HPV vaccine they prevent GW among themselves and others by way of herd immunity. The Human Papillomavirus vaccine uptake could improve the community health for the central Ohio immigrant and refugee population.

Research by Arnold et al. (2010) concluded that Immigrants and Refugees from low- or middle- income countries are more prone to cancers from viral infections during early life (Arnold, Razum & Coebergh, 2010). The research was conducted using 37 studies published between 1990 and 2010. Arnold and colleagues focused on cancer in adult migrants from non-western countries, living in the industrialized countries of the European Union. It was found that migrants from non-western countries were more likely to develop cancers related to infections experienced in early life such as cervical, liver, and stomach cancer. These results coupled with a study completed by Leinonen et al. (2017), who sought to identify a disparity with the rate of screening participation among immigrants in the same population, found that all immigrants in

the study were almost twice as likely to not complete screening when compared to Norwegian women (Leinonen, Campbell, Ursin, Tropé, & Nygård, 2017). While it is uncertain if their findings can be applied to central Ohio's immigrant and refugee population, we can predict that our populations in Columbus may be afflicted in the same way. Many of central Ohio's immigrants and refugees come from low-income countries such as: Somalia, Bhutan, and Nepal.

Vaccination, Screening, and Preventive Behavior Studies

Interventions are common practice in the public health field. Many studies are conducted in order to identify best practices to optimize predicted effects. Although intervention manipulation and study is common practice, what is not common practice is the study of intervention strategies among marginalized ethnic/racial groups (Zane, Bernal, & Leong, 2016). The researchers believe this can be true for the Somali population as there are minimal studies showcasing intervention strategies designed to eradicate HPV and HPV associated cancers. However, there are studies regarding the Somali population on preventive measure and HPV vaccination uptake below.

According to a study by Carroll et al. (2012), the Somali population is among the fastest growing groups in the United States with a low completion rate for preventive health services (Carroll, Epstein, Fiscella, Gipson, Volpe, & Jean-Pierre, 2007). Past studies on clinician-patient communications lead Morrison and partners to suspect that Somali-Americans may be at risk for low completion rates regarding preventive health services (Zane et al., 2016). This study attributed the negative experiences and unfamiliarity of the health infrastructure concerning Somali patients to health disparities (Carroll et al., 2007). Therefore, the study evaluated disparities in preventive health services among Somali patients compared to non-Somali patients

in a, Rochester, Minnesota, Academic Primary Care practice. The preventive service rates measured were pap smears, vaccination (Influenza, pneumococcus, and tetanus), lipid screening, colorectal cancer screening, and mammography. The study concluded that Somali patients experienced significantly lower completion rates in pap smears, influenza vaccination, colorectal cancer screening, and mammography. In regards to pap smears, the percentage of Somali patients that received pap smears was 48.79% when compared to non-Somali patients at 69.01%, ($p < .0001$). Patients utilizing an interpreter also had higher completion rates of preventive services (Carroll et al, 2007).

Pruitt et al. (2013) summarized that 80,000 Somalis immigrated to the United States in recent years. They represent one of the largest African-born immigrant populations in the United States. Somalia also has one of the highest cervical cancer rates around the world at 13.0 and every year 989 women are diagnosed with cervical cancer and 875 die from it (STATISTICS, 2018). According to the study, the age-adjusted incidence is 20.3 and the mortality rate is 15.2 per 100,000 women per year (Pruitt, Reese, Grossardt, Shire, & Creedon, 2013). Although, this may be due to limited pap smear availability in the country, evidence shows that women who immigrate to developed countries still have low completion rates for pap smears (Carroll et al, 2007). The awareness of this disparity prompted Pruitt et al. (2013) to seek understanding on HPV vaccination acceptance and participation in the Somali community. These data were the result of comparing vaccination initiation and completion among Somali and white/non-Hispanic girls. In accordance with the Mayo Clinic and Olmsted Medical Center Institutional Reviews Boards (2013), data were collected using the Rochester Epidemiology Project infrastructure. The findings reflected that in comparison with white non-Hispanic girls at 72% only 52% of Somali girls completed the HPV vaccination series (Pruitt et al, 2013). Somali participants also had

significantly longer intervals between doses when compared to non-Hispanic white participants at ($p < .001$). The average days of completion for Somali girl participants was also 204 days as compared to 145 days for their white counterparts, ($p < .001$) (Pruitt et al, 2013). The study highlighted the need for Somali-American intervention and communication efficiency.

Education Intervention Studies

Although, research has been conducted to highlight cervical cancer rates (STATISTICS, 2018), Pap smear rates (Carroll et al, 2007), HPV rates (DiClemente et al 2015), and non-compliance with HPV vaccine completion (Pruitt et al, 2013), studies beginning to interpret and find effective intervention skills specifically for the Somali population were not found. However, by using the following research below and general intervention studies we were able to conduct an intervention strategy.

A pre-/post- experimental design by Sweeney et al. (2015), analyzed changes over a months' time. The study incorporated group intervention strategies successfully used in a past study to drive their variable outcomes (St. Lawrence & Fortenberry, 2007). The Theory of Planned Behavior (TPB) was incorporated into the study and effectiveness was examined in conjunction with a variety of health risks (including sexual risk behaviors) (Sweeney, McAnulty, Reeve, & Cann 2015). The Theory of Planned Behavior posits that health behavior is primarily influenced by behavioral intention and behavioral intentions are influenced by normative beliefs (Ajzen, 1991). By incorporating these facets, the study was able to provide empirical support for brief one-time educational intervention strategies in reducing several HPV risks (Sweeney et al 2015). Participants who received intervention were more likely to seek information about HPV than those who did not, 68.4% and 31.3%, respectively. Overall, the intervention was successful

in increasing knowledge, behavioral intentions, HPV information seeking, and HIV testing (Sweeney et al 2015).

