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Implementation of Sexually Transmitted Disease Screening and Education in the College Aged Female

Margaret H. White
Mississippi University for Women

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Implementation of Sexually Transmitted Disease Screening
and Education in the College Aged Female

by

Margaret H. White, FNP-BC

Alena Groves, DNP, FNP-C, ONP-C and Chair

April 2024

A DNP Project submitted to the faculty of the College of Nursing in partial fulfillment of
the requirements for the degree of Doctor of Nursing Practice in the graduate college at
Mississippi University for Women

Graduate Committee Approval

The Graduate Committee of Margaret Hyer White

hereby approves her research project as meeting partial

fulfillment of the requirements for the Degree of

Doctor of Nursing Practice

Date: _____ Approved: _____

Chair

Approved:

Director of Graduate Studies

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IMPLEMENTATION OF SEXUALLY TRANSMITTED DISEASE SCREENING AND
EDUCATION IN THE COLLEGE-AGED FEMALE

Margaret H. White, FNP-BC

Mississippi University for Women, 2024

Supervising Faculty: Dr. Alena Groves

Abstract

Sexually transmitted diseases (STDs) and sexually transmitted infections (STIs) are a prevalent problem for all age groups. According to the Center for Disease Control (CDC) (2021), young people ages 15-24 years old account for almost half of all newly diagnosed STIs in the United States. Mississippi is steadily seeing increases in STIs, especially syphilis. The number of syphilis cases almost tripled from 2013 to 2016 according to the Mississippi State Department of Health (n.d). Early detection of STIs makes treating and curing STIs easier which is crucial for sexual and reproductive health but is a problem with the most vulnerable group of adolescents aged 15-24 years old. Approximately 12.7% of sexually active adolescents and young adults who were on their parent's health insurance would not seek health care related to sexual health for fear of their parents finding out (Litchliter et al., 2017). For this project, a comprehensive literature review reiterated the need for increased screening and education surrounding STIs. Participants were limited to females ages 18-25 and were asked to scan a QR code on their smartphone which took them to the project information. After scanning the QR code, the pretest was presented but was preceded by informed consent and began with a demographic section followed by a knowledge section, and then concluded with a personal practice section. After finishing the pretest section, participants were taken to an

educational PowerPoint developed by the researcher. A posttest was given following the completion of the educational material to measure if a knowledge increase occurred.

Analysis of the survey results showed that there was a statistically significant increase in knowledge between the pre- and posttest after completing the educational PowerPoint ($p = 0.008$). An STI provider tool protocol was developed from the CDC's "Prepare Before You're There" online quiz and developed to implement into clinic visits and streamline the STI visit. The STI screening tool was implemented in one urgent care clinic and two student health centers. Upon completion of the clinical practice project, participating providers were asked if they felt like they diagnosed more STIs while utilizing the STI provider tool and almost 75% stated yes. This increase in screening would lead to more STIs being found and treated and therefore increase opportunities to increase knowledge of STIs. This analysis further validates the need for increased education in females ages 18-25 related to STIs to improve their overall health.

DEDICATION

I dedicate this project to my wonderful family. To my husband Dylan, thank you for making my dreams of becoming a nurse practitioner and now, reaching my terminal degree in nursing, a reality. I have been in school our whole married life and now our new life as parents and I truly would not be who I am today without you. Thank you for holding down the fort and cleaning up the kitchen while I spent countless nights working on papers and discussion boards. To my Nora girl, I know you will not remember this season of life, but I hope that when you are old enough I can inspire you to follow your dreams and know that you can do anything you put your mind to. I cannot wait to watch you grow into a beautiful young lady and I am excited to see what your future holds.

To my mother, thank you for always being there for me and for helping guide me to reach my full potential. Thank you for instilling a love for school early on and knowing that I can achieve anything if I put in the work. To my sister, thank you for always being there to listen and encourage me throughout this process. To Davis and Chelsea, my sweet pups, thank you for always being by my side and never letting me burn the midnight oil alone.

To my DNP classmates, thank you for always being there throughout this journey with me. Thank you for helping this rather novice NP find her voice and be able to feel like she has a seat at the table with more experienced practitioners. I respect each one of you as people and as practitioners. Your patients, communities, and fellow classmates are lucky to have you as a part of their team.

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Introduction

Sexually transmitted diseases (STDs) and sexually transmitted infections (STIs) are prevalent problems for all age groups. According to the Centers for Disease Control (CDC) (2021), young people ages 15-24 years old account for almost half of all newly diagnosed STIs in the United States. New STIs totaled almost \$16 billion in medical costs in 2018 and the United States pregnancy rate among youth aged 12-19 years old is one of the highest in the developed world (Center for Disease Control, 2021). Mississippi is steadily seeing increases in STIs, especially syphilis. The number of syphilis cases almost tripled from 2013 to 2016 according to the Mississippi State Department of Health (n.d). Early detection of STIs makes treating and curing STIs easier which is crucial for sexual and reproductive health.

If STIs are left untreated it could lead to serious complications, especially in females including infertility and cancers. According to the World Health Organization (2023), if not treated or treated incorrectly, chlamydia and gonorrhea can lead to pelvic inflammatory disease which can lead to infertility in women. Herpes, gonorrhea, and syphilis increase your risk of contracting HIV. Human papilloma virus can cause cervical cancer in women (World Health Organization, 2023).

Early detection of STIs is a problem with the most vulnerable group being adolescents aged 15-24 years old. According to Litchliter, Copen, and Dittus (2017), approximately 12.7% of sexually active adolescents and young adults who were on their parent's health insurance would not seek health care related to sexual health for fear of their parents finding out. Females that expressed concern for confidentiality related to STI health care reported a lower prevalence of chlamydia screens at 17.1% versus females

that did not have concern for confidentiality with chlamydia screens at 38.7% (Litchiter et. al, 2017). The CDC recommends routine STI screenings for adolescents and sexual health risk assessments for sexually active females aged 25 years old or younger. Chlamydia is often asymptomatic and can go undetected, which is why routine screening is recommended annually. Gonorrhea is also recommended for annual screening (Adolescents, 2021). Nurse practitioners in primary care and urgent care have the opportunity to increase the STI screening frequency of women ages 25 years old and younger and in turn, decrease the number of STIs being transmitted. This will open an educational dialog between healthcare providers and younger females and increase the STI knowledge of these females and stress the importance of getting tested for STIs. Also, implementing a screening protocol within the clinic will increase awareness of high-risk females and bring awareness of this important group to providers. This will increase the number of STI tests performed and therefore increase treatment in this high-risk group.

Purpose of the Study

Based on the data from the CDC, sex education in schools does not appear to be fully effective. According to Helsel (2021) and Teen Health Mississippi, the CDC conducted a study and found that in Mississippi, high school teachers provide approximately 6 hours of sexual education on average and less than 4 hours on preventing pregnancy and STIs. In the clinic setting, most females in the high-risk age range of 15-24 years old are not going for routine wellness exams and therefore the educational opportunities within the healthcare setting are limited. Often females are only educated when they visit a clinic with symptoms or exposure to an STI. Education should

happen before these experiences to prevent an STI. The purpose of the clinical practice project is to implement a screening protocol for sexually transmitted infections in the urgent care and family practice setting and increase sexually transmitted infection education to females ages 18-25 years old. Increased screening and education, especially in the college age group of 18-25 years old, that present to the clinic would significantly help to increase the knowledge of sexually transmitted infections and help to decrease the number of sexually transmitted infections in that age group.

Problem Statement

Sexually transmitted diseases and infections (STDs/STIs) continue to be a serious problem within the young adult/adolescent population in the United States. McMann and Trout (2020) conducted a research study to assess the knowledge, attitudes, and practices regarding STIs among college students. Out of all the participants, 37% of participants strongly agreed/agreed that their parents would find out that they had an STI screening, and that number increased to 42% when asked if they felt that their friend group would find out. Copen et al. (2019) concluded that screening practices that include a standardized risk assessment could identify those with multiple sex partners and increase STI screening and treatment to decrease the spread of STIs. Therefore, the purpose of this DNP project is to deliver a screening protocol to participating clinics to increase screening in the high-risk group of females ages 18-25 years old and also provide education to those females aged 18-25 years old who present to participating clinics.

Objectives of the Project

The first objective of this project was to identify the need for STI education and an STI protocol for college-aged females. The age group of 15-24 years old is the highest

of newly diagnosed STIs in the United States according to the CDC at almost half of newly diagnosed STIs (CDC, 2021). There is a potential to decrease STIs with more education geared towards that age group.

The second objective of this project was to develop an STI provider tool that can be used by providers to simplify STI visits and identify those at high risk who need more screenings. The CDC has a quick six-question tool for providers and patients to use to identify those at high risk for STIs. This tool was used to develop the STI provider tool that was given to all participating providers.

