

**Sexually Transmitted Diseases Consultation and Education for Adolescents  
and Young Adults**

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### Abstract

Sexually transmitted diseases (STDs) have drastically increased in recent years nationwide and worldwide. Adolescents and young adults (AYAs) ages 15-24 make up just over one-quarter of the sexually active populace. Additionally, AYAs account for half of the 20 million new sexually transmitted infections in the United States. Compared with older adults, sexually active adolescents aged 15–19 years and young adults aged 20–24 years are at higher risk of getting STDs. Lack of knowledge of risk and protective factors and high-risk sexual health practices and behaviors significantly contribute to AYAs' STD acquisition. Hence, increasing STDs awareness and prevention is essential in reducing high incident rates of STDs among AYAs. At a practice clinic setting in the metropolitan area in Texas, a quality improvement project implementation offered sexual transmitted diseases consultation and education to AYAs 18-24 years by using the Plan-Do-Study-Act (PDSA) framework to increase disease general knowledge. The Sexually Transmitted Disease Knowledge Questionnaire [STD-KQ] was the tool that was used to assess the AYAs' STD general knowledge and cause/cure comprehension pre/post-intervention. The project used paired sample t-test as the final bivariate, which indicated that the mean number of total scale right STD knowledge items changed statistically significant level,  $t(10) = -7.27$ ,  $p < .001$  from pretest to post-test ( $M=26.64$ ,  $SD=.67$ ), with large effect size (Cohen's  $d = -2.88$ ). Integrating STD education and counsel into primary care practice will help improve AYAs' sexual practices and prompt providers to identify those associated with the risk of STD acquisition.

*Keywords:* sexually transmitted diseases (STDs), sexually transmitted infections (STIs), STDs/STIs prevention, STDs education, sexual health, sexual behavior, adolescents and young adults, risk factors.

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## **Sexually Transmitted Diseases Consultation and Education for Adolescents and Young Adults**

Sexually transmitted diseases (STDs) are a global health concern as approximately one million people are infected every day, contributing to 499 million new incidences of curable illness annually (Folasayo et al., 2017). More than half of the incidences are recorded among youths (Folasayo et al., 2017). Subsequently, Msengi et al. (2018) highlighted that STDs are prevalent among individuals between 15 to 50 years and result in a severe health burden in high and low-income earning nations. The predominant STDs include syphilis, trichomoniasis, chlamydia, and gonorrhea. Notably, one in four infected individuals are diagnosed with syphilis, trichomoniasis, chlamydia, and gonorrhea, and the majority are asymptomatic (World Health Organization [WHO], 2022). The causative agents of STDs are viruses, bacteria, and parasites transmitted through sexual contact, either by oral, vaginal, or anal sex (WHO, 2022).

Some STDs can be transmitted to an infant from the mother during pregnancy, childbirth, or breastfeeding (WHO, 2022). In addition, the prevalence of STDs is surging, especially in the United States, with the most affected populace being adolescents between 15 to 24 years old (Shannon & Klausner, 2018). With a projected daily infection prevalence of one million individuals, the most predominant STD is trichomoniasis at 156 million cases, chlamydia at 129 million incidences, gonorrhea at 82 million, and syphilis at 1.7million infections (WHO, 2022). Thus, there is a prerequisite to increase knowledge, cause/cure, and prevention awareness for STDs amongst AYAs in clinical practice.

### **Background**

In 2016, approximately 490 million individuals were projected to be living with herpes, while 300 million females had human papillomavirus (HPV), and 296 million persons were

diagnosed with chronic hepatitis B worldwide (WHO, 2022). The high prevalence of STDs can be attributed to a lack of awareness. According to Folasayo et al. (2017), most school-going students have premarital sex. Approximately 8% of the students have engaged in sex, with the mean age of first sexual intercourse reported to be 15 years (Folasayo et al., 2017).

Correspondingly, adolescents and young adults lack awareness of STDs and their related sequels in the practicum site.

Based on the clinical chart reviews, at least one young adult is diagnosed with STD in the practice setting in a week. According to the Centers for Disease Control and Prevention (CDC) (2022), youths and adolescents (15-24 years) account for half of the STDs cases that were reported in the United States in 2018. In addition, STDs result in increased health expenses as it was projected that \$16.9 billion cater for health costs annually (CDC Morbidity and mortality weekly report [MMWR], 2020). Thus, it is imperative to increase the knowledge and awareness of STD infections and preventative measures, especially for the common sexually transmitted infections (STIs).

### **Sexually Transmitted Diseases in the United States**

Sexually transmitted infections are on an upward trend in the United States, with the majority of the cases reported among adolescents and young adults. Shannon and Klausner (2018) stated that the high prevalence of STDs among adolescents can be attributed to biological and behavioral risk factors. For example, adolescents are at an increased risk of engaging in risky sexual behaviors such as sexual encounters without a condom and concurrent partners (Shannon & Klausner, 2018). Notably, adolescents are less likely to utilize sexual health services, which may help in raising awareness and increasing their knowledge of risk factors and related consequences.

In the 2019 CDC STD Surveillance report, estimated rates of reported chlamydia are highest among adolescents and young adults. Almost two-thirds (61.0%) of all reported chlamydia cases were aged 15–24 years. However, among females aged 18–24 years, the population targeted for chlamydia screening, the overall reported cases of chlamydia were 657,000 cases with 4,438.0 rates per 100,000 population, a significant increase from 2015, which had reported a total of 624,231 infection cases (CDC, 2021b). Furthermore, in males aged 18-24 years, 281,704 chlamydia cases were reported in 2019, an average of 1,809.8 rates per 100,000 population (CDC, 2021a).

There were 114,738 gonorrhea infection cases among females aged 18-24 years and 107,971 cases among males 18-24 years reported in 2019. Throughout 2017–2019, reported gonorrhea cases increased by 1.2% for persons aged 20–24 years (CDC, 2021a). However, the 2018 CDC surveillance report highlights that primary and secondary (P&S) syphilis among females aged 15–24 years was 7.2 cases per 100,000 females, a 28.6% increase from 2017 (5.6 cases per 100,000 females). Among males aged 15–24 years in 2018, the rate was 28.2 cases per 100,000 males, a 7.2% increase from 2017 (26.3 cases per 100,000 males). During 2017–2018, the reported P&S syphilis cases increased by 14.9% among persons aged 15–19 years and 10.3% among persons aged 20–24 years.

Furthermore, the CDC 2018 estimates indicated 43 million HPV infections in which, in that same year, there were 13 million new infections. The agency also estimated 37,968 new HIV infections in the United States in 2018. Of those, 21% (7,891 cases) were among AYAs aged 13-24 years. Notably, in the 2018 CDC report, more than half (51%, 3,334 infection cases) of young bisexual and gay men who received an HIV diagnosis were Black/African American, while Hispanic/Latino came in second with 27% accounting for 1,788 new infection cases (CDC,



2021a). Among AYAs aged 20 to 24 years, the rates of Chlamydia, Gonorrhea, and syphilis were highest among African Americans relative to adolescents of other racial and ethnic groups, with 180,100; 71,115; and 2,517 cases, respectively. (CDC, 2021c; Hong et al., 2019).

### **Sexually Transmitted Diseases in Texas**

According to the 2019 CDC STD surveillance report, Texas reported 129,075 cases of chlamydia, with 449.7 rates per 100,000 population; 44,230 cases of gonorrhea with 154.1 rates per 100,000 population; 12,657 cases of syphilis with rates 44.1 per 100,000 population (CDC, 2021). At the end of 2018, Texas Health and Human Services (THHS) reported that over 94,000 Texans live with a diagnosis of HIV infection. In addition, the total of people living with HIV increased by 16% over the past five years (THHS, 2021).

### **Sexually Transmitted Diseases Complications, Symptoms, and Risks**

#### ***Risk factors***

The causative agents of STDs are 30 parasites, viruses, and bacteria that can be transmitted through sexual contact. Eight of the thirty pathogens are associated with gonorrhea, syphilis, chlamydia, and trichomoniasis, which are curable. Incurable STD infections are caused by pathogens, including HPV, herpes, hepatitis B, and the human immunodeficiency virus (HIV) (WHO, 2022). Notably, pathogens can be transmitted from one individual to the other through sexual and non-sexual mediums such as semen, blood, and vaginal and body fluids (Mayo Clinic, 2021). The non-sexual transmission includes shared needles or body piercing instruments, blood transfusions, during pregnancy, birth, and breastfeeding to an infant from the mother (Mayo Clinic, 2021). Additionally, having a history of sexually transmitted infections (STIs) increases the risk of obtaining an STD (Mayo Clinic, 2021). Additional risk factors

include misuse of recreational drugs and alcohol, leading to impaired judgment, such as unprotected sexual encounters or sharing infected needles and syringes.

### ***Complications***

Sexually transmitted diseases are associated with adverse health effects and complications globally on sexual and reproductive health. The adverse events can have a detrimental impact on an individual and the overall public health. Reproductive health complications include infertility, ectopic pregnancy, unsafe deliveries, pelvic inflammatory disease (PID), illegal and dangerous abortion, congenital infection, unsafe motherhood, maternal and neonatal morbidity, and mortality and blindness and pneumonia in neonates (Dela et al., 2019). Notably, STD-related complications are more prevalent among women than men (National Library of Medicine, 2022). In males, the complications include dysuria, resulting in penile stricture, sterility, and epididymoorchitis. Also, STDs such as HPV cause genital warts, which can cause cervical cancer (CDC, 2019). In addition, pelvic pain and arthritis are among the complications triggered by STDs (Mayo Clinic, 2021).

### ***Symptoms***

In some cases, STDs are associated with no symptoms; thus, they may go undetected until the complications manifest or the sexual partner is diagnosed with an STD. However, some signs and symptoms might occur in some incidences. The signs and symptoms include painful urination with a burning sensation, discharge from the sexual organs, sores in the genital, rectal, or oral areas, unusual odors, pain during a sexual encounter and in the lower abdomen, fever, rash, and swollen lymph nodes (Mayo Clinic, 2021). In addition, bleeding and itchiness in the genital areas are associated with STDs (National Library of Medicine, 2022).