According to a study done by DiClemente et al. (2015), it was found that even though genital HPV is the most prevalent STI in the U.S., vaccination uptake rates among high risk subgroups remains low. The purpose of this study was to test the efficacy of a theory based, multi-component computer delivered media intervention designed to enhance initial uptake of the HPV vaccine (DiClemente, Murray, Graham, & Still, 2015). The results stated that participants had a neutral association for perception of the vaccine. Seventy six percent of participants stated they would try to get more information on the vaccine. Sixty three percent of participants noted they would be “likely to get the HPV vaccine if a healthcare provider offered it to them in the next 12 months” and 26.9% reported they would be “likely to actually get the HPV vaccine today” (on the day of study enrollment) (DiClemente et al., 2015). This study shows that intervention can positively affect participant behavior.

By reviewing the featured studies the researchers were able to conduct a procedure that would potentially enhance the outcome variables and objective. The outcome variables seek to increase knowledge of HPV and the HPV vaccine among the Somali community in Columbus. Somali- Americans come from an environment scarce of regular Pap smear screening and as such have one of the highest cervical cancer rates. By identifying efficient intervention strategies for the Somali community, this study seeks to combat this lack of resource and cancer rate from continuing in America and becoming a crossover disparity.

Methods

Participants

The study analyzed 69 participants from a Somali ethnic background. Individuals were recruited to participate in one of three sessions, located either at the Masjid, apartment complex, or the Somali Student Association at the nearby university. Inclusion criteria included Somali descent, ≥ 10 years old, and residing in Columbus, OH. Participants took part in the study in order to learn more about HPV and the HPV vaccine. Participants' ages ranged from 13-50 years old (mean of 21.35) and were predominantly female ($n=57$; 82.6%), as seen in Figure 1. Eighty three percent of participants ($n=45$) lived on the north side of Columbus while 6% ($n=3$) lived on the east side and 11.1% ($n=6$) lived on the west side, as seen in Figure 2. A majority of participants lived in Zip codes 43230 (17.4%), followed by 43224 (14.4%), 43219 (13.0%), 43229 (10.1%), 43231 (5.8%), and 43081 (4.3%), respectively. Lastly, a little more than a quarter of participants ($n=16$) already received the HPV vaccine or are currently receiving it prior to the intervention.

Procedure

During a pre/post quasi-experimental pilot, a pre-survey was passed out for the first 10 minutes of the program before the educational intervention (experiment) or standard care intervention (control) (Figure 3). Afterward, the participants were either given a 15-minute presentation on HPV and the HPV vaccine (educational intervention) or given an HPV vaccination sheet (standard care intervention) to review for 15 min. After the 15-minute intervention, participants were handed a post-survey to complete for the remaining 10 minutes. If participants were assigned as a part of the control group, immediately following the post-test they were offered to stay for the same educational intervention the experimental group received.

For ethical reasons, this additional educational intervention was offered to the control group as well.

The surveys within the experiment were constructed of three groups. A set of the questionnaires pre/post were used for ages 10-17, another set was used for 18-26 and ≥ 27 , respectively. The three groups were determined in order to accurately assess the barriers unique to each group. An interpreter was used to aid in all survey questions. Two professors from nearby universities further assessed face and content validity of the surveys.

The presentation was formed using the Health Belief Model (Mehta, Sharma, & Lee, 2014). The presentation reviewed the severity of HPV, potential susceptibilities, and gave resources to help overcome barriers. An interpreter was used during the presentation in order to optimize understanding by translating the presentation and provided documents. The vaccination sheet (VIS) used in doctor's offices contained basic information and was more compact. The VIS sheet was provided by the Center for Disease Control (CDC) and a translated document was found on the website (Vaccine Information Statements, 2016). Both the English and Somali translation of the document was used depending on the participant's preference. Cultural competency played a big role in how the research was conducted. As our population is identified as a race/ethnic minority, the intervention was tailored to fit cultural, social, and linguistic needs.

Instrument

Surveys utilized in this study followed constructs from three behavioral science theories: The Theory of Planned Behavior, The Theory of Reasoned Action and The Health Belief Model. The Theory of Planned Behavior (TPB) was created to explain all the behaviors that depend on self-control. The TPB assess attitudes, behavioral intention, subjective norms, social norms, perceived power, and perceived behavioral control (Ajzen, 1991). The Health Belief Model