The third objective of this project was to successfully educate all females aged 18-25 years who came into participating clinics for a visit and to improve the STI knowledge of those women who participated in the education. The success was measured by administering a pretest followed by a brief educational PowerPoint developed by the researcher. Following the education portion, the participants were then immediately given a posttest to evaluate what they learned. By providing STI education, women's health will improve by increasing STI screenings which will in turn decrease the amount of STIs acquired within this age group.

PICOT Question

In college-age females, does implementing a screening protocol for sexually transmitted infections along with education on sexually transmitted infections increase sexually transmitted infection screenings and increase their knowledge of sexually transmitted infections?

For the clinical practice project, the identified population was females aged 18-25 years old. The intervention was implementing a standardized screening protocol for STIs

along with education on STIs in the given population at participating clinics. There will not be a comparison, but the researcher hypothesizes that there would be an increase in knowledge and screening after implementing the intervention. The educational program took place over four months in an urgent care clinic and two student health centers in rural Mississippi.

Definition of Terms

For this study, several terms needed to be defined as they apply to the clinical practice project. The theoretical and operational definitions follow, respectively:

College Age Females:

Theoretical: College-age females can be defined as people who have a gender identity that is the opposite of males that are in the stage of life where they attend an independent institution of higher learning offering a course of general studies leading to a bachelor's degree (College, 2023; Age, 2023; Female, 2023).

Operational: For this project, college-age females were defined as any females ages 18-25 years old who do or do not attend college but who are in the age range of those who attend traditional college.

Screening Protocol:

Theoretical: A screening protocol is a detailed plan of a scientific or medical experiment, treatment, or procedure to test or examine for the presence of something such as a disease (Screens, 2023; Protocol, 2023).

Operational: For this project, the screening protocol was defined as the STI Provider Tool that was developed by the researcher and adapted from the CDC.

Sexually Transmitted Infections:

Theoretical: Sexually transmitted infections can be defined as any one of various diseases or infections that can be transmitted by direct sexual contact (Sexually Transmitted Infections, 2023)

Operational: For this project, sexually transmitted infections are defined as infections that can be passed by vaginal, oral, or anal sex including gonorrhea, chlamydia, trichomoniasis, herpes simplex virus, and human papillomavirus. Also, the terms sexually transmitted infections and sexually transmitted diseases were used interchangeably for this project.

Education:

Theoretical: Education is the knowledge and development resulting from the process of being educated (Education, 2023).

Operational: For this project, education is defined as a PowerPoint presentation developed by the researcher that educates on gonorrhea, chlamydia, trichomoniasis, herpes simplex virus, and human papillomavirus.

Knowledge:

Theoretical: Knowledge is defined as having or showing knowledge or intelligence (Knowledgeable, 2020).

Operational: For this project, knowledge is defined as scoring a higher score on the posttest knowledge section of the online survey regarding sexually transmitted infections versus the pretest section of the survey.

Review of Literature

Many research studies have been completed regarding education and screening. The outcomes of these studies almost all being related to the importance of increasing

education and screening for STIs. The research articles focus on a wide range of issues related to STIs. Articles range from assessing knowledge to educational interventions to assessing sexual risk behaviors and even the attitude related to STI screenings and education. All the previous aspects were considered in the research study and these articles helped guide the research project's development, implementation, and analysis of data.

McMann and Trout (2020) conducted a research study to assess the knowledge, attitudes, and practices regarding STIs among college students. The study was conducted in a rural Midwest town in Nebraska with college students. An electronic survey was administered (n=125) that was adapted from the YRBSS and National College Health Assessment. Results showed that condom use was below the national average and only half of the students had received the HPV vaccine. Of the participants, 37% strongly agreed/agreed that their parents would find out that they had an STI screening, and that number increased to 42% when asked if they felt that their friend group would find out. Almost all agreed that they would tell their partner if they noticed symptoms of an STI but only a little over half (60%) felt confident that they could tell if they had a change in their body to indicate that they had an STI. There was a positive association between the highest level of sexual health and knowledge scores indicating the need for increased sexual health education.

Kahn and Halpern (2018) conducted a study to examine the relationships between patterns of sexual initiation, partnering, and sexual health outcomes from adolescence to early adulthood. Data was taken from 6,587 respondents from the National Longitudinal Study of Adolescent to Adult Health. Data was analyzed and adjusted using least squares

regression models to determine associates. Results showed having fewer lifetime partners was associated with lower odds of STIs and unwanted pregnancies and better relationship quality. Little variation in health outcomes was shown in those who postponed sexual initiation. Results showed that partnering had the most impact on sexual health outcomes. Findings indicated the need for a more comprehensive sexual education focusing on risk reduction and relationship skills in adolescents and adults.

Copen et al. (2019) conducted a study that examined condom use and STI testing among unmarried, non-cohabitating women and men who had multiple partnerships or perceived that their partner was involved in another sexual relationship. Data was gathered from 5,868 unmarried women and 5,330 unmarried men aged 15-44 years old using the National Survey of Family Growth data from 2011 to 2017. Results showed that 39.4% of women and 48.3% of men reported multiple partnerships. Lower condom use was seen for women and men who had two or more partners in the past year and those with partners that they perceived to be non-monogamous versus those with one partner and those with partners that they perceived to be monogamous. STI testing was higher in the non-monogamous group. The authors concluded that screening practices, including a standardized risk assessment, could identify those with multiple sex partners and increase STI screening and treatment to decrease the spread of STIs.

Ozua and Artaman (2022) conducted a retrospective study of STI incidence in the Mississippi Delta. They focused on before and after the COVID-19 pandemic. Medical records of three clinics in the Mississippi Delta were analyzed for those tested for STIs. The numbers were gathered and then compared from pre-COVID-19 and post-COVID-19. Ozua and Artaman found that the number of individuals tested for STIs increased.

Among those tested, the average age from 2019-2020 was younger than before COVID-19, and there was an increase in the number of females getting tested. Among those tested in 2019, 0% tested positive for gonorrhea or chlamydia. In comparison to 2020 when positive results were 21.4% of those tested, 7.1% were chlamydia and 14.3% were gonorrhea. This indicated the need for increased testing and education among those high-risk groups to decrease transmission.

Spindola et al. (2019) led a study related to sexual practices, knowledge, and behaviors of college students related to STIs. A quantitative, descriptive study was conducted with a questionnaire at a public university in Rio de Janeiro with a sample size of 255 participants. Among those 255 students, 71% were women, 29% were men, and 93.7% were ages 18-24 years old. Results showed that only 56% of students use condoms at every sexual encounter. When asked about STI knowledge, 61% of students reported not having all the necessary knowledge regarding STI transmission and almost 79% believed that they can get an STI from a public restroom. The study concluded that the lack of STI knowledge and lack of condom use indicates that more education is needed for this age group.

Oliveira et al. (2017) conducted a study that examined the impact an educational program related to sexual behaviors would have on students in hopes of assessing the effectiveness of educational programs in decreasing risky sexual behaviors in those 18-24 years old. Oliveira et al. conducted a prospective and quasi-experimental cohort study. The sample size was 1,303 students. Participants were broken into two groups, control and intervention. A pre- and post-test design was used with the intervention being group sessions in between that totaled eight hours split into four two-hour sessions.

Measurements were taken at the beginning and end for both groups, but the intervention group took measurements at post-intervention, six months, and then 36 months for a final evaluation. Results showed that in comparison the intervention group was more likely to use a condom or get screened for STIs proving that intervention groups and education have an impact on sexual behaviors and can in turn decrease the number of STIs contracted in that high-risk age group.

Jahanfar and Nauhjah (2021) conducted a study to determine sexual abstinence prevalence among American university students. The study was conducted at Central Michigan University in the United States with 808 participants. The survey was sent out over email with a self-administered questionnaire that the researchers got from a World Health Organization questionnaire on sexual health. Results showed that most of the participants were female with a mean age of 23 years old. Most of the participants (85%) had sexual intercourse in their life while 14.9% had not. The researchers also found that the STD/HIV knowledge was lower in those who had never had sex versus those who had. This proves that sexual abstinence is low in the college-age group and that STI knowledge is low showing a need for more sexual education.

McLaurin-Jones et al. (2017) conducted a study to understand the perceptions of risk and condom use in African American college women. Using a qualitative method, they aimed to assess the role of pregnancy and STI risk when deciding to use a condom. One hundred African American women aged 18-24 years old were recruited to make up thirteen focus groups. The women perceived pregnancy as a greater threat than STIs. The conclusion was found to suggest that sexual health promotion programs would be useful in raising awareness of the increasing threat of STIs.