### ***Diagnosis and Treatment***

Diagnosis, especially for sexually active individuals, is imperative as symptoms may not occur in a majority of the STDs. Blood tests and physical or microscopic examinations of fluid or content swabbed from the genital areas can be used to diagnose STDs. Notably, accurate diagnostic exams for STDs are available in high-income countries and may be geographically inaccessible or costly for low and middle-income nations. Hence, effective treatment plans and follow-ups may be hindered (WHO, 2022). Syphilis, hepatitis B, and HIV are the only STIs for which affordable, rapid testing is currently accessible. In some resource-constrained areas, the fast syphilis examination is already in use. In addition, a swift dual HIV/syphilis diagnostic is available, which allows a person to be tested for the two STDs with one fingerstick and a single evaluation cartridge (WHO, 2022). The tests are precise, may produce results in 15 to 20 minutes, and require minimal training to perform. The use of rapid syphilis testing has been proven to surge the number of pregnant women tested for the disease. However, more work is needed in most low- and middle-income countries to guarantee that all pregnant women receive a syphilis diagnostic at their initial prenatal care visit (WHO, 2022).

Bacterial and parasitic caused STDs are curable with single-dose treatments of antibiotics. However, virally caused infections do not have a cure, but the administered antivirals help modulate the disease (WHO, 2022). Hepatitis B viral medications aid in fighting the virus and slow liver damage. Notably, cases of drug resistance, particularly for gonorrhea, have been reported, increasing the burden of STDs globally (WHO, 2022).

### ***Prevention***

The most effective prevention is sexual abstinence (CDC, 2022). However, for sexually active persons, the most effective measure for STDs is using a condom during sexual encounters

(WHO, 2022). Additionally, the use of condoms can help in preventing unplanned pregnancies among consenting individuals. However, it can be used to protect against STDs that cause extra-genital sores, such as genital herpes and syphilis (WHO, 2022). Vaccines are a safe, reliable, and highly recommended method of preventing HPV and hepatitis B infection (WHO, 2022). HPV vaccination is advised for preteens aged 11 or 12 (or can begin at age 9) and for everyone until 26 years if not already vaccinated. Vaccination is not recommended for anyone older than the age of 26. Adults aged 27 to 45 who have not yet received the HPV vaccine may opt to do so after discussing with their doctor their risk of new HPV infections and the potential advantages of vaccination. The HPV vaccine is less effective in this age group because more people have already been exposed to HPV (CDC, 2022).

Sexual health improvement's key to success hinges on understanding and prevention as the first steps in decreasing STD rates among AYAs (Hall et al., 2019; Keizur et al., 2019; Pourkazemi et al., 2020). With the increase in STDs prevalence, there is a need to raise awareness through STDs consultation and education to promote disease knowledge and prevention in the current practice setting. In addition, the National Committee for Quality Assurance (NCQA) highlights knowledge and screening for STDs as essential to infection prevention. (NCQA, 2021).

### **Review of Literature**

Providers and patients are often reluctant to openly address STDs due to the diseases' biological and social characteristics (Msengi et al., 2018). This reluctance led to the majority of the studies suggesting that lack of knowledge, poor protective factors, and high-risk sexual health practices and behaviors significantly contribute to AYAs' STD acquisition.

### ***Health Education***

Kalamar et al.'s (2016) systematic review study focuses on effective interventions to reduce and prevent sexually transmitted infections (STIs) among AYAs. The study findings showed that increased disease knowledge, abstinence, condom use, and health services utilization have increased STI screening and promoted infection prevention amongst AYAs. The study also suggests that sexual and reproductive health (SRH)/STI education curriculum targeting condom use has shown to be generally popular and the most common intervention in infection prevention (Kalamar et al., (2016).

Several cross-sectional studies identify and examine sexually risky behaviors, knowledge, and risk and protective factors of STIs amongst AYAs as the precursor to STI acquisition (Adejimi et al., 2020; Boyer et al., 2018; Folasayo et al., 2017). Evidence shows that STDs are significantly higher in female AYAs than in their male counterparts. The higher rates are reasons for detection and prevalence in females attributed to increased screening, higher rates of symptom development, and less capacity to negotiate condom use than males (Dela et al., 2019; Masese et al., 2017; Trent et al., 2018). Additionally, a descriptive study by Spindola et al. (2019) aims to understand and evaluate college students' sexual practices, knowledge, and behavior regarding STDs/STIs. The study finding indicated that young adult college students adopt risky behavior and demonstrate a lack of knowledge about STIs/STDs prevention and transmission (Spindola et al., 2019).

### ***Interventions that Promote Increased Knowledge***

Randomized control trial studies by Lauren et al. (2019) and Tamarelle et al. (2017) focus on interventions that promote STI screening and healthy sexual practices to prevent complications. Lauren et al. (2019) introduced a self-care intervention known as "Protecting Our

Future Generation" to assess the increasing uptake of STI screening and impacting sexual risk and protective behaviors among Native American AYAs through sexual health self-assessment and self-administered STI tests. The study only described the intervention protocol implementation and evaluation. Since the RCT is still in progress, there is no indication of study outcomes or recommendations. Nevertheless, Tamarelle et al.'s (2017) RCT study focused on the early screening intervention for *Chlamydia trachomatis* (Ct) to prevent PID among female AYAs. The study intervention also focused on identifying young women at risk of developing PID as a complication from untreated Ct to offer prompt treatment by reducing disease prevalence (Tamarelle et al., 2017).

### ***Consultation and Education***

Sexually transmitted diseases consultation and education for AYAs are crucial for disease prevention while promoting healthy sexual behaviors and practices. Studies suggest that interventions to increase STD awareness and screening rates among sexually active women younger than 26 years can be effective in primary care settings (Taylor et al., 2016). However, the topic of STDs, as well as their prevention, screening, treatment, and management, always poses a great social significance because it is a topic most people, especially adolescents and young adults, are uncomfortable discussing to avoid facing discrimination or embarrassment (Cuffe et al. 2020; Wesche et al., 2019). In their systematic review, Taylor et al. (2016) highlight the introduction of a health adviser whose role was to raise awareness of STDs and train staff on STDs screening guidelines to increase the number of STD tests and disease knowledge (Taylor et al., 2016). Pereira and Carmo's 2014 study addresses knowledge on sexual health, particularly of STDs risk and perceived symptoms' prevalence among young adult students, and found that young adults have inadequate knowledge about STDs, and the lifelong perceived occurrence of

an STD was 9.9%. The actual perceived event of symptoms associated with an STD was 16.8% (Pereira & Carmo, 2014).

### ***Barriers to Receiving Reproductive Health Services***

Sexually transmitted diseases among AYAs have broader social significance because of the higher incidence, lack of knowledge, and risk factors among this age population (Douglas et al., 2020; 2021). However, this higher incidence also reflects numerous barriers to accessing reproductive healthcare services, STD prevention, screening, and management services. Such barriers include low socioeconomic status, poor educational background, geographic isolation, confidentiality concerns, sexual health disparity, lack of health care coverage and lack of financial independence, embarrassment attached to seeking STIs services, anxieties about privacy, lack of transportation, long waiting times, conflicting hours between work and school schedules with clinic availability hours, inability to pay, and method of specimen collection (Boyer et al. 2018; Hong et al. 2019; Tingey et al., 2017). Sexually transmitted diseases knowledge and consultation as a foundation for AYA will serve as a vital tool to combat high prevalence and infection rates.

### **Project Question**

The project question is whether sexually transmitted diseases (STDs) consultation and education increase disease knowledge and prevention practices for adolescents and young adults (AYAs) ages 18-24 years after consultation and at four weeks of follow-up.

### **Project Objectives**

- Establish AYAs' STD knowledge level regarding causes, cures, and general understanding.

- Identify if targeted STDs consultation and education improve disease knowledge and preventive measures for AYAs.

### **Project Framework**

This project utilizes the Plan-Do-Study-Act (PDSA) framework for implementation and translation into clinical practice. This decision support tool effectively solves specific quality problems and outlines healthcare organizations' culture (Reed & Card, 2016). Furthermore, the quality improvement scientific approach of PDSA is ideal for this project because it is mainly for action-oriented learning purposes for a change, following a four-stage cyclic learning approach to adapt changes aimed at improvement (White et al., 2016).

The planning phase involved a detailed description of the project's main objective: increasing knowledge and preventive measures of STD among adolescents and young adult populations in the practice setting. This phase also involved setting up forums, meetings, and communication channels with stakeholders, supervising physicians, senior practice managers, and clinic providers to discuss plan outline, information collection plan, and answer questions.

The second (Do) phase involved collecting current clinic STD and sexual health guidelines. This phase also entailed collecting data on participants' demographics and general knowledge of STDs' cause/cure and preventions through questionnaires. This phase also includes collaboration with the clinic nurses and providers to promote outreach and optimize the project's success.

The Study phase involved reviewing and analyzing the project's results and comparing project outcomes with predictions. Summarized project outcomes and lessons learned to move forward with the project are also included in this phase. This phase assessed the effectiveness of



STD consultation and education to increase diseases knowledge and preventive measures among the targeted age population through post-intervention questionnaires and patients' feedback

The Act phase involved applying project outcomes for implementing STD consultation and education during a routine or acute visit for adolescents and young adults in standard practice guidelines. (See Appendix A).

## **Methods**

### **Project Design**

The project was a quality improvement evidence-based program that increased AYAs' knowledge of preventative measures against STDs. A quantitative methodology with a quasi-experimental design was employed to assess if consultation and educational sessions among AYAs would increase their understanding of STDs prevention methods. The quantitative method was selected because it involves collecting numeric data, enables the application of statistical analysis techniques, and the data can be extrapolated to a broader setting (Creswell & Creswell, 2018). The quasi-experimental design allows evaluating a causal relationship between the independent and the dependent variables (Handley et al., 2018). Also, quasi-experimental techniques help obtain a balance between internal and external validity (Handley et al., 2018). The quasi-experimental design was selected to determine the causal association between the independent variable, consultation, and educational sessions in this project. The dependent variable was AYAs' knowledge of STDs prevention techniques. A pre-and post-intervention approach was adopted in the project to aid in collecting baseline and end-line data that will be used to determine the causal relationship between the independent and the dependent variables. The project was implemented from September 10, 2021, to November 16, 2021.