(HBM) is similar, but contains some differences. Like the TPB, the HBM seeks to predict health behaviors, however, the methods and language used to predict behaviors is different. The (HBM) assesses the perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Concepts the HBM stresses are 'readiness to act' and 'cues to action', which promotes the individuals readiness to act (Becker, 1974). The Theory of Reasoned Action (TRA) involves the study of how individuals behave along with their perceiving attitudes to determine behavioral intentions (Fishbein & Ajzen, 1980). All three concepts were used in order to successfully interpret perceived attitudes, knowledge, and behavioral intention towards HPV and the HPV vaccine. The survey included the following type of questions: semantic differential, Likert-type, multiple choice, and open-ended questions. These questions helped develop an understanding towards the perceived barriers and behavioral control, attitudes, and knowledge of individuals who participated in this study. For example, some questions used a 5-point Likert-type scale (strongly disagree to strongly agree) to assess attitudes such as (I believe I have access to the Human Papillomavirus Vaccine). Six 7-point semantic differential scales were used to answer this question, "How would you rate your overall experience with this program?" The scale included the following labels: bad-good, hard-easy, awful-excellent, difficult-simple, low quality-high quality, and meaningless-meaningful. Lastly, the survey included other open-ended questions and multiple choice. Open-ended questions included, "What is the Human Papillomavirus (HPV)?" while multiple choice questions asked participants to select an option of when they intend to receive the HPV vaccine. The multiple asked " Because I participated in this program, I plan to receive the HPV Vaccine (check the box that matches your opinion)..." and the options included in less than a month, within 1-6 months, within 7-12 months, in more than a year, I don't plan on receiving the vaccine, and I am not sure I will receive the vaccine.

Questions were formulated using the text, *Health behavior and health education: Theory, research, and practice* (Montaño & Kasprzyk, 2008).

Data Analysis

In this quantitative study, an education intervention was used in order to identify differences to standard care practices. It was hypothesized that the educational intervention would significantly increase knowledge and vaccination intent when compared to the standard care intervention. After gathering data using pre- and post- surveys, the data were analyzed utilizing the Statistical Package for the Social Sciences (SPSS v. 25). Descriptive statistic measures (means, frequencies, and percentages) were calculated in order to assess percentages and means in demographics, knowledge, and barriers. A repeated measures ANOVA was also performed in order to assess the difference in knowledge and vaccination intention between the experiment and control groups.

Results

This study sought to attain results on barriers, knowledge, intention to vaccinate, demographics, and program evaluation. Regarding barriers, multiple questions on access to vaccine, costs associated, parent willingness, those who have already received it, and health insurance were asked. It was found that 14.5% of participants deemed health insurance as a barrier. Some participants also listed insurance issues in the 'other' option within the same question. Eighteen percent of participants believe their parents are a barrier to receiving the HPV vaccine, whereas, 26.6% of the participants already received the vaccine (n=12) or are currently receiving the vaccine (n=4). A set of 5-point Likert-type questions (from Strongly Disagree, Disagree, Neither Disagree or Agree, to Strongly Agree) further evaluated barriers faced by these individuals. The results were then subcategorized between those who identified as either a 10-17

year old or 18-26 year old. Among ages 10-17, when posed the statement, “my doctor has mentioned the Human Papillomavirus Vaccine to me” the mean was 1.91. Which indicated they were more likely to strongly disagree or disagree that their provider mentioned the vaccine. The 18-26 age group was slightly less likely to disagree with a mean of 2.78. The age group 10-17 was also more likely to either strongly disagree or disagree about their parents asking their provider about the vaccine (mean= 2.30) as seen in Table 1.

For intention to vaccinate, only participants aged 10-17 and 18-26 were considered. This is primarily because the vaccine is most effective and indicated for ages 10-26. In the experiment group, 76% plan to receive the vaccine in the future, 20% were not sure if they would receive the vaccine, and 3.4% do not plan on receiving the vaccine. The data also showed, in the control group, that 57% plan to receive the vaccine, 36% are not sure if they will receive the vaccine, and 14% do not plan to receive the vaccine.

When assessing knowledge gained, participants in the experimental group gained a greater understanding of HPV and the HPV vaccine when compared to the control group ($F_{(2, 1)} = 5.54, p = .002$). Both groups experienced an increase in knowledge but no variance in intentions to vaccinate was observed ($F_{(2, 1)} = 0.082, p = .776$).

Overall, participants deemed each educational method as beneficial. Evaluation of the program was calculated on a 7-point semantic differential scale. Data analysis showed that most participants believed the program to be meaningful, easy, and high-quality with means 6.71, 6.79, and 6.71, respectively. Results are summarized in Figure 2.

Discussion

This intervention was successful with enhanced retention of information. According to these results, health care providers who disseminate information will increase knowledge either

by standard care or intervention. However, additional research is needed to connect knowledge with behavioral outcomes as there was no significant difference in vaccination intention between the experiment and control group.

Although, most participants attend their yearly checkups, participant's ages 10-17 were more likely to disagree that their doctors mentioned the vaccine (mean=1.97). This highlights an issue between patient-provider communications. One plausible reason for this lack of communication is cultural competency. A lack of cultural competency regarding physicians and providers does a disservice to young patients in terms of preventative health measures. More cultural competency training is suggested so that either physicians or providers adequately care for their minority patients. This discussion is vitally important among patients aged 10-17 because, according to the CDC, this is when the vaccine is most effective (Center for Disease Control and Prevention, 2015).

Racial/Ethnic minorities as a whole are in need of tailored interventions that can help improve their health outcomes and patient-provider relationships. Many evidence based prevention and intervention programs work for non-racial/ethnic minorities, but what strides has public health taken to improve racial/ethnic minority health? As a society, whom are we promoting evidence-based interventions for? This study provides a stepping-stone in order to answer these questions. Healthcare providers who seek to equitably educate and reduce HPV in the Somali population can review studies such as this one in order to implement best practices for interventions.

There are limitations to this study. The population was not randomized and most participants were acquainted with the researcher. There is a possibility that the Hawthorne effect influenced values. The Hawthorne effect speaks to the difference in behavior by subjects due to

their awareness of being observed (Cook, 1967). Due to the closed-survey format used within the questionnaire, the participants were limited in some of their responses. As such, they were unable to provide additional response information, such as describing the ways in which their attitudes have changed throughout the course. Future research would be benefitted by the inclusion of more free response items, allowing subjects to reflect on their attitudes, and any attitude change they experienced as a result of the course. Face and content validity could be improved by more critique of the survey instrument. Questions deemed unnecessary for our objective were not reported. Participants who have already received the vaccine were also not excluded.