The previous studies all indicated the increased need for STI education and screening and proved that it will be beneficial in decreasing the number of STIs among college-age females. While some of the factors in the previous studies are different than the current study, including the age of the participants, location of study, and type of study, the same concepts can be taken away for improvement in STI education and knowledge. These research studies helped to guide the current research study in improving knowledge and screening in college-age females.

Theoretical Framework

The researcher utilized Nola Pender's Health Promotion Model (HPM) as the theoretical framework as a guide to implement the clinical practice change project. Nola Pender first developed the Health Promotion Model in 1982 utilizing her background in nursing, human development, psychology, and education. Pender's HPM is closely related to Albert Bandura's social cognitive theory and the health belief model. Bandura's social cognitive theory includes the beliefs of self-attribution, self-evaluation, and self-efficacy, and Pender's HPM is heavily rooted in the idea of self-efficacy. The health belief model and the HPM both explain behaviors related to disease prevention, but the HPM does not include fear or threats as a source of encouragement for the health promotion behavior. The HPM can help explain how and what motivates a person to take steps to improve their overall well-being. The HPM is also helpful because it explains how frameworks from earlier research can complement each other and lead to further research studies (Alligood, 2018, Health Promotion Model).

The HPM is widely used in the nursing community and within research due to the theory's broad nature of relatability. There are three major categories within Pender's

HPM: individual characteristics and experiences, behavior-specific cognitions and affect and behavioral outcome. Within the health promotion model, health is viewed in a positive light and is viewed within the realm of health promotion and disease prevention. Butts and Rich (2022) define health promotion as a “behavior that is motivated by a desire to increase well-being and optimized human health potential” (p. 367). Past behavior influences current health-promoting behavior and should be considered when educating patients on health-promoting behaviors concerning their current health.

Pender’s HPM was implemented within the clinical practice project by assessing the three major categories of the HPM. First, the individual characteristics and experiences were assessed by the demographic and personal practice section of the questionnaire. The second category of the HPM is related to behavior-specific cognitions. STIs are a sensitive healthcare matter and therefore easily persuaded by others in the participants’ life. As healthcare providers, the education we provide can alter the behavior of the participant, which in this clinical practice project, was an educational PowerPoint. This action can help the third category of the behavioral outcome. In this case, increased knowledge of STIs and a personal practice change to participate in safer sex practices.

Sexually transmitted infections continue to be a prevalent problem for women of college age. Pender’s HPM suggests that education on sexually transmitted infections will motivate the patient to increase health promotion activity and in turn decrease the amount of sexually transmitted infections with proper education. According to the HPM, with adequate education on sexually transmitted infections and their long-term effects,

the patient will reflect on past practices and lead to increased self-evaluation of current sexual practices through self-efficacy and will motivate the patient to make a change.

Project Implementation/Methodology

The implementation of the STI screening protocol and education was conducted in adherence to Mississippi University for Women's guidelines and with approval from the Mississippi University for Women's Institutional Review Board (Appendix A). Random convenience sampling was used to identify participants for this clinical practice project. Patients were offered the survey/education if they were female ages 18-25 years old and presented to the urgent care or participating clinic for any reason. Patients were not called and recruited to participate in this clinical practice project. If the patient met the gender and age requirements, they were then directed to a flyer with a QR code to scan on their smartphone (Appendix B). That link took them to information about the project, informed consent, demographic questions, personal practice questions, and the pretest survey (Appendix C).

If the patient completed the informed consent, demographic questions, personal practice questions, and the pretest survey then they became a research participant. After finishing the pretest survey, the participants were then directed to click a link to the educational material. After reviewing the educational PowerPoint, they were then redirected back to the posttest survey which was the same as the pretest survey (Appendix C). All consent, demographic, and survey questions were in Qualtrics.

A STI provider tool was also developed and distributed to participating clinics (Appendix D). This tool was developed from the CDC's "Prepare Before You're There" online quiz. This tool was made to help providers simplify the STI visit and help to detect

more patients at risk for STIs and to increase STI testing. Each participating provider was given a hard copy of the STI provider tool with a letter of interest with instructions for the STI provider tool, the researcher's contact information, as well as a QR code to scan that tool the participating providers to a Google Doc that collected each provider's email address for the follow-up survey (Appendix E). After the 4-month implantation period, a link to a Qualtrics survey was emailed to each participating provider for feedback about the tool (Appendix F).

Tools/Instrumentation

The STI screening and educational project utilized tools such as an informational flyer with a QR code, informed consent, demographic questionnaire, personal practice questionnaire, pretest and posttest survey, educational PowerPoint, provider STI screening tool and provider survey. The pretest and posttest were adapted from STD-KQ-27 developed by Dr. Michael P. Carey after obtaining permission for use of the tool (Appendix G). The educational PowerPoint was developed by the researcher. The participant was given an informational flyer that explained the clinical practice project. The QR code then directed the participant to the survey. The first part of the survey included information about the researcher and the clinical practice project along with informed consent. Next, the participant was directed to four demographic questions that gathered information regarding the participant's age, race, educational status, and previous sexual education. The pretest survey then included twelve true/false questions regarding knowledge of STIs. The STIs included in the survey and educational PowerPoint were genital herpes (HSV), human papillomavirus (HPV), chlamydia,

gonorrhoea, and trichomoniasis. The posttest was the same as the pretest and was administered through Qualtrics.

The STI provider tools were printed and delivered to each participating clinic and given to each provider. The providers filled out a Google Doc with contact information regarding the follow-up survey. After the 4-month implantation period, an email was sent to each participating provider with a link to a Qualtrics survey for feedback on the STI tool.

Evaluation Methods

To evaluate the effectiveness of the STI screening and education clinical practice project, data was gathered in Qualtrics and then exported to a Microsoft Excel sheet. Data was analyzed using IBM SPSS statistical software, version 28. All data was analyzed by a statistician. The goal of the clinical practice project was for women ages 18-25 years old to become more knowledgeable of STIs and their effects and to help providers become more confident in STI testing for a more streamlined visit. The statistics and post-STI provider tool feedback revealed whether the educational PowerPoint and STI provider tools were effective.

Project Timeline

The proposal for the STI educational clinical practice project was presented and approved in late fall of 2022. In the spring of 2023, the researcher continued to review the literature and developed the STI educational PowerPoint. In February 2022, permission was granted by Dr. Michael P. Carey for the use of STD-KQ-27 in the current clinical practice project. Pre and posttest as then developed by the researcher with help from clinical practice advisor, Dr. Katrina Poe. In March 2023, IRB approval was obtained by

Mississippi University for Women's IRB. Data collection for the STI education clinical practice project began in July 2023 and went through November 2023. The data was collected through Qualtrics and sent to the statistician for analysis in December 2023. Project results, outcomes, and limitations were collected in the spring of 2024. The manuscript was finalized, and the final defense was in April 2024.

Results of the Project

The purpose of the STI educational project along with the STI provider tool was to increase the knowledge of college-aged females ages 18 to 25 years old and to increase the amount of STI testing and streamline the STI visit for healthcare providers. The clinical practice project was implemented in an urgent care clinic and two college health centers in rural Northeast Mississippi. Research flyers were placed in each exam room at participating clinics. At triage, if the patient was within the project's parameters, the patient was educated on the clinical practice project and instructed to scan a QR code with their smartphone to access the project's information. Participants were able to finish the pretest, education, and posttest on their phones. Participation was strictly voluntary. The project included a pretest followed by educational material then immediately followed by a posttest to measure knowledge after education. Data was then analyzed to determine the effectiveness of the STI project's educational material to increase the participants' STI knowledge.

Participants

The STI education clinical practice project was completed by 50 participants with all 50 participants completing the pretest survey and 15 participants completing the posttest survey. This resulted in a 30% completion rate. The largest age group (19%) was

25 years old (Figure 1). The majority of participants were Caucasian/white (70.7%) followed by African American at 19%. The remaining races are visualized in Figure 2. Only 3.5% had solely a high school degree. The majority of participants (63.2%) had some college and are represented in Figure 3. Figure 4 represents sexual education in high school, where 60.3% said that they did not have sexual education available in high school. When asked about how often the participants' healthcare providers educated on STIs, a combined 72.7% answered "never" or "rarely" (Figure 5). When asked where the participant got information on STIs only 24.2% answered healthcare providers (Figure 6). However, when asked if they had been to an OB/GYN, 70.5% answered yes (Figure 7).

Figure 1

What is your age?