The project's strengths, weaknesses, opportunities, and threats (SWOT) analysis was a practically developed strategic analysis. It consists of confrontation between external developments and internal capabilities. External developments are either the opportunities or threats for the project or organization, while internal capabilities are the strengths or weak points of the project. (Van Wijngaarden Jeroen et al., 2012). The project's success opportunities ensured patients' quality care improvement. Patients' and providers' refusal to participate in the project threatened the initiation of project implementation. Moreover, the implementation effort to increase STDs knowledge and promote preventive measures was the project's greatest strength in helping decrease infection rates among AYAs. The project's weakness is the time constraints in the data collection phase; table one in appendix B shows the SWOT assessment as the project implementation tool for the strategic process to highlight and identify internal capabilities and external changes.

The project's success hinged on the developed plan to evaluate the risk, impact, mitigation, and contingency plan. It was imperative to have a stable risk management plan to review and evaluate all variables that might impact the project implementation. Fortunately, no threats were encountered throughout the project's implementation. Table two in appendix B discusses the potential threats and weaknesses that could have impacted this project and the contingency plan that addresses these threats.

### **Population**

A total of fifteen participants, two males and thirteen female adolescents and young adults between 19 and 24 years, were recruited for this project. Participant selection criteria included a convenience sample of participants who present for routine or acute clinic visits. Convenience sampling was selected because it entails the selection of participants from a readily

available population (Cohen et al., 2018). Additionally, convenience sampling is inexpensive and does not consume time (Cohen et al., 2018). Inclusion criteria for the project consist of individuals ages 18-24 years who provided written informed consent (See Appendix C) before the consultation and who could read, write and speak the English language were preferred. Also, participants who have a primary means of contact such as cell phone and consent to receive calls and text messages regarding STD consultation follow-up were included in the project. The exclusion criteria entailed participants below the age of 18 and above 24 years, unable to speak, read, and write English proficiency, and do not have a means by which they can be contacted. Also, individuals with impaired cognition and incomplete questionnaire surveys were excluded. Two participants failed to complete the post-consultation and education questionnaire, and two participants declined to participate in the project, resulting in a final sample of 11 participants.

### **Setting**

The proposed project was implemented in a primary care clinic that provides healthcare services to patients. The clinic is a privately owned practice setting located in the metropolitan area of Texas, consisting of African American and Hispanic populations. The clinical setting consists of two providers that attend to patients of all races, gender, and socioeconomic statuses with private insurance, Medicaid/Medicare, or self-pay. An average of 20 patients 18- 24 years old present for a visit in a month, with 10% presenting for annual or preventive visits. Chart review was conducted at the clinic site, which helped identify those AYAs that might not have upcoming clinic appointments but met the inclusion criteria and informed them through phone calls about the proposed project to determine if they were interested and willing to participate.

## **Measurement Methods**

Adopting Jaworski and Carey's (2007) open-access instrument, the Sexually Transmitted Disease Knowledge Questionnaire (STD-KQ), consisting of 27-item true/false questions, was the appropriate measuring tool to use for this project. The tool measures knowledge of six common sexually transmitted diseases, including gonorrhea, chlamydia, hepatitis B, genital herpes, HIV/AIDS, and HPV. The questionnaire sought answers on the STD's causes and whether it is curable or incurable, and other prevalent STDs knowledge questions. The outcome is to assess eligible AYAs STD's knowledge level and current preventive practices before and after STD consultation and education and one-month follow-up. A self-administered 27-item STD-KQ pre/post-intervention (See figure D1) on knowledge of STD serves as a tool to measure outcomes. Knowledge of STD will be on the cause/cure and general understanding. The questionnaires were distributed to eligible participants by the project lead in the clinic setting. The grading of the questionnaire using the scoring tool developed by Jaworski and Carey (2007) is appropriate to correctly assess the questionnaire performance (See figure D2). In addition, data from the medical record utilization pre-and post-intervention determined the patient's eligibility, including age, sex, and race.

### ***Reliability***

Smith et al. (2020) performed a test to assess the reliability of the STD-KQ tool using Cronbach's reliability coefficients to determine the responsive consistency while Pearson's coefficients to evaluate the test-retest reliability. Smith et al. (2020) reported that Cronbach's alpha coefficients for the STD-KQ scale were high for the two days the participants filled the questionnaires, 0.905 and 0.917. The coefficients obtained indicated a strong response consistency (Smith et al., 2020). In addition, the Pearson's  $r$  coefficients between the responses

for the 27 items were high,  $r = 0.882$ ,  $p < .01$  (Smith et al., 2020). Additionally, Jaworski and Carey (2007) evaluated the reliability of the STD-KQ questionnaire. The STD-KQ had a test-retest reliability ( $r = .88$ ) and internal consistency of ( $\alpha = .86$ ) (Jaworski & Carey, 2007). Thus, it can be concluded that the tool is reliable in measuring the knowledge of AYAs on STDs.

### ***Validity***

Jaworski and Carey (2007) accessed and obtained evidence for the validity of the STD-KQ through a comparison with a validated HIV knowledge questionnaire. The STD-KQ treatment findings sensitivity achievement responds to the educational program (Jaworski & Carey, 2007). STD-KQ efficacy will facilitate researchers and health educators to detect knowledge deficits, measure knowledge for theory testing, evaluate risk reduction programs, and assess treatment response in research and applied healthcare settings (Jaworski & Carey, 2007).

Weaver (2015) evaluated the face and content validity of the STD-KQ among students. Based on the findings, the STD-KQ had a face validity as the students understood what the question entailed and responded with a certain level of comprehension. More than half of the subject matter experts rated the items as essential, similar to nearly two-thirds of the items on the STD-KQ, giving 17 of the 27 questions some validity. Seven of the ten questions with the content validity ratios (CVRs) equal to or below 0 had a CVR of 0, denoting that half of the SMEs considered the question essential (Weaver, 2015).

### **Data Collection/Implementation Plan**

Data collection was conducted in two phases; baseline and end-line data stages. The baseline entailed the collection of primary data and secondary data. The Primary data collected included baseline sociodemographic data and age at sexual debut, current preventive practices, and the number of sexual partners, as shown in Dashboard in Appendix E. In addition, secondary

data collection included proportions of AYAs present STD consultation/education and completed the pre/post-intervention STD-KQ. In addition, providers, nursing staff, and front desk registration clerks informed all eligible participants about STD consultation and education.

The education plan is shown in figure one; Appendix F outlines the session overview and instructional objectives. The educational sessions were conducted using a PowerPoint presentation; during the consultation and educational session, the provider used the opportunity to discuss STD prevalence, implications, complications, disease types and processes, and preventive practices. The posted invitation flyers for the sessions (see figure F2) at the clinic waiting-area nurses/phlebotomy station were vital to attendance rates and productive outcomes. The PowerPoint presentation helped improve the AYAs' knowledge and prevention; see Figure F3. Participants appraised the overall learning presentation and the presenter using the performance evaluation form in table F4.

The key stakeholders for this project included the clinic supervisors, nurses, and clinic providers. Personal identification such as names and social security numbers were not used in the project. Before commencing the implementation of the intervention, the project lead briefed the stakeholders and the participants separately about what the project entailed. Then, the data collection procedure started with collecting demographic information and issuing the STD-KQ questionnaire. Afterward, the participants were engaged in consultations and educational programs on STDs prevention measures and their related complications by the project lead. The questionnaire allocation time was estimated to be about 30 minutes in each session, with an extra 30 minutes to one hour allocation time for discussion and information on STDs after the survey to respond to participants' concerns and correct misconceptions.

Educational sessions for AYAs to improve their knowledge of STDs and preventive measures are essential for project success. Setting up communication and collaborative channels for questions and feedback was crucial to evaluating patients' and providers' perceptions of proposed interventions. Participants were given open access pamphlet, "The Lowdown on How to Prevent Sexually Transmitted Diseases," retrieved from the CDC website to use as a take-home resource after the entire session. (Appendix G). Participants completed another STD-KQ form to reevaluate the STD knowledge post each consultation and educational session. The STD-KQ tool was not given to participants through email, phone call, or in-person for the final evaluation at a four-week follow-up due to the inability to reach and follow up after multiple unsuccessful attempts. The participants were assigned pseudo-code numbers to maintain their privacy. Additionally, data was stored in a secured cabinet accessible by the project lead only. The hard copy data were recorded in a Microsoft Excel sheet on a password-protected laptop, and after completion, the information was shredded.

### **Statistical Analysis**

Statistical Package for Social Sciences (SPSS) latest version 26.0 was used to perform the analysis. All data analyses are based on expert statistician review and consultation. The data analysis plan was conducted in three phases. First, all study variables were presented using descriptive statistics, such as means, standard deviation, and minimum/maximum values for continuous variables (Interval/Ratio level) and frequencies and percentages for categorical variables (Nominal/Ratio level).

Second, a series of bivariate tests were used to produce inferential findings. First, pretest to post-test difference scores were computed by subtracting pretest scores from respective post-test scores for all STD knowledge scales (the total scale, the cause/cure subscale, and the general

knowledge subscale). Table one represents the cause/cure and general knowledge subscale items taken from the STD-KQ tool Jaworski & Carey (2007) identified in their original study.

Pearson's  $r$  correlations were then used to examine if change scores were related to the study covariate variables (age, age at sexual debut, and the number of current sexual partners) at a statistically significant level ( $p < .05$ ). If any covariate variables were related to pretest to post-test change at a statistically significant level ( $p < .05$ ), that covariate variable would be included in the third phase of data analysis, multivariate analysis. Additionally, paired-samples  $t$ -test analysis examined if the mean number of correct responses among each STD knowledge scale (the total scale, the cause/cure subscale, and the general knowledge subscale) changed significantly from pretest to post-test.

The third phase of data analysis was multivariate modeling. Here a repeated measures general linear model would be considered to model pretest to post-test changes in matched paired scores while controlling for any covariate variables significantly related to pretest to post-test change in bivariate analysis. No significant covariate variables were related to pretest to post-test change; the paired samples  $t$ -test analysis represents the final analysis.