Overall, this research highlights that both the educational intervention and the standard care intervention (VIS sheet) improve knowledge. However, in this intervention, knowledge significantly increased more so by participating in an educational intervention. Either way physicians or providers need to be mindful and address HPV and the vaccine while encouraging patients to receive it. Ignorance surrounding HPV in our racial/ethnic minority populations further perpetuates minority health disparities. This project attempts to influence research on evidence-based interventions directed at providing tailored intervention techniques for racial/ethnic minorities.

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Date 01/30/19

The Department of Health and Sport Sciences at Otterbein University supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You should be aware that even if you agree to participate, you are free to withdraw at any time without penalty.

We are interested in evaluating and educating you on the Human Papillomavirus and Human Papillomavirus Vaccine. You will first participate in a survey to assess your knowledge and attitude on the virus and vaccine. After this, you will participate in the evaluation of a flyer on both the virus and vaccine. Once the session is finished, you will again complete a post-program survey to reassess your knowledge and attitude on the virus and vaccine. At the end, we will provide you with resources you can take home as well as a voluntary educational session.

Your participation is solicited although strictly voluntary. We assure you that your name will not be associated in any way with the research findings. The information will be identified only by a code number.

If you would like additional information concerning this study before or after it is complete, please feel free to contact me by phone or mail.

Sincerely,

Robert E. Braun, PhD, MPH, CHES, Principal Investigator
Associate Professor of Public Health Education
140 Center Street, #011
614.823.3528

Signature of subject agreeing to participate
With my signature I affirm that I am at least 18 years of age



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Date 01/30/19

The Department of Health & Sport Sciences at Otterbein University supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish your son or daughter to participate in the present study. You should be aware that even if you agree to participate, your child is free to withdraw at any time without penalty.

We are interested in evaluating and educating your child on the Human Papillomavirus and Human Papillomavirus Vaccine. The students will first participate in a survey to assess their knowledge and attitude on the virus and vaccine. After this, they will participate in an educational session on both the virus and vaccine. Once the session is finished, the students will complete another post-program survey to reassess their knowledge and attitude on the virus and vaccine. At the end, we will provide both you and your child with resources you can take home.

Your child's participation is solicited although strictly voluntary. We assure you that their name will not be associated in any way with the research findings. Only a code number will identify the information.

If you would like additional information concerning this study before or after it is complete, please feel free to contact me by phone or mail.

Sincerely,

Robert E. Braun, PhD, MPH, CHES, Principal Investigator
 Associate Professor of Public Health Education
 140 Center Street, #011
 614.823.3528

 Signature of parent/guardian for child

 Child's name

 Date

Ages 10-17 Pre-Survey

Your Last 4 digits are: ____ _

Do **NOT** put your name on this survey, your answers are confidential. Please answer the questions as best you can, thank you!

1. What is the Human Papillomavirus (HPV)?

2. Name three symptoms of the Human Papillomavirus:

1. _____

2. _____

3. _____

3. List three reasons why you should receive the Human Papillomavirus Vaccine:

1. _____

2. _____

3. _____

4. How would you rate your overall attitude towards the Human Papillomavirus Vaccine? Please place an “X” on the line that best reflects your attitude towards this vaccine.

	1		2		3		4		5		6		7	
Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Harmful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Beneficial
Worthless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Valuable
Ineffective	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Effective
Unbelievable	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Believable
Meaningless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Meaningful
Useful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Useless
Unimportant to me	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Important to me

5. As of now, how likely or unlikely am I to receive the HPV Vaccine (check the box that matches your opinion)...

Very Unlikely
 Unlikely
 Neither Likely nor Unlikely
 Likely
 Very Likely
 I already (or currently) receive this vaccine

6. For me, barriers to receiving this vaccine is/are (check all that apply)

- my physician not offering it
- my parents
- cost
- health insurance
- access to the vaccine
- No barriers – I’m currently receiving the vaccine
- No barriers – I already received the vaccine
- other: _____

(Please continue on to the next page)

7. Please place a check mark in the corresponding box that matches your level of agreement or disagreement with the statements below.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I believe I have access to the Human Papillomavirus Vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My doctor has mentioned the Human Papillomavirus Vaccine to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I attend yearly physical Check-ups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a doctor or office to visit to receive the vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I believe my parents will ask our healthcare provider about the vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My parents would be comfortable taking me to receive the vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**You have reached the end of the survey.
We thank you for your participation!**

Ages 10-17 Post-Survey

Your Last 4 digits are: _____

Do **NOT** put your name on this survey, your answers are confidential. Please answer the questions as best you can, thank you!

Difficult _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ Simple
 Low Quality _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ High Quality
 Meaningless _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ Meaningful

6. How would you rate your overall experience with this program? Please place an “X” on the line that best reflects your attitude toward this program.

7. After participating in this program, how likely or unlikely am I to receive the HPV Vaccine (check the box that matches your opinion)...

- Very Unlikely Unlikely Neither Likely nor Unlikely Likely Very Likely
- I already (or currently) receive this vaccine

8. Because I participated in this program, I plan to receive the HPV Vaccine (check the box that matches your opinion)...