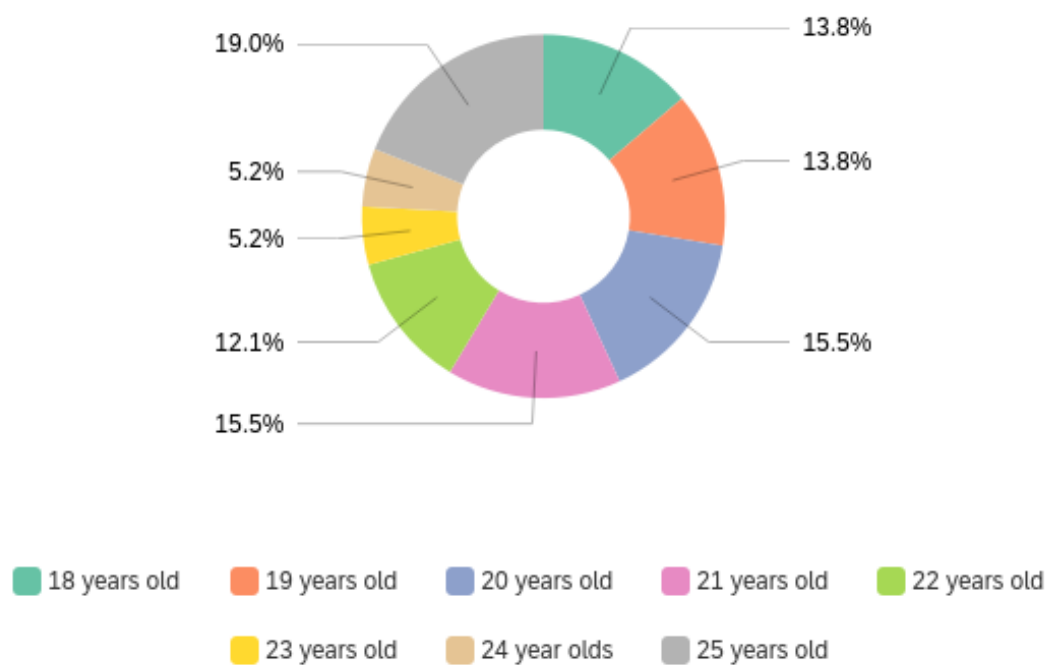


Figure 2

What is your race?

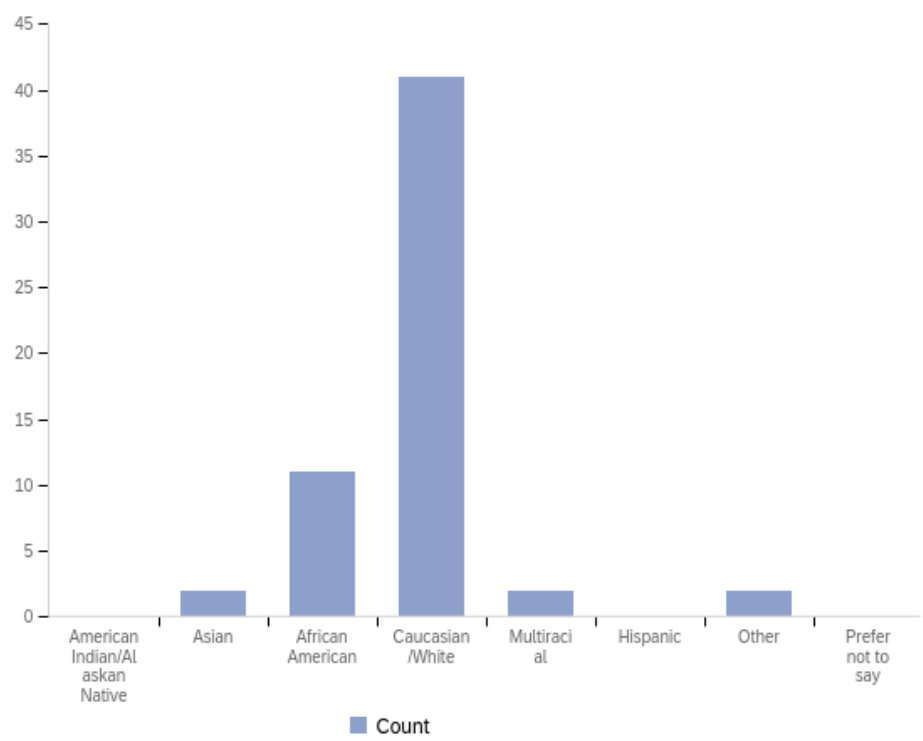


Figure 3

What is your level of education?

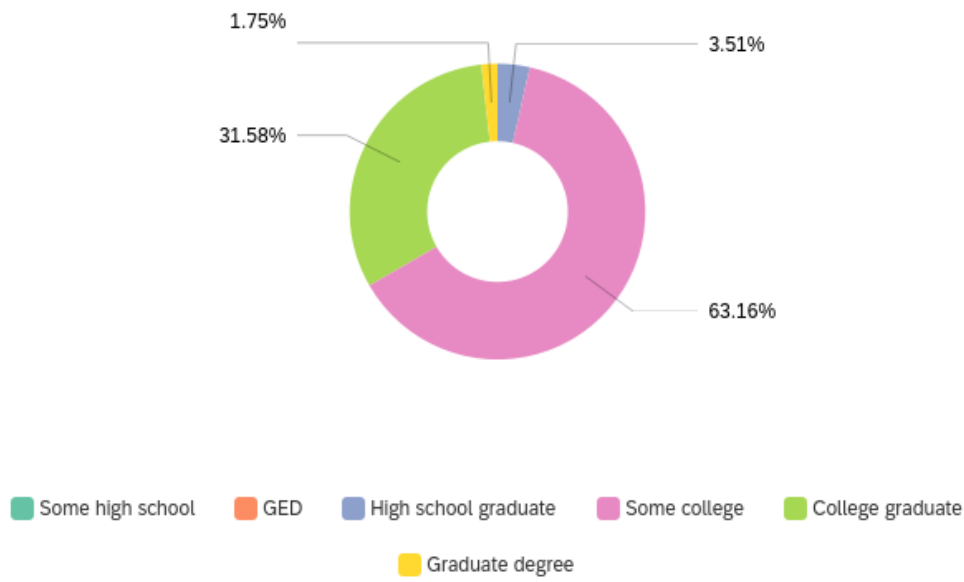
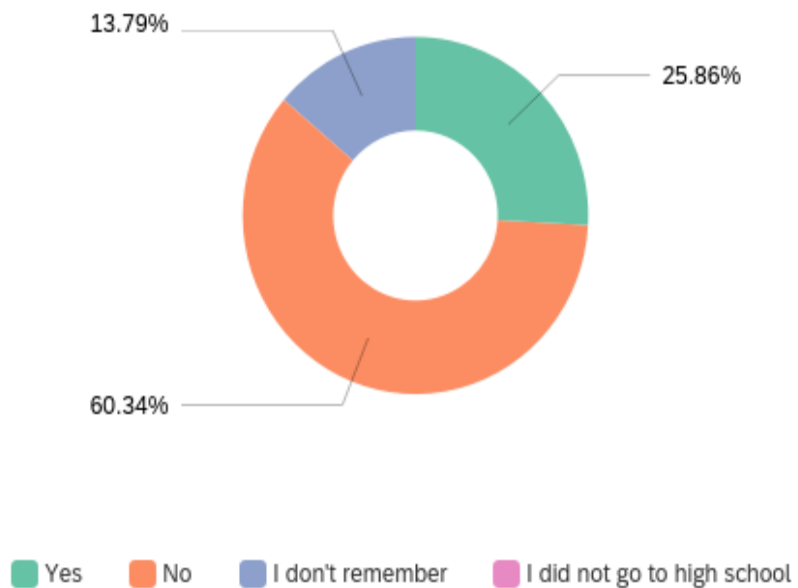


Figure 4

Did you have a sex education class in high school?

**Figure 5**

How often does your healthcare provider educate on STIs?

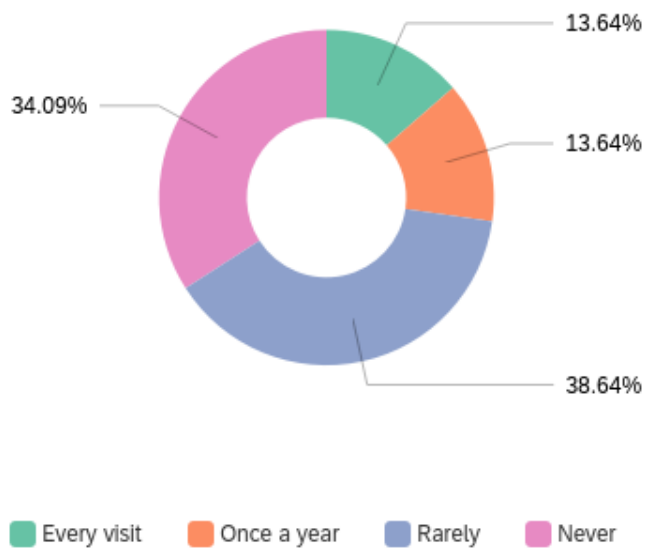


Figure 6

Where do you get information regarding STDs?