Within the final inferential analysis presented, all test assumptions related to parametric testing were examined, including normality, linearity, and no undue influence of outliers scores, and revealed no significant problems. There were no missing data values within the dataset. In terms of psychometric properties, a reliability analysis evidenced a sufficient level of internal consistency reliability for the STD Knowledge questionnaire total scale (Pretest Cronbach's  $\alpha = .86$ ), the cause/cure subscale (Pretest Cronbach's  $\alpha = .74$ /item 8 was removed to increase the Cronbach's  $\alpha$  from  $.67$  to  $.74$ ), and the general knowledge subscale (Pretest Cronbach's  $\alpha = .79$ ).



### **Ethical Considerations**

The project received approval from the University's Graduate Nursing Review Committee (GNRC), authorized by the University Internal Review Board (IRB) (See Figure H1), and the project practice site's president/chief executive officer (See Figure H3). The approval from the institution and the project site meant that the project adhered to the ethical provisions for dealing with human participants. The ethical considerations requirement set by GNRC was also met by completion of human subject protection training, as shown in the certificate of completion in figure H2. The participants were adults (19 to 24 years) with autonomous decision-making skills about participation in the project. The project lead allowed the participants to withdraw from the project, especially when they felt it was not beneficial. Maintaining the participants' confidentiality was essential in the project to help prevent data sharing with third parties without authorization. Data was stored in a password-protected laptop accessible by the project lead only. There was no conflict of interest in disclosure during the project. Also, the project was not associated with any risks.

### **Results**

#### **Descriptive Analysis Findings**

Project sample categorical demographic characteristics are summarized in table two. Data from the descriptive analysis indicated that the typical study participants were females (n=10; 90.9%) of a Black racial/ethnic identity (n=10; 90.9%) and had the highest education level of a high school degree (n=8; 72.7%). Almost three-quarters of the sample reported no current preventive practices (n=8; 72.7%). The descriptive analysis of the continuous study variables presented in table three revealed that the average study participant was 22.00 ( $SD=1.79$ , MIN/MAX=19.00-24.00) years old. The average age of sexual debut was 16.55 ( $SD=1.29$ ,

MIN/MAX=15.00-19.00) years of age. The average number of current sexual partners was 1.45 ( $SD=.69$ , MIN/MAX=-0.00-2.00). The scores' distribution was approximately normal as the skewness and kurtosis were not about three times each respective standard error.

Assessment of knowledge on STDs involved participants' self-evaluation of their understanding regarding cause/cure and general knowledge pre/post-consultation/education. In terms of the mean number of correct responses by total scale, cause/cure subscale, and general knowledge subscale scores at pretest and post-test result findings as displayed in table four, indicated that regarding the total scale score, the mean number of correct responses at pretest was 14.73 ( $SD=5.80$ , MIN/MAX=3.00-24.00), at post-test were 26.64 ( $SD=.67$ , MIN/MAX=25.00-27.00), with a mean pretest to post-test difference score of 11.91 ( $SD=5.43$ , MIN/MAX=3.00-23.00). Data also showed that regarding the cause/cure subscale score, the mean number of correct responses at pretest was 4.73 ( $SD=2.24$ , MIN/MAX=0.00-8.00), at post-test was 8.00 ( $SD=.00$ , MIN/MAX=8.00-8.00), with a mean pretest to post-test difference score of 3.27 ( $SD=2.24$ , MIN/MAX=0.00-8.00). Data indicated that concerning the general knowledge subscale score, the mean number of correct responses at pretest was 9.09 ( $SD=3.91$ , MIN/MAX=2.00-15.00); at post-test was 17.64 ( $SD=.67$ , MIN/MAX=16.00-18.00), with a mean pretest to post-test difference score of 8.55 ( $SD=3.50$ , MIN/MAX=3.00-15.00). The scores' distribution was approximately normal as the skewness and kurtosis were not around three times each respective standard error.

The result findings of the mean percentage of correct responses by total scale, cause/cure subscale, and general knowledge subscale scores at pretest and post-test, as presented in table five, suggested that the total scale score, the mean percentage of correct responses at pretest was 54.55 ( $SD=.21$ , MIN/MAX=11.00-89.00), at post-test was 98.65 ( $SD=.03$ , MIN/MAX=93.00-

100.00), with a mean pretest to post-test difference score of 44.11 ( $SD=.20$ ,  $MIN/MAX=11.00-85.00$ ). Data indicated that regarding the cause/cure subscale score, the mean percentage of correct responses at the pretest was 59.09 ( $SD=.28$ ,  $MIN/MAX=0.00-100.00$ ). At post-test was 100.00 ( $SD=.00$ ,  $MIN/MAX=100.00-100.00$ ), with a mean pretest to post-test difference score of 40.91 ( $SD=.28$ ,  $MIN/MAX=0.00-100.00$ ). Data indicated that regarding the general knowledge subscale score, the mean percentage of correct responses at pretest was 50.51 ( $SD=.22$ ,  $MIN/MAX=11.00-83.00$ ), at post-test was 97.98 ( $SD=.04$ ,  $MIN/MAX=89.00-100.00$ ), with a mean pretest to post-test difference score of 47.47 ( $SD=.19$ ,  $MIN/MAX=17.00-83.00$ ). The scores' distribution was approximately normal as the skewness and kurtosis were not about three times each respective standard error. Please see Figure 1 for a graph displaying the percentage of correct responses from pretest to post-test by all STD study scales.

### **Bivariate Analysis Findings**

Pearson's  $r$  correlation between the number of pretest correct STD knowledge responses with study participant age, age at sexual debut, and the number of current sexual partners shown in table six indicates that the number of pretest correct STD knowledge responses was not correlated with study participant age,  $r(30)=.22$ ,  $p=.51$ , age at sexual debut,  $r(30)=.21$ ,  $p=.54$ , and the number of current sexual partners,  $r(30)=-.27$ ,  $p=.43$ , at a statistically significant level. Additionally, Pearson's  $r$  correlation between pretest to post-test correct STD knowledge responses changes scores with study participant age, age at sexual debut, and the number of current sexual partners. Data indicated that the pretest to post-test correct STD knowledge responses change scores were not correlated with study participant age,  $r(30)=-.28$ ,  $p=.41$ , age at sexual debut,  $r(30)=-.22$ ,  $p=.52$ , and the number of current sexual partners,  $r(30)=.25$ ,  $p=.45$ , at a statistically significant level (see table 7).

The result of a paired-samples t-test analysis of pretest to post-test changes in the number of items correct by all study scale scores revealed that the mean number of total scale right STD knowledge items changed at a statistically significant level,  $t(10)=-7.27$ ,  $p<.001$ , from pretest ( $M=14.73$ ,  $SD=5.80$ ) to post-test ( $M=26.64$ ,  $SD=.67$ ), with a large effect size (Cohen's  $d=2.88$ ). The bivariate analysis also indicated that the mean number of cause/cure subscale correct STD knowledge items changed at a statistically significant level,  $t(10)=-4.85$ ,  $p<.001$ , from pretest ( $M=4.73$ ,  $SD=2.24$ ) to post-test ( $M=8.00$ ,  $SD=.00$ ), with a large effect size (Cohen's  $d=2.06$ ). Lastly, the analysis indicated that the mean number of general knowledge subscale correct STD knowledge items changed at a statistically significant level,  $t(10)=-8.09$ ,  $p<.001$ , from pretest ( $M=9.09$ ,  $SD=3.91$ ) to post-test ( $M=17.64$ ,  $SD=.67$ ), with a large effect size (Cohen's  $d=3.05$ ) (see table 8).

### Discussion

The AYA group is particularly at risk of contracting an STI; despite the ready availability of various effective primary and secondary prevention strategies, their perception remains hindered by a widespread lack of knowledge among adolescents and young adults (Skaletz-Rorowski et al., 2020). Knowledge of STDs is crucial in decreasing infection rates, reducing the prevalence, fostering early diagnosis, and aiding adherence to treatment (Msengi et al., 2018). Knowledge about STDs/STIs among adolescents and young adults AYA is pertinent to creating effective sexual health policies in clinical practice (Skaletz-Rorowski et al., 2020). The results of this project imply that many participants lacked basic knowledge and cause/cure information concerning common STDs. Comparable results have been reported in previous studies. Msengi et al.'s (2018) study examining STI knowledge relating to signs, symptoms, prevention, and available treatment options shows that many participants lacked a basic understanding of

syphilis, gonorrhea, and chlamydia. However, the study mainly focused on syphilis, and the sample population is primarily adults.

### **Summary of the Key Findings**

This project examined STDs knowledge regarding general understanding, STDs cause/cure, and established if STDs consultation and education improve knowledge and preventive measures for AYAs 18-24 years. The third phase of data analysis, multivariate modeling, was unnecessary because no significant covariate variables were related to pretest to post-test change. This made paired sample t-test final analysis needed for the project. This project's findings showed that most participants (90.9 %) are females of black ethnicity with the highest education of high school degree. These findings suggest that education and race might play a role in STD knowledge. Project data indicated that two participants (18.2%) use condoms for STD prevention, while most (72.7 %) have no current preventive practices. These findings suggest that the efficacy of STD prevention endeavors among AYAs could be enhanced by increasing awareness of to use of condoms and by targeting social norms concerning condom use resistance (Skaletz-Rorowski et al., 2020).

This project's findings show no correlation that AYAs' age, age at sexual debut, and the number of current sexual partners affect STD knowledge and preventive measures. Nonetheless, there is a need for AYA-targeted interventions to improve understanding regarding risk factors associated with early sexual debut and multiple sexual partners. This project also found a drastic increase in the STD cure/cure and general knowledge by more than 97% from pretest to post-test, suggesting that STD consultation and education improved knowledge.