- in less than a month
- within 1-6 months
- within 7-12 months
- in more than a year
- I don’t plan on receiving the vaccine
- I am not sure if I will receive the vaccine

Demographic Questions:

1. What is your age? _____

2. You self-identify as...

- a. Bhutanese
- b. Nepalese
- c. Somali
- d. Other: _____

3. What is your gender?

- a. Female
- b. Male
- c. Other: _____

4. What side of Columbus are you located?

- a. East Side
- b. North Side
- c. West Side
- d. South Side
- e. Other: _____

5. What is your Zip-Code? _____

You have reached the end of the survey.

We thank you for your participation!

Ages 18-26 Pre- Survey

***Your Last 4 digits are:* _____**

Do **NOT** put your name on this survey, your answers are confidential. Please answer the questions as best you can, thank you!

1. What is the Human Papillomavirus (HPV)?

2. Name three symptoms of the Human Papillomavirus:

1. _____

2. _____

3. _____

3. List three reasons why you should receive the Human Papillomavirus Vaccine:

1. _____

2. _____

3. _____

4. How would you rate your overall attitude towards the Human Papillomavirus Vaccine? Please place an “X” on the line that best reflects your attitude towards this vaccine.

	1		2		3		4		5		6		7	
Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Harmful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Beneficial
Worthless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Valuable
Ineffective	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Effective
Unbelievable	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Believable
Meaningless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Meaningful
Useful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Useless
Unimportant to me	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Important to me

5. As of now, how likely or unlikely am I to receive the HPV Vaccine (check the box that matches your opinion)...

- Very Unlikely
 Unlikely
 Neither Likely nor Unlikely
 Likely
 Very Likely
 I already (or currently) receive this vaccine

6. For me, barriers to receiving this vaccine is/are (check all that apply)

- my physician not offering it
- my parents
- cost
- health insurance
- access to the vaccine
- No barriers – I’m currently receiving the vaccine
- No barriers – I already received the vaccine
- other: _____

(Please continue on to the next page)

7. Please place a check mark in the corresponding box that matches your level of agreement or disagreement with the statements below.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I believe I have access to the Human Papillomavirus Vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My doctor has mentioned the Human Papillomavirus Vaccine to me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I attend yearly physical Check-ups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a doctor or office to visit to receive the vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**You have reached the end of the survey.
We thank you for your participation!**

Ages 18-26 Post- Survey

Your Last 4 digits are: ____ _

Do **NOT** put your name on this survey, your answers are confidential. Please answer the questions as best you can, thank you!

Awful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Excellent
Difficult	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Simple
Low Quality	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	High Quality
Meaningless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Meaningful

6. How would you rate your overall experience with this program? Please place an “X” on the line that best reflects your attitude towards this program.

7. After participating in this program, how likely or unlikely am I to receive the HPV Vaccine (check the box that matches your opinion)...

- Very Unlikely Unlikely Neither Likely nor Unlikely Likely Very Likely
- I already (or currently) receive this vaccine

8. Because I participated in this program, I plan to receive the HPV Vaccine check the box that matches your opinion)...

- in less than a month
- within 1-6 months
- within 7-12 months
- in more than a year
- I don’t plan on receiving the vaccine
- I am not sure if I will receive the vaccine

Demographic Questions:

6. What is your age? _____

7. You self-identify as...

- a. Bhutanese
- b. Nepalese
- c. Somali
- d. Other: _____

8. What is your gender?

- a. Female
- b. Male
- c. Other: _____

9. What side of Columbus are you located?

- a. East Side
- b. North Side
- c. West Side
- d. South Side
- e. Other: _____

10. What is your Zip-Code? _____

You have reached the end of the survey.

We thank you for your participation!

27 & UP (Parent) Pre -Survey

Your Last 4 digits are: _____

Do **NOT** put your name on this survey, your answers are confidential. Please answer the questions as best you can, thank you!

1. What is the Human Papillomavirus (HPV)?

2. Name three symptoms of the Human Papillomavirus:

1. _____
 2. _____
 3. _____

3. List three reasons why you should receive the Human Papillomavirus Vaccine:

1. _____
 2. _____
 3. _____

4. How would you rate your overall attitude towards the Human Papillomavirus Vaccine? Please place an "X" on the line that best reflects your attitude towards this vaccine.

	1	2	3	4	5	6	7	
Bad	_____	: _____	: _____	: _____	: _____	: _____	: _____	Good
Harmful	_____	: _____	: _____	: _____	: _____	: _____	: _____	Beneficial
Worthless	_____	: _____	: _____	: _____	: _____	: _____	: _____	Valuable
Ineffective	_____	: _____	: _____	: _____	: _____	: _____	: _____	Effective
Unbelievable	_____	: _____	: _____	: _____	: _____	: _____	: _____	Believable
Meaningless	_____	: _____	: _____	: _____	: _____	: _____	: _____	Meaningful
Useful	_____	: _____	: _____	: _____	: _____	: _____	: _____	Useless
Unimportant to me	_____	: _____	: _____	: _____	: _____	: _____	: _____	Important to me

4. As of now, how likely or unlikely will my child (children) receive the HPV Vaccine? (check the box that matches your opinion)...