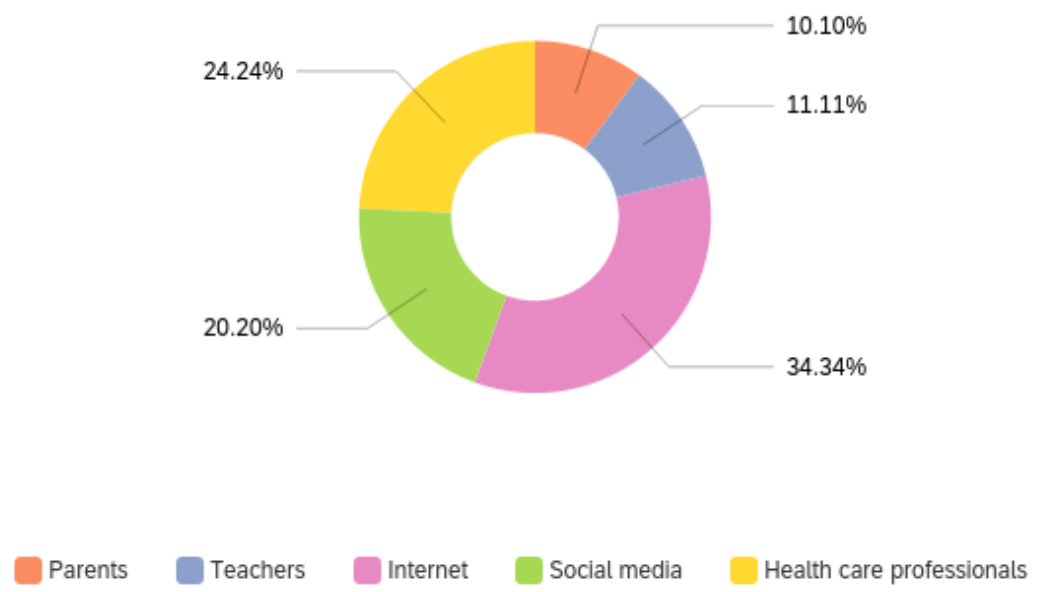
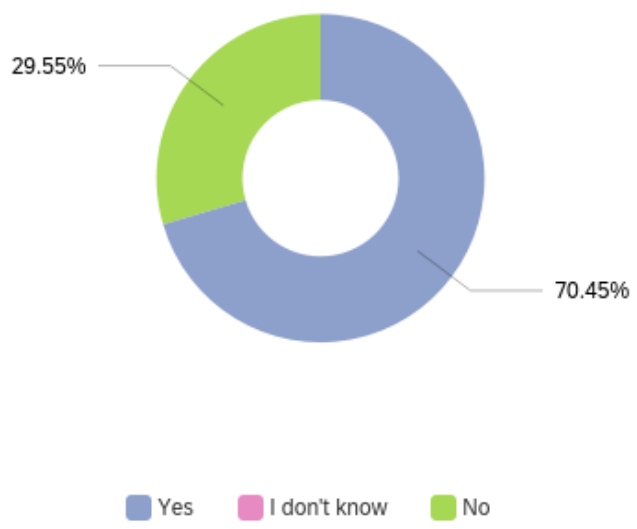


Figure 7

Have you ever been to the OB/GYN?



The STI provider tool was given to three participating clinics for healthcare providers to utilize the tool to help streamline the STI visit. Seven providers participated by using the STI provider tool. Participants were asked how long they had been a provider. The majority answered that they had been a healthcare provider for 16 or more years at 42.9% with the second being 4-10 years at 28.6%. Figure 8 shows the remaining years of the remaining participants. Each provider that participated was also asked which setting in which they practiced. Urgent care and family practice were both at 42.9% and college health at 14.3%. This is shown in Figure 9.

Figure 8

How long have you been a healthcare provider?

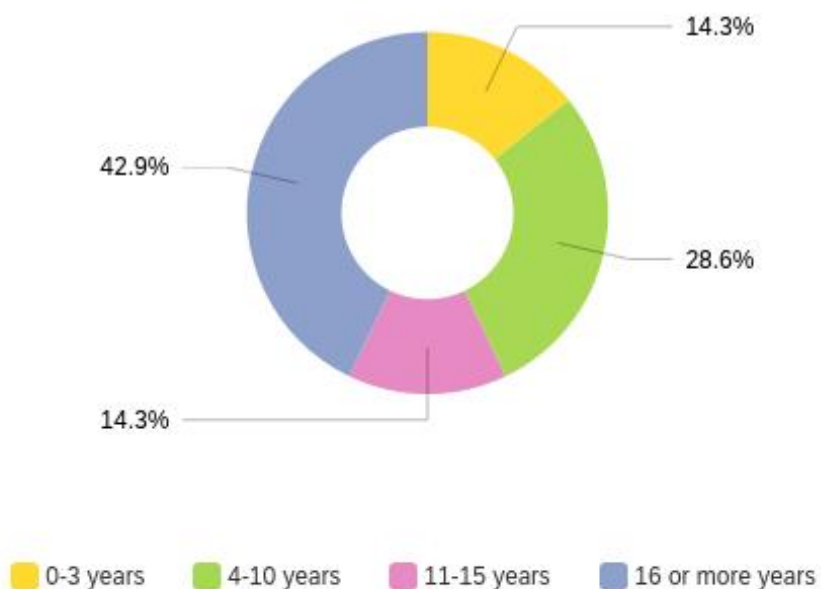
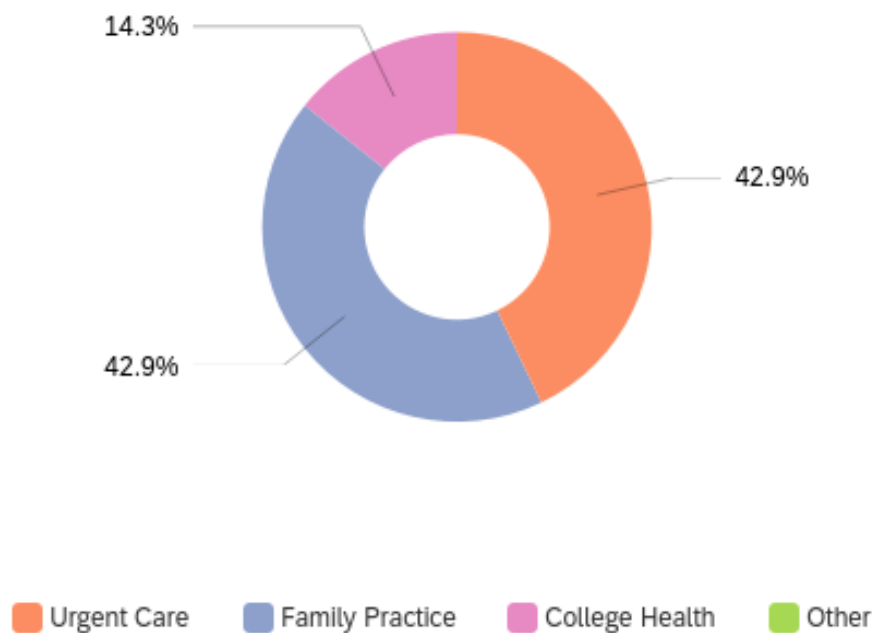


Figure 9

What setting do you work in?



Outcomes

Fifty pretest surveys and fifteen posttest surveys were completed. The pretest and posttest both had the same questions. The goal of the STI educational clinical practice project was to increase the knowledge of participants which were limited to females ages 18-25 years old. The increase in knowledge was measured by the average score between pretest and posttest. There were twelve questions in the knowledge section of the pretest and posttest. All questions were true/false. After data was collected in Qualtrics the pretest and posttest were analyzed by a statistician. Participants improved on all questions except question two and question eight. Question two stated, “Frequent urinary infections can cause chlamydia.” On the pretest, 62% chose the correct answer of *false* (Table 1) and on the posttest 60% chose the correct answer of *false* (Table 2). Both pretest and posttest had a majority of participants answer correctly. Question eight stated, “A woman

can tell that she has chlamydia if she has a bad-smelling odor from her vagina.” On the pretest 48% answered the correct answer of *false* (Table 3) but on the posttest only 33.3% answered correctly (Table 4). This is most likely related to confusion with the wording on the educational PowerPoint regarding this content. However, scores increased on all other questions. The largest improvement in scores was on questions one and seven. Question one stated, “Genital herpes (HSV) and human papillomavirus (HPV) are caused by the same virus that causes HIV.” On the pretest only 34% of participants answered the correct answer of *false* (Table 5) but on the posttest 80% of participants answered correctly (Table 6). That is a 46% increase in participants who answered correctly after the educational material was presented for question 1. Question seven stated ‘Human papillomavirus (HPV) can lead to cancer in women.’ On the pretest only 56% of participants answered question seven correctly with the answer *true* (Table 7) but after the educational material 100% of participants answered question seven correctly on the posttest (Table 8).