### **Project Limitations and Strengths**

This project had some limitations. First was the inability to contact participants at four-week post-consultation follow-up, which prevented data collection from this project phase; as a result, no data analysis was done. For a future project, It is imperative to consider shorter follow-up time and age population contact preferences to ensure complete and accurate data collection. Secondly, there is a possibility of social desirability bias because participants' responses to questions regarding the age of sexual debut and the number of current sexual partners might have been underreported. On the other hand, questions concerning their STD knowledge on cause/cure and general understanding may have been overreported post-consultation. Also, because participants were asked to evaluate their knowledge regarding STD on a multiple-choice questionnaire post consultation and educational presentation on STD, it might have led to the over-reporting of comprehension. However, self-reports appeared to be the best method to explore STD knowledge levels in this project.

Third, this project was a quality improvement intervention conducted in a small private practice in a metropolitan area in Texas among a small sample of AYA 18-24 years old, the majority females of black ethnicity. The project utilized a non-randomized, non-stratified convenience sample. Therefore, the result of this project might not be generalized to older age populations, other races, and male counterparts. Consequently, further projects are warranted to reach more AYAs from different racial and ethnic backgrounds in more extensive settings like youth camps, schools, and social services organizations for more sustainable outcomes.

Despite the limitations mentioned above, it is noteworthy that this project was associated with several strengths. For instance, this is the first project to assess STDs' cause/cure and general knowledge among AYAs in this project's private practice location based on feedback

from participants, clinical staff, and management staff. This project also ushered policy change to include STD consultation and education among AYAs into standard practice guidelines. This project created a unique chance to investigate more opportunities for future interventions to be implemented in the practice setting. There is a need for future studies to document the impact of STD knowledge on routine and increased screening among AYAs in promoting faster treatment, safeguarding preventative practices, and improving sexual health. Future AYA-based studies can explore the STDs knowledge among those vulnerable populations with low socioeconomic status living below the poverty level. Future projects can also examine the STD knowledge level among AYAs like those victims of sexual trafficking, violence/assaults, and those who engage in risky lifestyles, sexual behaviors, and practices such as prostitution and substance use regarding STD acquisition.

### **Conclusion**

Assessing STD knowledge among AYAs is significant and sustainable in the practice setting because it provides a broad view of the basic understanding of STDs, allowing for individualized and age-targeted healthcare delivery. Providing STD consultation and education to AYAs promote knowledge increase and understanding of diseases' transmission, causes, signs and symptoms, treatment, screening, risk factors, complications, and preventative measures to encourage healthier sexual behaviors and safe sexual practices. Increasing knowledge and awareness of STDs among AYAs will help combat population groups' misconceptions and misinformation about an acquisition, risk factors, and complications. Integrating STD education and counsel into primary care practice will improve AYAs' sexual practices and prompt providers to identify those associated with the risk of STD acquisition. Finally, STD consultation

and counsel will enable providers to educate AYAs regarding evidence-based prevention tactics, safe sexual health behaviors, and appropriate reproductive health choices.



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### Data Analysis Tables and Figure

**Table 1. Sexually Transmitted Disease Knowledge Questionnaire Subscales**

<b>Cause/Cure Subscale Items</b>	<b>General Knowledge Subscale Items</b>
Genital herpes is caused by the same virus as HIV	It is easier to get HIV if a person has another Sexually Transmitted Disease
Frequent urinary infections can cause chlamydia	Human Papillomavirus (HPV) is caused by the same virus that causes HIV
There is a cure for gonorrhea	Having anal sex increases a person's risk of getting Hepatitis
Human Papillomavirus (HPV) can cause Genital Warts	Soon after infection with HIV, a person develops open sores on his or her genitals (penis or vagina).
Human Papillomavirus (HPV) can lead to cancer in women	A woman who has Genital Herpes can pass the infection to her baby during childbirth
There is a vaccine available to prevent a person from getting gonorrhea	A woman can look at her body and tell if she has gonorrhea
There is a vaccine that prevents a person from getting chlamydia	The same virus causes all of the Sexually Transmitted Diseases
There is a vaccine that prevents a person from getting chlamydia	Using a natural skin (lambskin) condom can protect a person from getting HIV
Human Papillomavirus (HPV) can cause HIV	A man must have vaginal sex to get Genital Warts
	Sexually Transmitted Diseases can lead to health problems that are usually more serious for men than women
	A woman can tell that she has chlamydia if she has a bad smelling odor from her vagina
	If a person tests positive for HIV, the test can tell how sick the person will become.
	A woman can tell by the way her body feels if she has a Sexually Transmitted Disease
	A person who has Genital Herpes must have open sores to give the infection to his or her sexual partner
	A man can tell by the way his body feels if he has Hepatitis B
	If a person had gonorrhea in the past, he or she is immune (protected) from getting it again.
	A man can protect himself from getting Genital Warts by washing his genitals after sex
	There is a vaccine that can protect a person from getting Hepatitis B



**Table 2. Descriptive Analysis of Categorical Demographic Characteristics (n=11)**

Variable	N	%
<b><i>Gender</i></b>		
Male	1	9.1
Female	10	90.9
<b><i>Race/Ethnicity</i></b>		
Black	10	90.9
Hispanic	1	9.1
<b><i>Education Level</i></b>		
High School	8	72.7
College Degree	3	27.3
<b><i>Current Preventive Practices</i></b>		
Abstinence	1	9.1
Condom	2	18.2
None	8	72.7

**Table 3. Descriptive Analysis of Continuous Demographic Variables (n=11)**

Variable	M (SD)	Minimum/ Maximum	Skew (SE)	Kurtosis (SE)
Age	22.00 (1.79)	19.00-24.00	-.38 (.66)	-1.23 (1.28)
Age at Sexual Debut	16.55 (1.29)	15.00-19.00	.73 (.66)	-.42 (1.28)
# of Current Sexual Partners	1.45 (.69)	0.00-2.00	-.93 (.66)	.08 (1.28)

**Table 4.**

**Mean *Number of Correct Responses* by Total Scale, Cause/Cure Subscale, and General Knowledge Subscale Scores at Pretest and Posttest (*n*=11)**

<b>Variable</b>	<b>M (SD)</b>	<b>Minimum/ Maximum</b>	<b>Skew (SE)</b>	<b>Kurtosis (SE)</b>
<b>Total Scale Scores</b>				
Pretest Scores	14.73 (5.80)	3.00-24.00	-.44 (.66)	.60 (1.28)
Posttest Scores	26.64 (.67)	25.00-27.00	-1.80 (.66)	2.61 (1.28)
Difference Scores	11.91 (5.43)	3.00-23.00	.42 (.66)	.82 (1.28)
<b>Cause/Cure Subscale Scores</b>				
Pretest Scores	4.73 (2.24)	0.00-8.00	-.69 (.66)	.69 (1.28)
Posttest Scores	8.00 (0.00)	8.00-8.00	NA (NA)	NA (NA)
Difference Scores	3.27 (2.24)	0.00-8.00	.69 (.66)	.69 (1.28)
<b>General Knowledge Subscale</b>				
Pretest Scores	9.09 (3.91)	2.00-15.00	-.22 (.66)	-.40 (1.28)
Posttest Scores	17.64 (.67)	16.00-18.00	-1.80 (.66)	2.61 (1.28)
Difference Scores	8.55 (3.50)	3.00-15.00	.12 (.66)	-.10 (1.28)

**Table 5.**

**Mean Percentage of Correct Responses by Total Scale, Cause/Cure Subscale, and General Knowledge Subscale Scores at Pretest and Posttest ( $n=11$ )**

<b>Variable</b>	<b>M (SD)</b>	<b>Minimum/ Maximum</b>	<b>Skew (SE)</b>	<b>Kurtosis (SE)</b>
<b>Total Scale Scores</b>				
Pretest Scores	54.55 (.21)	11.00-89.00	-.44 (.66)	.60 (1.28)
Posttest Scores	98.65 (.03)	93.00-100.00	-1.80 (.66)	2.61 (1.28)
Difference Scores	44.11 (.20)	11.00-85.00	.42 (.66)	.82 (1.28)
<b>Cause/Cure Subscale Scores</b>				
Pretest Scores	59.09 (.28)	0.00-100.00	-.69 (.66)	.69 (1.28)
Posttest Scores	100.00 (0.00)	100.00-100.00	NA (NA)	NA (NA)
Difference Scores	40.91 (.28)	0.00-100.00	.69 (.66)	.69 (1.28)
<b>General Knowledge Subscale</b>				
Pretest Scores	50.51 (.22)	11.00-83.00	-.22 (.66)	-.40 (1.28)
Posttest Scores	97.98 (.04)	89.00-100.00	-1.80 (.66)	2.61 (1.28)
Difference Scores	47.47 (.19)	17.00-83.00	.12 (.66)	-.10 (1.28)

**Table 6.**

**Pearson's r Correlation Between Number of Pretest Correct STD Knowledge Responses with Age, Age at Sexual Debut, and Number of Current Sexual Partners ( $n=32$ )**

Variable	1	2	3	4
1. Number of Pretest Correct STD Knowledge Responses	--	.22	.21	-.27
2. Age		--	.65*	-.41
3. Age at Sexual Debut			--	-.87**
4. Number of Current Sexual Partners				--

\* $p<.05$ , \*\* $p<.01$ .

**Table 7.**

**Pearson's r Correlation Between Pretest to Posttest Correct STD Knowledge Responses Change Scores with Age, Age at Sexual Debut, and Number of Current Sexual Partners ( $n=32$ )**

Variable	1	2	3	4
1. Pretest to Posttest Correct STD Knowledge Responses Change Scores	--	-.28	-.22	.25
2. Age		--	.65*	-.41
3. Age at Sexual Debut			--	-.87**
4. Number of Current Sexual Partners				--

\* $p<.05$ , \*\* $p<.01$ .