- Very Unlikely
 Unlikely
 Neither Likely nor Unlikely
 Likely
 Very Likely
 They have already (or currently) receive this vaccine

5. I want my child (children) to receive the HPV Vaccine (check the box that matches your opinion)...

- Very Unlikely
 Unlikely
 Neither Likely nor Unlikely
 Likely
 Very Likely

(Please continue on to the next page)

6. Please place a check mark in the corresponding box that you matches your level of agreement or disagreement with the following statements.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I believe I have access to the Human Papillomavirus Vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a doctor or office to attend in order to receive the vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My doctor has mentioned the Human Papillomavirus Vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can afford the HPV Vaccine for my child	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I attend yearly checkups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My child's doctor has mentioned the Human Papillomavirus Vaccine.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My child attends yearly checkups.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**You have reached the end of the survey.
 We thank you for your participation!
 Please refer to the research assistant.**

Do **NOT** put your name on this survey, your answers are confidential. Please answer the questions as best you can, thank you!

1. What is the Human Papillomavirus?

2. Name three symptoms of the Human Papillomavirus:

1. _____
 2. _____
 3. _____

3. List three reasons why you should receive the Human Papillomavirus Vaccine:

1. _____
 2. _____
 3. _____

4. How would you rate your overall attitude towards the Human Papillomavirus Vaccine? Please place an "X" on the line that best reflects your attitude towards this vaccine.

	1		2		3		4		5		6		7	
Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Harmful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Beneficial
Worthless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Valuable
Ineffective	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Effective
Unbelievable	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Believable
Meaningless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Meaningful
Useful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Useless
Unimportant to me	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Important to me

5. After participating in this program, how likely or unlikely will my child (children) receive the HPV Vaccine (check the box that matches your opinion).

- Very Unlikely
 Unlikely
 Neither Likely nor Unlikely
 Likely
 Very Likely
 They have already (or currently) receive this vaccine

6. I received translated resources during the workshop:

- Yes
 No

(Please continue on to the next page)

7. How would you rate your overall experience with this program? Please place an "X" on the line that best reflects your attitude towards this program.

	1		2		3		4		5		6		7	
Bad	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Good
Hard	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Easy
Awful	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Excellent
Difficult	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Simple
Low Quality	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	High Quality
Meaningless	_____	:	_____	:	_____	:	_____	:	_____	:	_____	:	_____	Meaningful

Demographic Questions:

11. What is your age? _____

12. You self-identify as...

- a. Bhutanese
- b. Nepalese
- c. Somali
- d. Other: _____

13. What is your gender?

- a. Female
- b. Male
- c. Other: _____

14. What side of Columbus are you located?

- a. East Side
- b. North Side
- c. West Side
- d. South Side
- e. Other: _____

15. What is your Zip-Code? _____

**You have reached the end of the survey.
We thank you for your participation!**

INSTITUTIONAL REVIEW BOARD
 RESEARCH INVOLVING HUMAN SUBJECTS
 OTTERBEIN UNIVERSITY

Original Review
 Continuing Review
 Five-Year Review
 Amendment

ACTION OF THE INSTITUTIONAL REVIEW BOARD

With regard to the employment of human subjects in the proposed research:

HS # 18/19-08

Braun, Rocks & Barnes: Perception of the Human Papillomavirus and Human ...

THE INSTITUTIONAL REVIEW BOARD HAS TAKEN THE FOLLOWING ACTION:

Approved Disapproved
 Approved with Stipulations* Waiver of Written Consent Granted
 Deferred

*Stipulations stated by the IRB have been met by the investigator and, therefore, the protocol is APPROVED.

It is the responsibility of the principal investigator to retain a copy of each signed consent form for at least four (4) years beyond the termination of the subject's participation in the proposed activity. Should the principal investigator leave the college, signed consent forms are to be transferred to the Institutional Review Board for the required retention period. This application has been approved for the period of one year. You are reminded that you must promptly report any problems to the IRB, and that no procedural changes may be made without prior review and approval. You are also reminded that the identity of the research participants must be kept confidential.

Date: 12 December 2018

Signed: Meredith C. Frey
 Chairperson

Table 1

Perceived barriers/behavioral control

	10-17 (n=12)		18-26 (n=50)	
	Mean	Frequency	Mean	Frequency
I believe I have access to the Human Papilloma-virus Vaccine.	3.09	11	3.54	50
My doctor has mentioned the Human Papillomavirus Vaccine to me.	1.91	11	2.78	50
I attend yearly physical check-ups.	3.64	11	3.74	50
I have a doctor or office to visit to receive the vaccine.	3.67	9	3.94	50
I believe my parents will ask our healthcare provider about the vaccine.	2.30	10	N/A	N/A
My parents would be comfortable taking me to receive the vaccine.	3.60	10	N/A	N/A

Note. This contains means associated with terms from strongly disagree (SD), disagree (D), neither agree nor disagree (N), agree (A), and strongly agree (SA). Values are associated with the following terms: 1=SD, 2=D, 3=N, 4=A, and 5=SA.