Table 1

Question 2 - Pretest

Frequent urinary infections can cause chlamydia.			
#	Answer	%	Count
1	TRUE	16.0%	8
2	FALSE*	62.0%	31
3	I don't know	22.0%	11
Total		100%	50

Note. This table demonstrates the percentage and numerical count of answers for

Question 2 of the Pretest.

Table 2*Question 2 - Posttest*

Frequent urinary infections can cause chlamydia.			
#	Answer	%	Count
1	TRUE	26.7%	4
2	FALSE*	60.0%	9
3	I don't know	13.3%	2
Total		100%	15

Note. This table demonstrates the percentage and numerical count of answers for Question 2 of the Posttest.

Table 3*Question 8 - Pretest*

A woman can tell that she has chlamydia if she has a bad-smelling odor from her vagina.			
#	Answer	%	Count
1	TRUE	28.0%	14
2	FALSE*	48.0%	24
3	I don't know	24.0%	12
Total		100%	50

Note. This table demonstrates the percentage and numerical count of answers for Question 8 of the Pretest.

Table 4*Question 8 – Posttest*

A woman can tell she has chlamydia if she has a bad-smelling odor from her vagina.			
#	Answer	%	Count
1	TRUE	66.7%	10
2	FALSE*	33.3%	5

3	I don't know	0.0%	0
Total		100%	15

Note. This table demonstrates the percentage and numerical count of answers for Question 8 of the Posttest.

Table 5

Question 1 – Pretest

Genital herpes (HSV) and human papillomavirus (HPV) are caused by the same virus that causes HIV.			
#	Answer	%	Count
1	TRUE	22.0%	11
2	FALSE*	34.0%	17
3	I don't know	44.0%	22
Total		100%	50

Note. This table demonstrates the percentage and numerical count of answers for Question 1 of the Pretest.

Table 6

Question 1 – Posttest

Genital herpes (HSV) and human papillomavirus (HPV) are caused by the same virus that causes HIV.			
#	Answer	%	Count
1	TRUE	20.0%	3
2	FALSE*	80.0%	12
3	I don't know	0.0%	0
Total		100%	15

Note. This table demonstrates the percentage and numerical count of answers for Question 1 of the Posttest.

Table 7*Question 7- Pretest*

Human papillomavirus (HPV) can lead to cancer in women.			
#	Answer	%	Count
1	TRUE*	56.0%	28
2	FALSE	10.0%	5
3	I don't know	34.0%	17
Total		100%	50

Note. This table demonstrates the percentage and numerical count of answers for Question 7 of the Pretest.

Table 8*Question 7 - Posttest*

Human papillomavirus (HPV) can lead to cancer in women.			
#	Answer	%	Count
1	TRUE*	100.0%	15
2	FALSE	0.0%	0
3	I don't know	0.0%	0
Total		100%	15

Note. This table demonstrates the percentage and numerical count of answers for

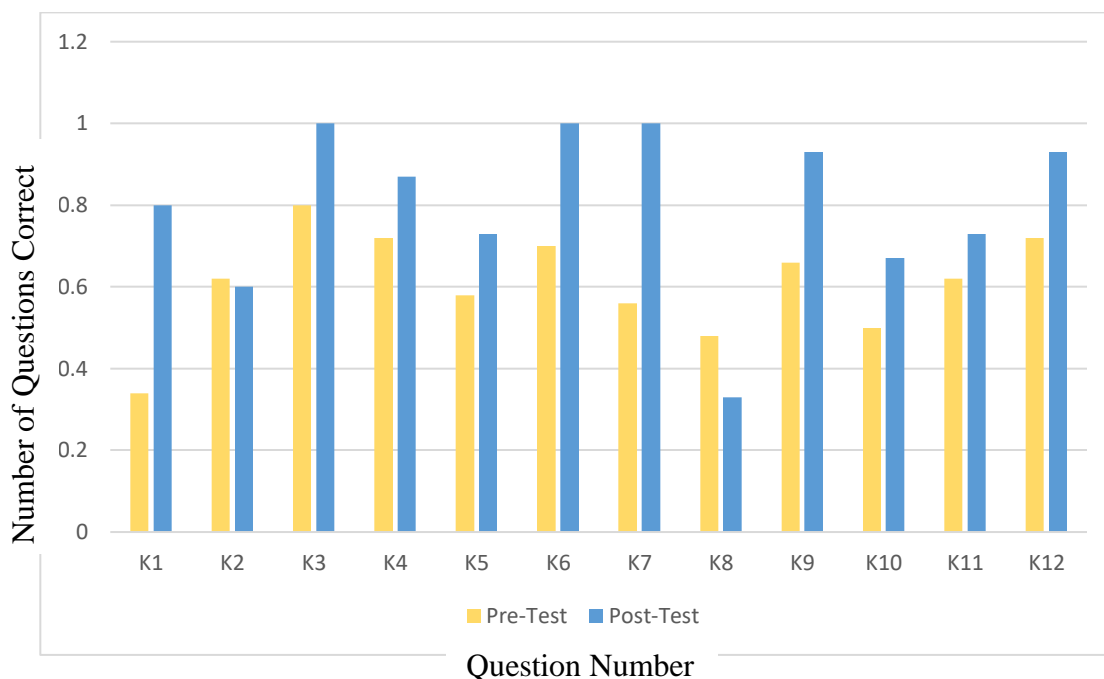
Question 7 of the Posttest.

To measure overall knowledge improvement, the scores from all participants from the pretest and posttest were averaged. The questions were scored as 1 if the participant answered correctly, and zero if answered incorrectly. The mean can be interpreted as the percentage of participants who answered the question correctly. Higher values indicate

that more participants answered the question correctly. This data is shown graphically in Figure 10.

Figure 10

Average Score by Question and Test



The research question was the following: In college-age females, does implementing a screening protocol for STIs along with education on STIs increase STI screenings and increase their knowledge of STIs? The null hypothesis stated implementing a screening protocol for STIs does not affect increased screenings or increased knowledge of STIs in college age females. The alternative hypothesis states that implementing a screening protocol for STIs increases screening for STIs and increases the knowledge of the college age females. To test the hypothesis, a pretest and posttest knowledge score was calculated using the average of all scores from pretest versus the average of all scores from posttest. There was a statistically significant difference in scores ($t(63) = -2.739, p = 0.008$), with scores on the post-test ($M = 80.07$,

SD = 18.93) being significantly higher than the scores on the pretest (M = 60.76, SD = 25.20). The average score increased by nearly 20 percentage points, or 2.30 question points, meaning that participants answered more than 2 additional questions correctly on the posttest compared to the pretest.

Seven healthcare providers completed the STI provider tool survey. All seven participants stated that the tool was easy to use. When asked if the providers that utilized the tool planned to continue to use the tool, six participants (85.7%) stated yes, and one (14.3%) participant said maybe (Figure 11). When asked if provider participants felt like they diagnosed more STIs while utilizing the STI provider tool, 71.43% of participants stated that they felt like they diagnosed more STIs while using the tool while 28.6% stated maybe (Figure 12). This proves that by implementing an STI screening protocol and STI screening tool, providers will screen more frequently for STIs.

Figure 11

Do you plan to continue to use the tool after this study?

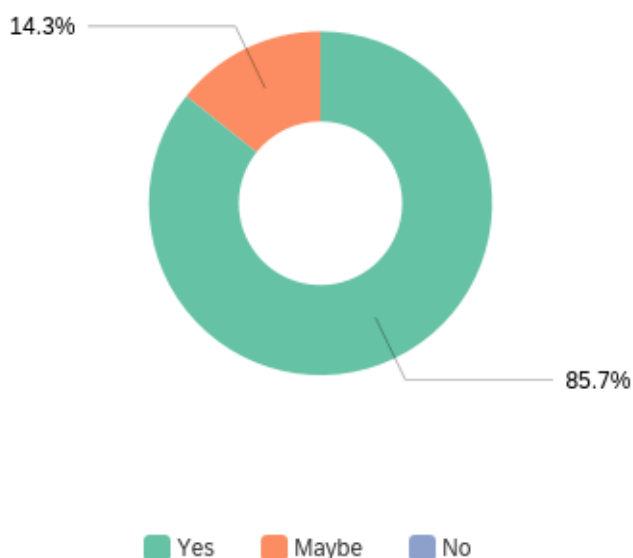
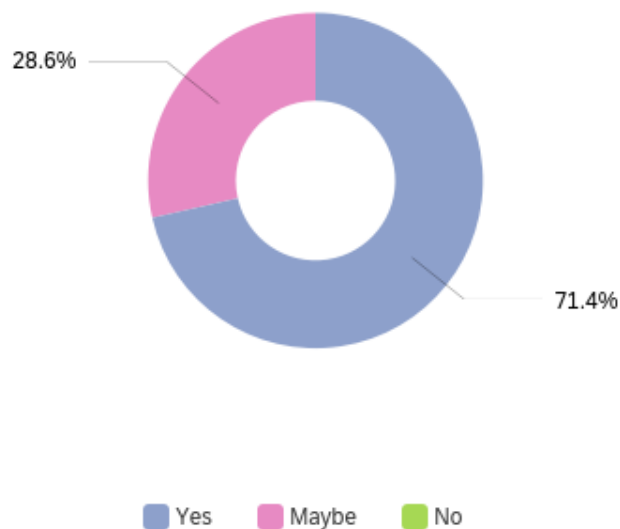


Figure 12

Did you feel like you diagnosed more STIs while utilizing the tool?