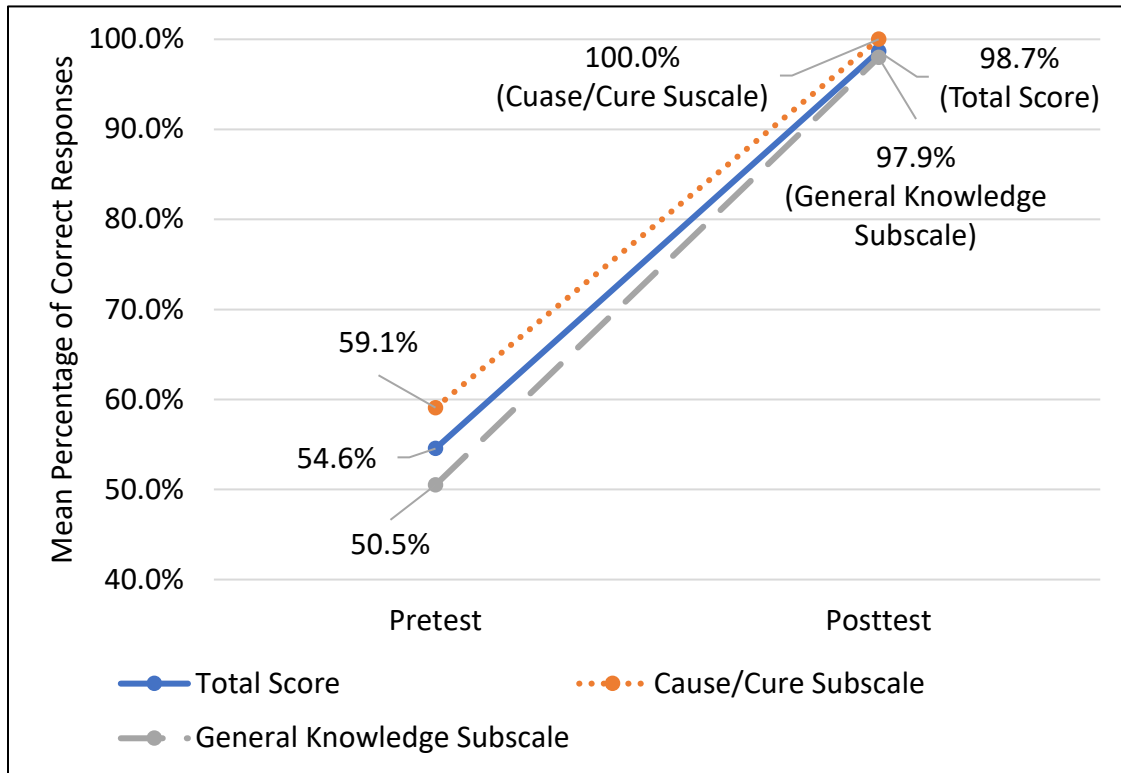
**Table 8.**

**Paired Samples T-Test Analysis of Pretest to Posttest Change in the Number of Items Correct by all Study Scale Scores ( $n=11$ )**

<b>Timepoint</b>	<b>n</b>	<b>M (SD)</b>	<b>t(df)</b>	<b>p</b>	<b>Cohen's <i>d</i></b>
<b><i>Total Subscale</i></b>			<b>-7.27 (10)</b>	<b>.001</b>	<b>-2.88</b>
Pretest	11	14.73 (5.80)			
Posttest	11	26.64 (.67)			
<b><i>Cause/Cure Subscale</i></b>			<b>-4.85 (10)</b>	<b>.001</b>	<b>-2.06</b>
Pretest	11	4.73 (2.24)			
Posttest	11	8.00 (0.00)			
<b><i>General Knowledge Subscale</i></b>			<b>-8.09 (10)</b>	<b>.001</b>	<b>-3.05</b>
Pretest	11	9.09 (3.91)			
Posttest	11	17.64 (.67)			

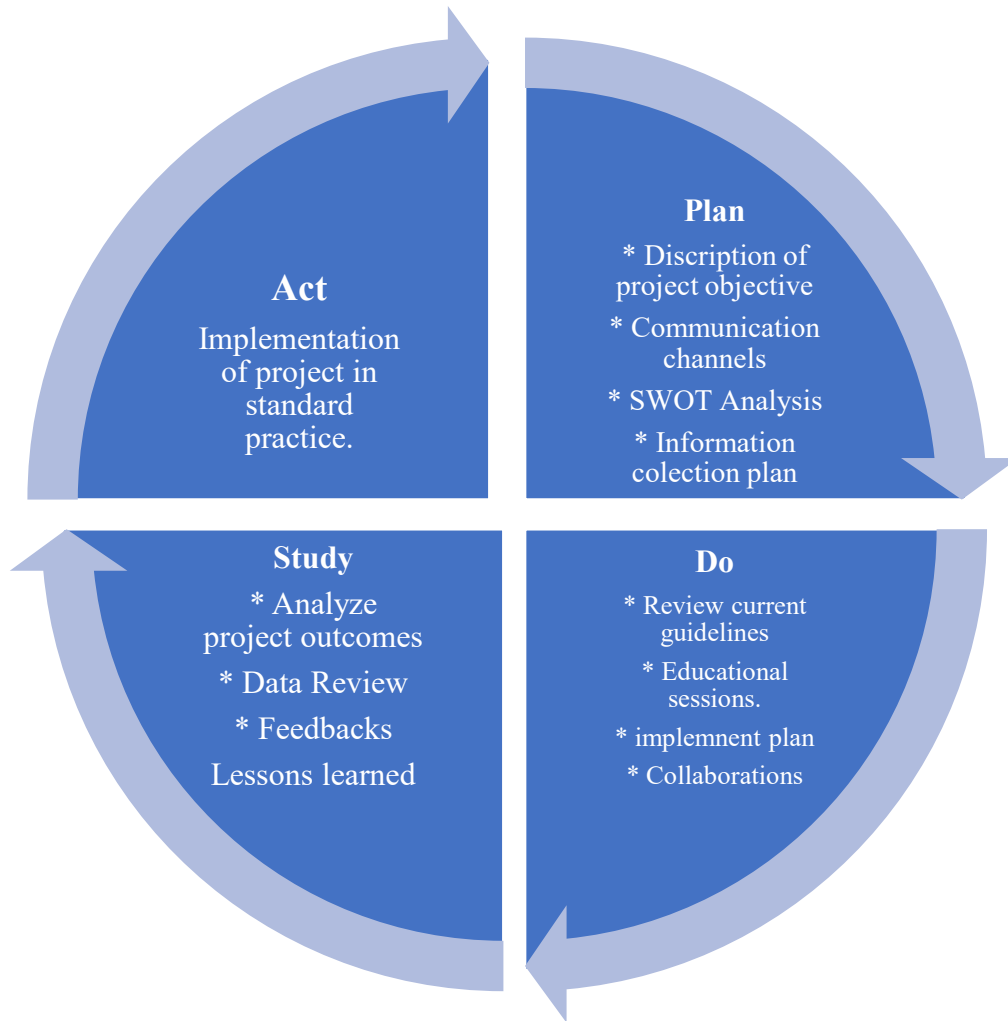
**Figure 1.**

**Percentage of Correct Responses from Pretest to Posttest by the Total STD Knowledge Scores, Cause/Cure Subscale Scores, and General Knowledge Subscale Scores ( $n=11$ )**



**Appendix A**

**PDSA Implementation Tool.**



**Appendix B1****SWOT analysis**

<b>Strengths</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>• Explanation and identification of STDs'causes, signs/symptoms, risk factors, and complications.</li> <li>• Identify factors that impact STD acquisition.</li> <li>• Increase awareness of diseases and preventive measures.</li> <li>• Optimize patient care satisfaction.</li> <li>• Promote providers' STD knowledge and sexual healthcare competency.</li> <li>• Encourage interprofessional communication.</li> </ul>	<ul style="list-style-type: none"> <li>• Time constraints for data collection.</li> <li>• Lack of support from stakeholders.</li> <li>• Project cost and impact on the budget</li> <li>• Lack of providers' commitment to project implementation.</li> <li>• Lack of effective communication channels for assessing project progression and feedback.</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Quality improvement</li> <li>• Patient care outcomes and safety improvement</li> <li>• Ensure AYA increased STD knowledge.</li> <li>• Help Combat misconception and misinformation regarding STDs.</li> <li>• Improve providers' proficiency in offering STD consultation and education.</li> <li>• Improve patients' motivation to learn about STDs</li> <li>• Promote confidentiality and sensitivity of patient healthcare information.</li> <li>• Improvement of patient healthcare coordination and continuity of care.</li> </ul>	<ul style="list-style-type: none"> <li>• Poor staff turnouts to educational sessions</li> <li>• Project participation refusal from the practice staff and patients.</li> <li>• Participants' noncompliance with follow-up.</li> <li>• Unforeseen circumstances: Inclement weather, clinic closure, or illness befalling the project lead.</li> </ul>



## Appendix B2

Risk Management Plan Table

Risk	Probability	Impact	Mitigation of Risk	Contingency Plan
Poor staff turnouts to educational sessions	Likely	Significant	Schedule multiple times for forums and sessions throughout the project's duration. Example: 10 AM, 2 PM, and 4 PM, three times a week (Tuesday, Thursday, and Friday).	Make educational modules online accessible, which will promote flexibility in completing the online learning modules.  Provide refreshments during educational sessions
Project cost	Seldom	Significant	Review the estimated budget for the educational session supplies.	Apply for a project grant.
Lack of support from stakeholders	Occasional	Critical	Collaborate with the practice change facilitators and champions to help raise support from stakeholders.	Set up forums with stakeholders to discuss project implementation benefits, barriers, and concerns.

Patients lost to follow-up, and no post-intervention survey was obtained.	Likely	Critical	Evaluate the new process of scheduling post consultation and counseling review appointments in-person vs. telephone	Utilize education/ counseling pathways within EHR to ensure communication of follow up appointments  Reschedule follow up appointments in real-time when a patient no shows or cancels  Consider an electronic version of the post-survey emailed to the patient securely as a backup.
Lack of effective communication channels	Likely	Significant	Set up electronic communication such as emails and phone correspondents to provide feedback.	Follow-up with providers and practice staff regarding project progress daily or as needed.
Practice setting providers lack awareness of STD consultation and counseling, hindering patient compliance.	Occasional	Moderate	Collaborate with Practice setting providers regarding patient care.  Share current evidence supporting project objectives with practice setting providers.	Obtain providers' information from the clinic manager to inform of project implementation.