Table and Figures

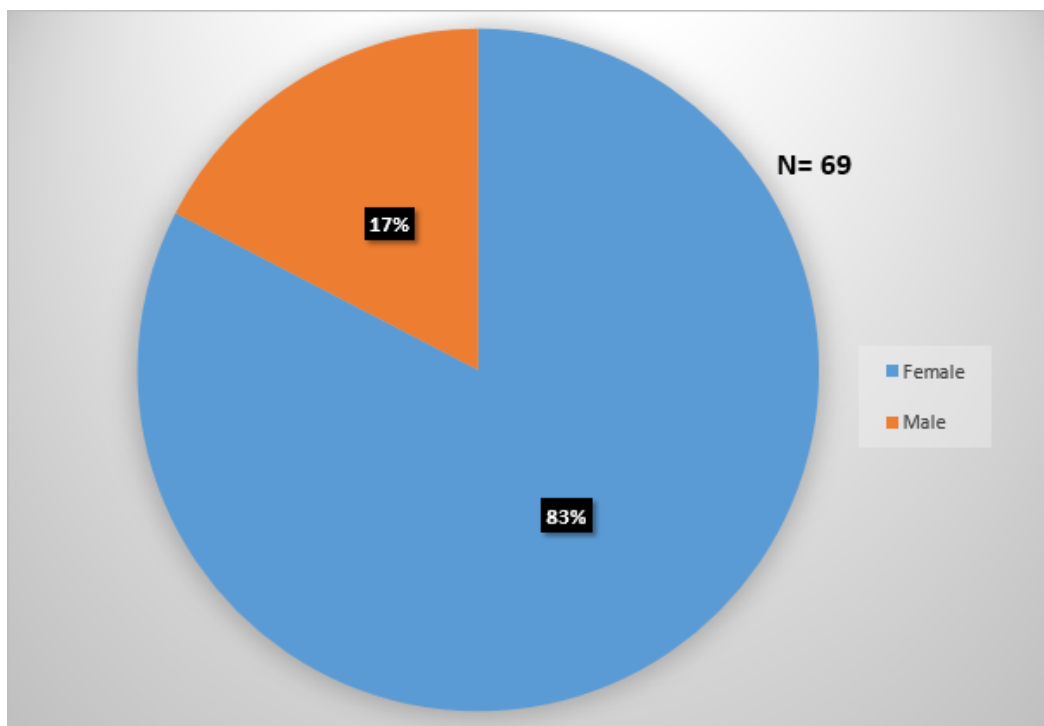


Figure 1. Sex of Participants. This figure illustrates the percentage of sex in the priority population assessed.

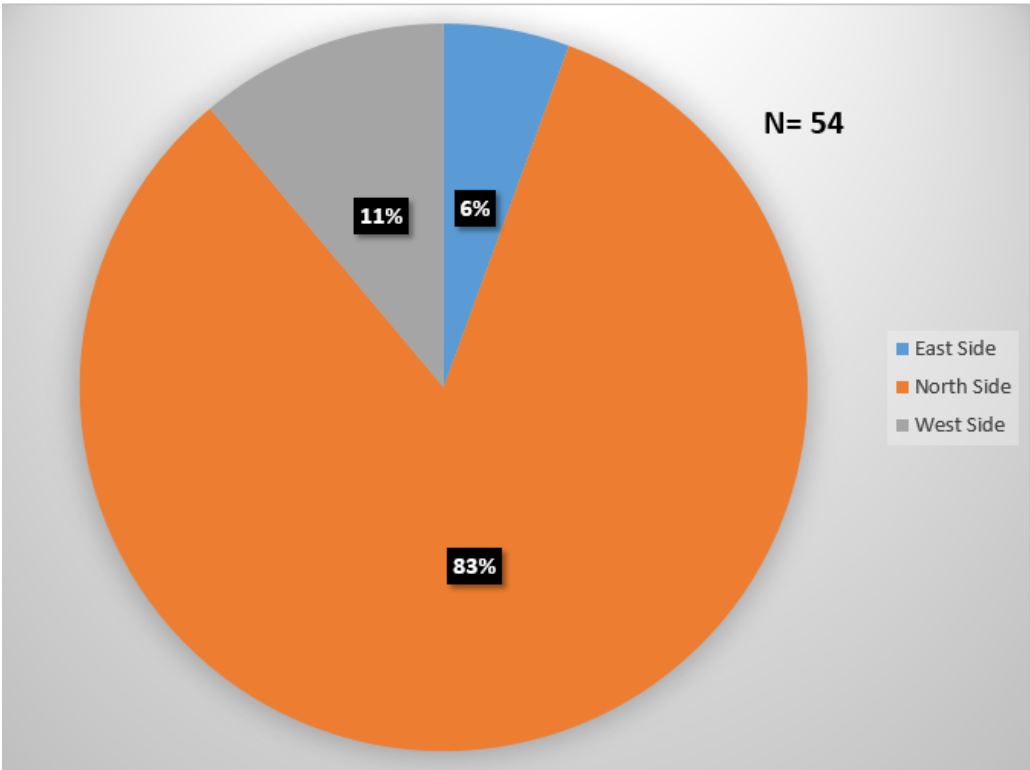


Figure 2. Participant’s geographic location in Columbus. This figure illustrates which side of Columbus, Ohio the participants live.