Project Limitations

There were limitations when implementing the STI clinical practice project. The demographic questionnaire and educational material were developed by the researcher so only had face validity. The verbiage and questions may have not been as clear for some participants. The posttest was offered immediately following the education, but some participants may not have finished the posttest due to the participants finishing their clinic visit quicker than they could finish the posttest survey. Once the participants left the building, they were possibly more likely to not finish the posttest. This may be a reason there was a 30% posttest completion rate. This could also be why questions 2 and 8 saw a decrease in correct answers. People may be rushed to finish the educational material and then rushed to finish the posttest and not read the questions fully. Another limitation was that this clinical practice project was conducted in three different clinics.

One urgent care where the researcher worked and two other student health centers where the researcher did not work. While there is no way to measure who did not finish the posttest based on location, other clinics may not have been as active in promoting the clinical practice project as the researcher was. Lastly, while the goal to increase education on STIs was met, the sample size was small. For a pilot project, it was significant but could be replicated on a larger scale to have a greater influence in the community.

Project Significance

In Mississippi, high school teachers provide approximately 6 hours of sexual education on average and less than 4 hours on preventing pregnancy and STIs (Helsel, 2021). In the United States, new STIs totaled almost \$16 billion in medical costs in 2018 (CDC, 2021). The purpose of this clinical practice project was to increase knowledge in college-age females and increase STI testing in that vulnerable population by implementing an STI screening protocol within the participating clinics. A barrier to STI testing is that often sexually active young adults do not want to get tested due to fear of their parents finding out through insurance. Approximately 12.7% of sexually active adolescents and young adults who were on their parent's health insurance would not seek health care related to sexual health for fear of their parents finding out (Litchliter et al., 2017). This STI screening tool can easily be implemented into other clinic settings and increase STI screenings and by utilizing the STI provider tool, providers can increase STI knowledge while increasing STI screening.

Implications and Recommendations

As McMann and Trout (2020) found through their study to assess the knowledge, attitudes and practices regarding STIs among college students, there was a positive

association between the highest level of sexual health and knowledge scores indicating the need for increased sexual health education. Oliveira et al. (2017) found in their study that examined the impact that an educational program related to sexual behaviors would have on students in hopes of assessing the effectiveness of educational programs to decrease risky sexual behaviors in those 18-24 years old showed that in comparison the intervention group was more likely to use a condom or get screened for STIs proving that intervention groups and education have an impact on sexual behaviors and can decrease the number of STIs contracted in that high-risk age group. With a statistically significant increase in knowledge of females 18-25 years old, this project has the potential to improve women's health in Mississippi if implemented on a larger scale. The implications and recommendations for nursing, nursing research, nursing education, and the community will be discussed further.

Nursing

This project discovered an increase in knowledge in females ages 18-25 years old when STI education was completed during their visit. STI education can be completed at every visit, and it is recommended that all primary care providers, urgent care providers and student health providers educate females at each visit. Providers can also utilize the STI provider screening tool to streamline the visit when STI screenings may need to increase testing for STIs among females ages 18-25. The STI screening tool can also be used by primary care providers at wellness visits to identify those at higher risk for STIs. This will lead to an increase in screenings and therefore more STIs treated and more patients receiving STI education.

Nursing Research

This clinical practice project developed by the researcher could easily be implemented in future studies. Implementing the provided STI education and the STI provider tool in primary care or a women's health clinic rather than urgent care and student health centers could reach a larger audience. The STI education and STI provider tools, both developed by the researcher, are easily replicated for patient and provider use and can be easily incorporated as a resource for providers and patients. STIs are a sensitive subject and are often not discussed during routine exams. These tools will help with broaching this delicate subject with patients.

Nursing Education

An educational presentation was developed to use for this clinical practice project. The PowerPoint included information on STIs including gonorrhea, chlamydia, trichomoniasis, human papillomavirus and herpes simplex virus. Education is a vital part of the role of healthcare providers and by allowing time for STI education at each visit, STI cases can decrease in the vulnerable population of females aged 18-25 years old. This will in turn improve the overall health of females aged 18-25 years old.

Community

The CDC (2021) states that STIs cost almost \$16 billion in healthcare costs in 2018. This is a burden to healthcare systems and the community. By increasing knowledge of STIs to those at the highest risk, that will in turn decrease the amount of STIs that need treatment and can cut healthcare costs. The clinical practice project can easily be implemented in the community. The STI education portion of the clinical practice project can be utilized in schools, churches, and community centers for a more

expansive outreach into the community. Providing educational resources to all females allows an opportunity for health promotion to a greater number of individuals.

Project Budget/Cost

To implement this clinical practice project, the budget included printed materials, statistical fees, and editorial/publishing fees. Seventeen research flyers and 14 STI provider tools were printed along with a presentation poster totaling \$219. Statistician fee was \$90 and editorial and publishing fees included \$200. This brings the total for implementing this clinical practice project to \$509.

Expense	Estimated Cost
Printing materials	\$219
Statistician	\$90
Editorial/Publishing Fees	\$200
Total	\$509

Conclusion

The implementation of the clinical practice project was introduced to increase the knowledge of STIs for females ages 18-25 years old and to implement an STI screening protocol by creating the STI provider tool. This increase in screening would lead to more STIs being found and treated and the increase in knowledge would then lead to decrease in STIs. This would improve the health of females ages 18-25. Of the 50 participants, 30% completed the posttest. After analyzing the pretest and posttest questionnaire, there was a statistically significant increase in the knowledge of females ages 18-25 years old ($p = 0.008$). This analysis further validates the need for increased education in females ages 18-25 years old to improve their knowledge and their overall health. STI education

and the STI provider tool should be further implemented in primary care clinics and women's health clinics to improve the overall health of today's females and for generations to come.

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Appendix A

IRB Submission

Irene Pintado <itpintado@muw.edu>
To: Margaret Hyer <mhyer@myapps.muw.edu>

Mon, Apr 17, 2023 at 11:30 AM

Margaret,

The Mississippi University for Women IRB committee has determined that your project, Implementation of a Sexually Transmitted Disease Screening and Education in the College Aged Female, is exempt under 45 CFR 46.101 (b)(4). This is a quality assurance project.

If any changes are made to the study, the Committee must be notified. If the project is still running twelve months after the date of this memo, please be advised that we will need an update for our files.

Good luck with your project!

Irene Pintado, PhD, MCHES©
Professor of Health Education
Department of Health & Kinesiology
Department Chair
Mississippi University for Women
(662) 329-7225
(662) 329-7259

Appendix B

Research Project on Sexually Transmitted Disease (STD) Knowledge

Maggie White, FNP-BC



Dear Participant,

I am a nurse practitioner and Doctor of Nursing Practice student at Mississippi University for Women. Thank you for participating in my research study about knowledge of sexually transmitted diseases. This will only take a few minutes and the survey is completely anonymous. Once you complete the brief survey you will be provided with a short presentation to review. After reviewing the presentation, you will take the questionnaire again. Your participation does not affect your care at this clinic in any way and is completely voluntary. The results of the questionnaire will simply be used to improve patient education. No identifying information will be obtained, and your answers are completely anonymous. To participate, you must be a female aged 18-25. Thank you for your participation.

Please scan the QR code below with your smartphone camera to begin!



Appendix C

Sexually Transmitted Disease Knowledge Questionnaire (STD-KQ) Pre- and Posttest

I am a Doctor of Nursing Practice student at Mississippi University for Women, and this questionnaire aids me in my graduate research. By completing and submitting this survey, you are agreeing to participate in my research study. This questionnaire is intended for females ages 18-25 years old. Please do not take this survey if you are male and under the age of 18 or older than 25 years old. This questionnaire is voluntary, and all answers will be kept confidential. This questionnaire is part of an anonymous study. Please do not provide your name or any other identifiers. You may withdraw from the study at any time until the questionnaire is submitted. After the questionnaire is submitted your answers cannot be retracted.