Participation limitation or refusal from the patients and providers.	Likely	Significant	Propose an incentive for participation.	Offer an incentive such as \$10 gift cards for participation.  Offer flexible times for consultations to increase participation rates
Unforeseen circumstances (Inclement weather, clinic closure, or illness)	Seldom	Critical	Review the city's weather forecast for possible hazardous weather weekly and plan accordingly.  Review Clinic regular and holiday schedules	Maintain effective communication and contacts with stakeholders in unforeseen circumstances to reschedule project initiation and implementation dates.

**Appendix C**  
**Sexually Transmitted Diseases Consultation and Education**  
**Consent Form**  
**Doctorate of Nursing Practice (DNP) Project**  
**The University of Texas at Arlington**

I, \_\_\_\_\_ hereby agree to participate in Sexually Transmitted Diseases Consultation and Education.

I, \_\_\_\_\_ hereby agree to receive follow-up call, email or text message.

**CONSULTATION/EDUCATION** is a confidential process designed to help you to come to a greater understanding of sexually transmitted diseases (STDs), causes, transmissions, signs/symptoms, and learn effective prevention strategies to decrease STD acquisition. Consultation might involve sharing sensitive, personal, and private information.

**CONFIDENTIALITY:**

**All interactions during the consultation and educational sessions, including appointments, the content of your sessions, and your records, are confidential. All data collection forms and spreadsheets will be shredded at the end of the project.**

**EXCEPTIONS TO CONFIDENTIALITY:**

The clinic staff works as a team. The educator may consult with other clinic staff to provide the best possible continuity of care. These consultations are for professional and training purposes.

**I have read and discussed the above information with the educator. I understand the process and benefits of consultation, the nature, and the limits of confidentiality.**

\_\_\_\_\_  
*Signature of participant*

\_\_\_\_\_  
*Signature of Educator*

\_\_\_\_\_  
*Date*

## Appendix D1

**The Sexually Transmitted Disease Knowledge Questionnaire  
(STD-KQ; Jaworski & Carey, 2007)**

**Instructions:** For each statement below, please circle true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.

	True	False	Don't Know
1. Genital Herpes is caused by the same virus as HIV.	T	F	DK
2. Frequent urinary infections can cause Chlamydia.	T	F	DK
3. There is a cure for Gonorrhea.	T	F	DK
4. It is easier to get HIV if a person has another Sexually Transmitted Disease.	T	F	DK
5. Human Papillomavirus (HPV) is caused by the same virus that causes HIV.	T	F	DK
6. Having anal sex increases a person's risk of getting Hepatitis B.	T	F	DK
7. Soon after infection with HIV a person develops open sores on his or her genitals (penis or vagina).	T	F	DK
8. There is a cure for Chlamydia.	T	F	DK
9. A woman who has Genital Herpes can pass the infection to her baby during childbirth.	T	F	DK
10. A woman can look at her body and tell if she has Gonorrhea.	T	F	DK
11. The same virus causes all of the Sexually Transmitted Diseases.	T	F	DK
12. Human Papillomavirus (HPV) can cause Genital Warts.	T	F	DK
13. Using a natural skin (lambskin) condom can protect a person from getting HIV.	T	F	DK
14. Human Papillomavirus (HPV) can lead to cancer in women.	T	F	DK
15. A man must have vaginal sex to get Genital Warts.	T	F	DK
16. Sexually Transmitted Diseases can lead to health problems that are usually more serious for men than women.	T	F	DK
17. A woman can tell that she has Chlamydia if she has a bad smelling odor from her vagina.	T	F	DK
18. If a person tests positive for HIV the test can tell how sick the person will become.	T	F	DK
19. There is a vaccine available to prevent a person from getting Gonorrhea.	T	F	DK
20. A woman can tell by the way her body feels if she has a Sexually Transmitted Disease.	T	F	DK
21. A person who has Genital Herpes must have open sores to give the infection to his or her sexual partner.	T	F	DK
22. There is a vaccine that prevents a person from getting Chlamydia.	T	F	DK
23. A man can tell by the way his body feels if he has Hepatitis B.	T	F	DK
24. If a person had Gonorrhea in the past he or she is immune (protected) from getting it again.	T	F	DK
25. Human Papillomavirus (HPV) can cause HIV.	T	F	DK
26. A man can protect himself from getting Genital Warts by washing his genitals after sex.	T	F	DK
27. There is a vaccine that can protect a person from getting Hepatitis B.	T	F	DK

**Appendix D2****Scoring for the STD Knowledge Questionnaire:**

Score 1 for each correct response.

False is the correct response for these items:

1, 2, 5, 7, 10, 11, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25,  
26.

True is the correct response for the remaining items:

3, 4, 6, 8, 9, 12, 14, 27.

Total scores range from 0—27.



**Appendix F1**  
**Educational Outline Plan**

**Overview**

Topic: Sexually Transmitted Diseases (STDs) Awareness and Prevention

Setting: Clinic practice setting

Audience: Adolescents and Young adults ages 18-24 years.

**Instructional Objective**

**Cognitive:**

- The learner will state and identify six common types of STDs
- The learner will express and identify common symptoms of STDs
- The learner will identify risk factors for contracting STDs and complications.
- The learner will identify at least three preventive and protective measures to reduce the spread of STDs.

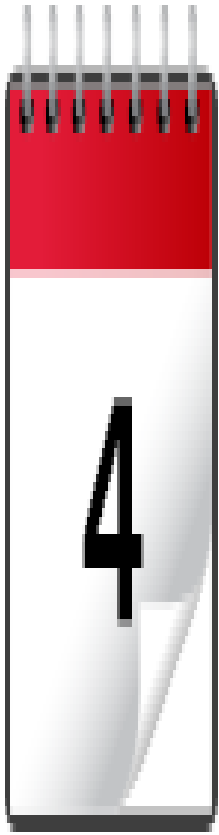
**Affective:**

- During project implementation, the learner will express feelings, concerns, and feedback regarding STD knowledge and prevention measures.

**Psychomotor**

- 
- The learner will demonstrate proper STD knowledge, risk factors, and complications.
- The learner will demonstrate assertiveness, confidence, and proper practices in reducing STD risks complications to promote infection prevention.

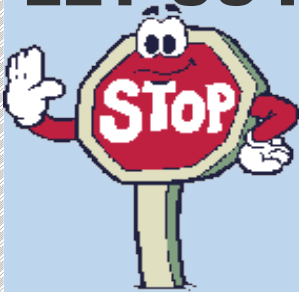




# Explore our Educational Sessions ➔

**WHERE: CONFERENCE ROOM**

**WHEN: TUES, WED & THUR 11 AM, AND 3 PM**  
**LET US PUT A**



**TO STDS**

**THE NEED TO KNOW ABOUT STDS AND PREVENTION.**

# STDS

**WHAT YOU DON'T KNOW  
CAN HURT YOU OR WORSE**

**PowerPoint  
presentation  
& Consultation**

**STDs Awareness**

**STDs preventative  
measures**

**Nourishments will  
be provided**

**PRESENTED BY**


Maryrose Obidiaku, MSN,  
APRN, FNP-C,  
UTA DNP Student.

**Appendix F3**

**PowerPoint Presentation**



# Sexually Transmitted Diseases Knowledge and Prevention



Presented by Maryrose Obidiaku  
APRN, MSN, FNP-C, DNP- Student  
University of Texas at Arlington.



## Introduction

Sexually transmitted diseases (STDs) are infections transmitted through intimate:

- Physical sexual contact
- Sexual activity

**Causes:**

- Bacteria
- viruses
- parasites

There is an increase rate of STDs nationwide.



## Statistics and Prevalence

### In the United States

- The CDC estimates that youth ages 15-24 makeup just over one -quarter of the sexually active populace but account for nearly **half** of the 26 million new sexually transmitted infections in the United States in 2018 (CDC, 2021).

### In state of Texas

In 2019, the state of Texas reported:

- 129,075 cases of chlamydia, with 449.7 rates per 100,000 population.
- 44,230 cases of gonorrhea with 154.1 rates per 100,000 population.
- 12,657 cases of syphilis with rates 44.1 per 100,000 population

(CDC, 2021).

## Race and Ethnicity

- Among Adolescents and young adults (AYAs) aged 20 to 24 years, the rates of STDs were highest among African Americans relative to other racial and ethnic groups.

### Cases:

- Chlamydia= 180,100
- Gonorrhea= 71,115
- Syphilis= 2,517



## Common Types of STDs

- Chlamydia
- Gonorrhea
- Trichomoniasis
- Human immunodeficiency virus (HIV)
- Hepatitis B and C
- Genital Herpes
- Syphilis
- Human papillomavirus (HPV )

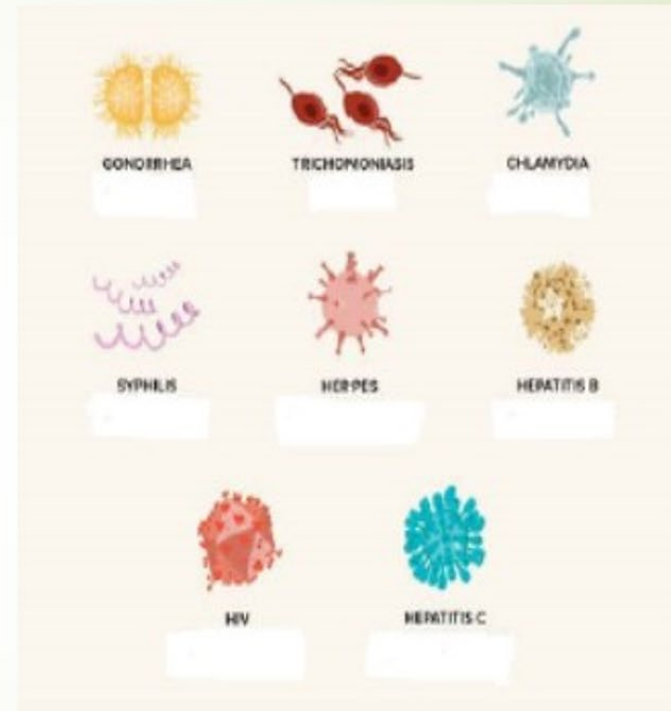
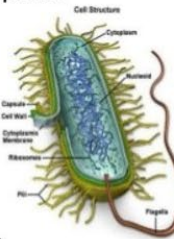