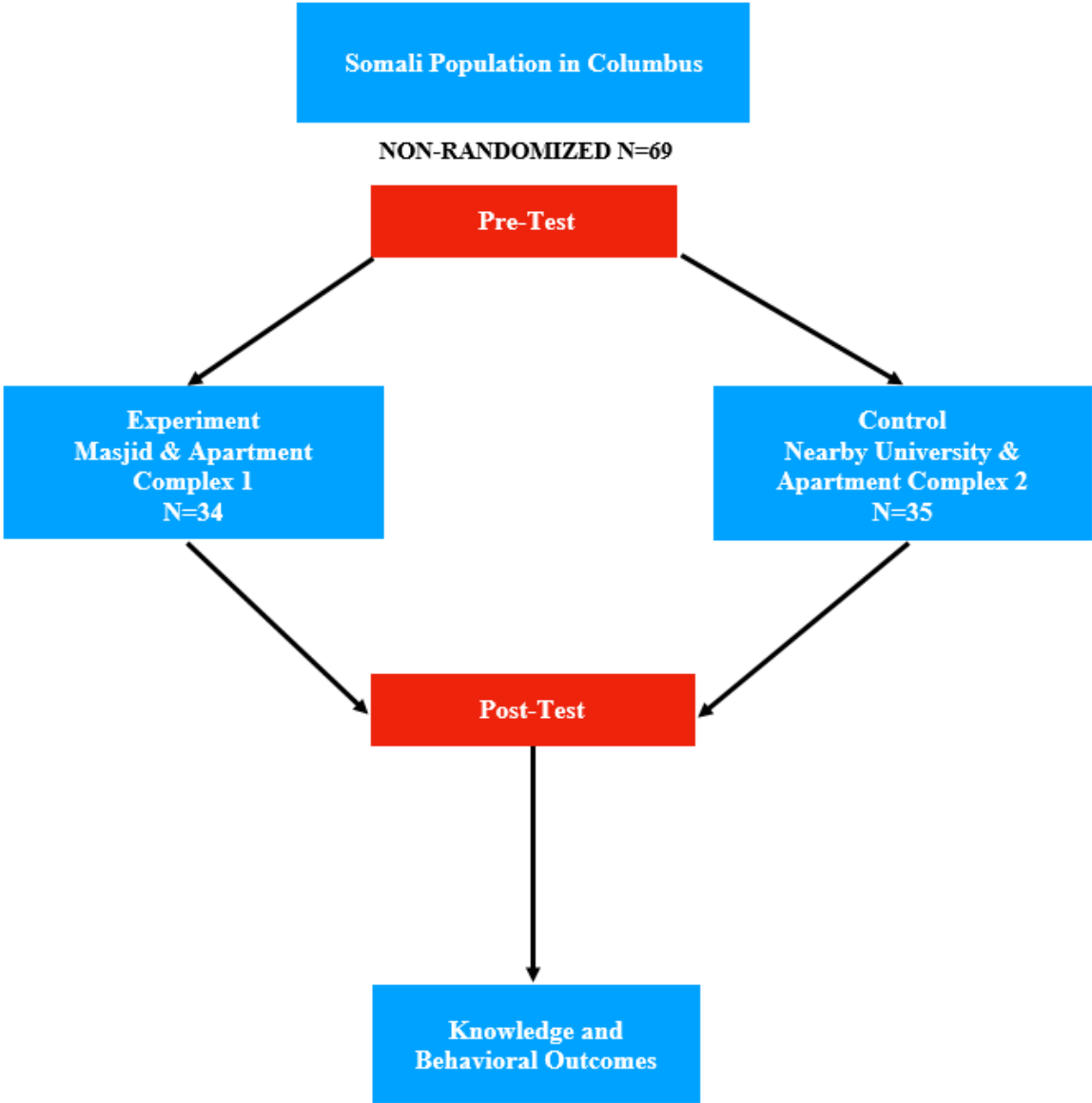


Figure 3. Flow chart. This figure illustrates flow of experiment and amount of participants in each group.

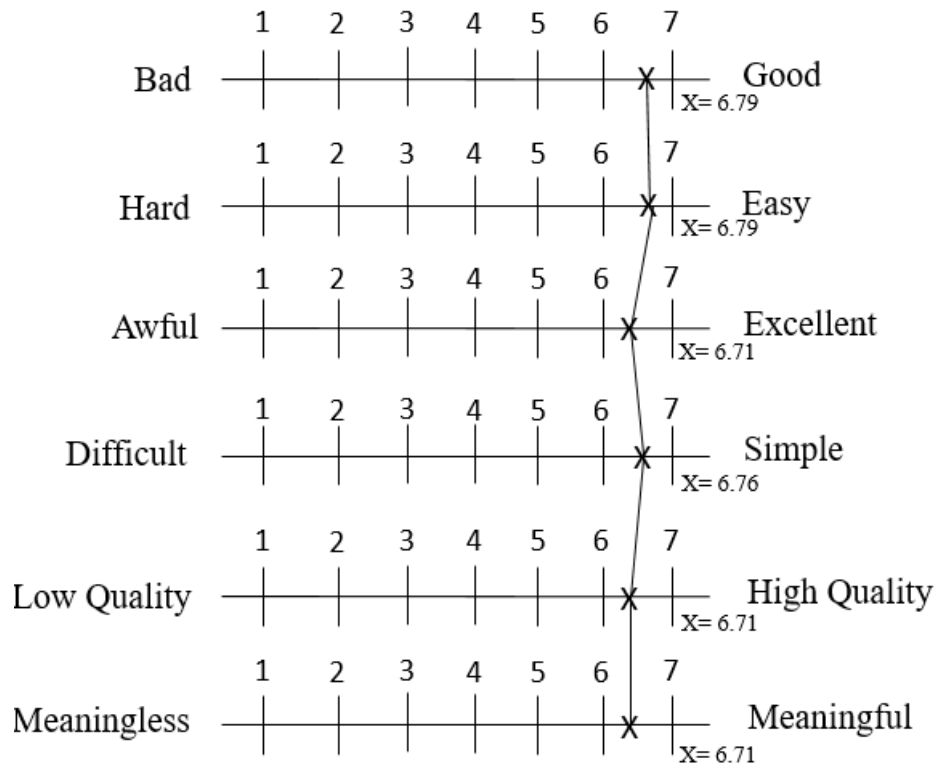


Figure 4. Program Evaluation. This figure illustrates an assessment of the program by means associated with each scale.