Please select the correct response to the following questions:

DEMOGRAPHICS:

1. What is your age?
 - a. 18
 - b. 19
 - c. 20
 - d. 21
 - e. 22
 - f. 23
 - g. 24
 - h. 25
2. What is your race?
 - a. American Indian/Alaskan Native
 - b. Asian
 - c. African American
 - d. Caucasian/White
 - e. Multiracial
 - f. Hispanic
 - g. Other
 - h. Prefer not to say.
3. What is your current level of education?
 - a. Some high school
 - b. GED
 - c. High school graduate
 - d. Some college
 - e. College graduate
 - f. Graduate degree
4. Did you have sexually transmitted disease (STD) education in high school?
 - a. Yes
 - b. No

- c. I don't remember.
- d. I did not go to high school.
- e. I was homeschooled or attended virtual school.

KNOWLEDGE:

1. Genital herpes (HSV) and human papillomavirus (HPV) are caused by the same virus that causes HIV.
 - a. True
 - b. False**
 - c. I don't know
2. Frequent urinary infections can cause chlamydia.
 - a. True
 - b. False**
 - c. I don't know
3. There are cures for gonorrhea, chlamydia and trichomoniasis.
 - a. True**
 - b. False
 - c. I don't know
4. A woman who has genital herpes (HSV) can pass the infection to her baby during childbirth.
 - a. True**
 - b. False
 - c. I don't know
5. The same virus causes all of the sexually transmitted diseases including chlamydia, gonorrhea, trichomoniasis, human papillomavirus (HPV) and genital herpes.
 - a. True
 - b. False**
 - c. I don't know
6. Human papillomavirus (HPV) can cause genital warts.
 - a. True**
 - b. False
 - c. I don't know
7. Human papillomavirus (HPV) can lead to cancer in women.
 - a. True**
 - b. False
 - c. I don't know
8. A woman can tell that she has chlamydia if she has a bad smelling odor from her vagina.
 - a. True
 - b. False**
 - c. I don't know
9. There is a vaccine available to prevent a person from getting gonorrhea or chlamydia.
 - a. True
 - b. False**

- c. I don't know
- 10. A woman can tell by the way her body feels if she has an STD.
 - a. True
 - b. False**
 - c. I don't know
- 11. A person who has genital herpes must have open sores to give the infection to his or her sexual partner.
 - a. True
 - b. False**
 - c. I don't know
- 12. If a person had gonorrhea in the past, he or she is immune (protected) from getting it again.
 - a. True
 - b. False**
 - c. I don't know

PERSONAL PRACTICE

1. How often does your healthcare provider educate on STDs?
 - a. Every visit
 - b. Once a year
 - c. Rarely
 - d. Never
2. Where do you get information regarding STDs? (PLEASE SELECT ALL THAT APPLY, YOU MAY SELECT MORE THAN ONE ANSWER)
 - a. Parents
 - b. Teachers
 - c. Internet
 - d. Social media
 - e. Health care professionals
3. Have you ever been to the OBGYN?
 - a. Yes
 - b. No
 - c. I don't know

Knowledge section of questionnaire adapted with permission from:
Jaworski, B. C., & Carey, M. P. (2006). Development and Psychometric Evaluation of a Self-administered Questionnaire to Measure Knowledge of Sexually Transmitted Diseases. *AIDS and Behavior*, 11(4), 557–574. <https://doi.org/10.1007/s10461-006-9168-5>

Appendix D

STI Provider Tool

Question	Answer <i>Circle Your Answer</i>		
1. Have you had vaginal (penis in the vagina), anal (penis in the anus), or oral sex (mouth on penis, vagina, or anus) without a condom in the past 12 months?	Yes	No	
2. Have you ever had an STI, including HIV?	Yes	No	I don't know
3. Have any of your partners had an STI?	Yes	No	I don't know
4. Have you or any of your partners ever used illicit substances?	Yes	No	I don't know
5. Have you exchanged sex for needs (money, housing, drugs, etc.) in the past 12 months?	Yes	No	I don't know
6. Is it possible that any of your sex partners in the past 12 months had sex with someone else while they were still in a sexual relationship with you?	Yes	No	I don't know

If the patient answered “yes” or “I don’t know” to one or more of the above questions means they may be at risk for and STI and need further testing even if asymptomatic.

Prepare Before You're There - Sexual Health Quiz.
<https://www.cdc.gov/std/saw/pbyt/quiz.htm>

Appendix E

Letter of Interest

March 10, 2023

Mississippi University for Women

1100 College Street

Columbus, Mississippi 39701

SUBJECT: Information and permission to participate in a clinical practice project

I am a graduate student in the Doctor of Nursing Practice program at Mississippi University for Women in Columbus, Mississippi. As a program requirement, I am conducting a voluntary, anonymous knowledge questionnaire to evaluate females, ages of 18-25 years old, on their knowledge of sexually transmitted disease along with provided educational material. I am also creating a tool for providers to use to help streamline the STI visit in the clinic setting.

Your participation will involve utilizing the tool provided during visits with females ages 18-25 years old with or without STI symptoms. The goal is to streamline the visit and to easily identify females at risk for STIs to increase testing and therefore decrease the transmission of STIs. To qualify for the knowledge questionnaire, the participant must be a female ages 18-25 years old, but the tool can be used on patients of any age range or sex. At the end of the study, I will send a survey to you for your input and evaluation regarding the STI tool.

The lead investigator and Alena Groves' contact information has been provided at the end of the participant's informative letter. The survey is anonymous, and the participants'

information and responses cannot be traced. After scanning the provided QR code on their smartphone or device they will be directed to our questionnaire powered by Qualtrics. Prior to beginning the survey, a brief description of the survey and a statement of consent is presented to the participant. By clicking submit after completion of the survey the participant is providing consent of participation to our research study. Once the survey is submitted on Qualtrics, the participant can no longer retract participation. The researcher and the research committee chair are the only ones allowed to access the results of the survey. The identity of the clinic will not be disclosed in any manuscripts or presentations. Your response regarding the STI tool will also be anonymous and link to the survey will be emailed to you at the end of the study. Please scan the QR code below and fill out the Google Form so that your name and email will be available for the end of study survey.

If you require any information about this study or would like to speak to the researcher, please call Maggie White (601) 966-0414. You may also contact the chair of our research committee, Alena Groves, DNP, FNP-BC at (662) 299-2985. In addition, you may withdraw your consent and participation in this study at any time by contacting me or the chair of my research committee.

Sincerely,

Maggie White, MSN, FNP-BC



Appendix F

STI Provider Follow Up Survey

I am a Doctor of Nursing Practice student at Mississippi University for Women, and this questionnaire aids me in my graduate research. By completing and submitting this survey, you are agreeing to participate in my research study. This questionnaire is intended for providers that utilized the STI Provider Tool in their practice. Please do not take this survey if you did not utilize the STI Provider Tool. This survey is voluntary, and all answers will be kept confidential. This survey is part of an anonymous study. Please do not provide your name or any other identifiers. You may withdraw from the study at any time until the questionnaire is submitted. After the questionnaire is submitted your answers cannot be retracted.

1. How long have you been a healthcare provider?
 - a. 0-3 years
 - b. 4-10 years
 - c. 11-15 years
 - d. 16 years or more
2. What setting do you practice?
 - a. Urgent Care
 - b. Family practice
 - c. College health
 - d. Other
3. Was the tool easy to use and understand?
 - a. Yes
 - b. No
4. Do you plan to continue to use the tool after this study?
 - a. Yes
 - b. No
 - c. Maybe
5. Did you feel like you diagnosed more STIs while utilizing the tool?
 - a. Yes
 - b. No
 - c. Maybe
6. Do you have any ways to improve the tool?

Appendix G

Permission to use STD-KQ-27

2 messages

Margaret Hyer <mhyer@myapps.muw.edu>
To: "mpcarey@syr.edu" <mpcarey@syr.edu>

Sat, Feb 25, 2023 at 1:03 PM

Dr. Carey,

My name is Maggie White and I am working on a clinical practice project for my DNP program and my project is on STD knowledge. If possible, I would like to use your questionnaire for my study. I wanted to reach out and see if I could get your permission to use it. I look forward to hearing from you!

Thank you,
Maggie White

Michael Carey <michael_carey@brown.edu>
To: Margaret Hyer <mhyer@myapps.muw.edu>

Sat, Feb 25, 2023 at 2:39 PM

Permission granted. Good luck!

Sent from my iPhone