Image from <https://www.healthline.com/health/healthysex/sti-vs-std>

## STI Pathogens

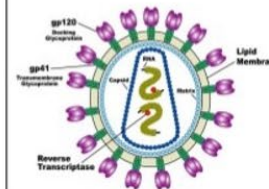
### Pathogen = Bacteria

- Chlamydia
- Gonorrhea
- Bacterial Vaginosis\*
- Syphilis



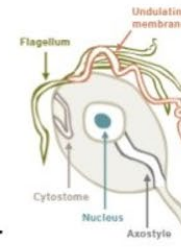
### Pathogen = Virus

- Herpes
- Hepatitis B
- Genital Warts (HPV)
- HIV/AIDS



### Pathogen = Parasite

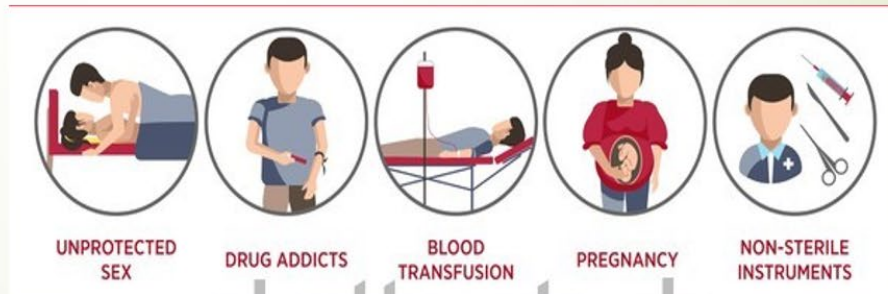
- Pubic Lice
- Scabies
- Trichomoniasis



\*Not classified as an STI

## Modes of Transmission

- **STDs can spread through:**
- Oral, Vaginal or anal intercourse
- Direct contact with sores or break in skin
- Mucous membrane or fluid exchange
- Vertical transmission (Mother to Child):
  - - In Utero
  - - During delivery
  - - Breastmilk
- Needle sharing
- Infected blood or blood products





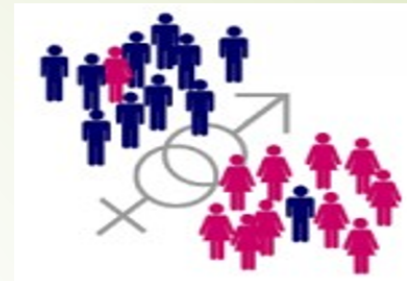
# Signs and Symptoms of STDs

Bumps or sores in or around the genitals, anus, buttocks, or thighs	Changes in the amount of, color, or smell of vaginal discharge	Penile discharge	Unusual vaginal bleeding or spotting between periods or after sex
Painful or burning urination	Pain during vaginal or anal penetration	Pelvic pain	Painful or swollen testicles
Tingling or itching around the genitals	Swollen and painful lymph nodes, especially in the groin and neck	Genital or anal rash	Rectal bleeding



Images from <https://mapolytrends.wordpress.com/2018/07/30/sexuallytransmitteddisease-std-symptoms/>

## STDs Risk Factors



- Lack of STDs Knowledge
- Multiple sexual partners
- Inconsistent, inaccurate, or nonuse of condoms
- Alcohol and substance use
- Early sexual debut
- Sexual violence/assaults
- Intimate partner violence
- Inadequate parental supervision
- Peer victimization
- Incarceration
- Low socioeconomic status
- Poverty
- homelessness

Image from <https://dunedinstudy.otago.ac.nz/newsand-events/2013/having-multiple-sex-partners-linked-to->



## Complications of STDs

Women	Men
<ul style="list-style-type: none"><li>■ Infertility</li><li>■ Cervical cancer</li><li>■ Ectopic pregnancy</li><li>■ Unsafe deliveries</li><li>■ Pelvic inflammatory disease (PID)</li><li>■ Illegal and dangerous abortion</li><li>■ Congenital infection</li><li>■ Unsafe motherhood</li><li>■ Maternal and neonatal morbidity, and mortality</li><li>■ Blindness and pneumonia in neonates</li></ul>	<ul style="list-style-type: none"><li>■ Sterility</li><li>■ Epididymoorchitis</li><li>■ Penile stricture</li></ul>

## Preventive Measures

- Consistent condom use
- Abstinence
- Regular testing
- Avoid casual or anonymous sex
- Avoid substance or alcohol use before or during sex.
- Get Vaccination of HPV and Hepatitis B
- Education and counseling



Sexually transmitted disease knowledge and preventive approaches will promote increase in understanding of:

- STDs' transmission modes
- Diseases' process
- Risk factors
- Complications
- Preventive measures

And encourage healthier sexual behaviors and safe sexual practices especially among AYAs.

The background of the slide features a light gray background with several decorative circular patterns. These patterns are composed of various colored segments (blue, red, yellow, green, orange, pink, purple) arranged in a semi-circular or circular fashion, creating a vibrant, abstract design.

# Conclusion

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**Appendix F4  
PowerPoint Presentation Evaluation Form**

**Presenter:** Maryrose Obidiaku, MSN, APRN, FNP-C

**Date:** \_\_\_\_\_

**Topic:** Sexually Transmitted Diseases Awareness and Prevention.

Please evaluate the presentation based on the following criteria: 1=Poor, 2=Fair, 3=Adequate, 4=Good, 5=Excellent.						Comments
PRESENTER AND PRESENTATION						
1. Materials are presented clearly, concisely, logically, and in sequential form.	1	2	3	4	5	
2. Visual aids matched critical knowledge.	1	2	3	4	5	
3. Delivered confidently and professionally.	1	2	3	4	5	
4. Presenter demonstrated knowledge of the topic	1	2	3	4	5	
5. Stimulated activity and ability to maintain participant's attention and interest.	1	2	3	4	5	
6. The presenter responded effectively to participant's questions and comments	1	2	3	4	5	
7. Overall presentation in general	1	2	3	4	5	
8. Overall knowledge gained from this presentation	1	2	3	4	5	
9. Time for presentation used effectively	1	2	3	4	5	

Appendix G

STD Prevention Pamphlet

### THE LOWDOWN ON HOW TO PREVENT SEXUALLY TRANSMITTED DISEASES

CDC estimates there are **MILLIONS** of new STD infections in the United States each year.

Anyone who is sexually active can get an STD.

Some groups are more affected by STDs and their outcomes

- Adolescents and Young Adults
- Gay, Bisexual, & other Men who have Sex with Men
- Pregnant Women and Infants
- Racial and Ethnic Minorities

### The Good News

STDs **ARE** preventable. There are steps you can take to keep yourself and your partner(s) healthy.

Here's How You Can Avoid Giving or Getting an STD:

### Practice Abstinence

The surest way to avoid STDs is to not have sex.

This means not having vaginal, oral, or anal sex.

### Use Condoms

Using a condom correctly every time you have sex can help you avoid STDs.

Condoms lessen the risk of infection for all STDs. You still can get certain STD infections, like herpes or HPV, from contact with your partner's skin even when using a condom.

Most people say they used a condom the first time they ever had sex, but when asked about the last four weeks, less than a quarter said they used a condom every time.

All boys and girls ages 11 to 12, but the vaccine can start at age 9

Everyone through age 26 years, if not vaccinated already

### Have Fewer Partners

Agree to only have sex with one person who agrees to only have sex with you.

Make sure you both get tested to know for sure that neither of you has an STD. This is one of the most reliable ways to avoid STDs.

### Get Vaccinated

The most common STD can be prevented by a vaccine.

The HPV vaccine is safe, effective, and can help you avoid HPV-related health problems like genital warts and some cancers.

#### Who should get the HPV vaccine?

### Talk With Your Partner

Talk with your sex partner(s) about STDs and staying safe before having sex.

Let's both get tested together!

Why take a chance when we can know for sure?

It might be uncomfortable to start the conversation, but protecting your health is your responsibility.

### Get Tested

Many STDs don't have symptoms, but they can still cause health problems.

- Talk with your health care provider
- Search for CDC recommended tests
- Find a location to get tested for STDs

The only way to know for sure if you have an STD is to get tested.

### If You Test Positive...

Getting an STD is not the end!

Many STDs are curable and all are treatable.

If either you or your partner is infected with an STD that can be cured, both of you need to start treatment immediately to avoid getting re-infected.

View Infographic Online at: [www.cdc.gov/std/prevention/lowdown/](http://www.cdc.gov/std/prevention/lowdown/)

## Appendix H1

### Graduate Nursing Review Committee Approval Letter

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**Doctor of Nursing Practice Program**  
**College of Nursing and Health Innovation**  
**Box 19407**  
**411 S. Nedderman Drive**  
**Arlington, Texas, 76019-0407**

Dear Mary Rose,

The UT Arlington Office of Regulatory Services and the UTA IRB have empowered the Graduate Nursing Review Committee to make preliminary determinations as to whether DNP projects submitted to the GNRC may include aspects of Human Subjects Research under 45 CFR 46.102(d). **For all projects that fit the federal definition of “Research with Human Subjects,” IRB review and approval is required before any research activities begin per [UT Arlington’s policy 5-705](#).**

**The following is the decision by the Graduate Nursing Review Committee regarding your project:**

1. The results will be disseminated, but they are not generalizable knowledge. The results will include use of the most current research to translate the knowledge into practice, thus it is not new generalizable knowledge.
2. This project is an evidence-based/quality improvement project that will translate existing knowledge into the clinical setting. The intention of the project is to implement local, setting-specific improvements to the quality or processes of patient care, not to discover or test new ways to improve processes and patient care with the intention of sharing scientific findings. Therefore, this project is not considered Human Subjects Research and does not require IRB review.
3. This quality improvement project did not satisfy the *definition of research* under 45 CFR 46.102(d). Therefore, it was not subject to the Health and Human Services regulations for the protection of human subjects in research (45 CFR part 46), UT Arlington’s [policy 5-705](#), [Statement of Principles and Policies Regarding Human Subjects in Research](#), or require Institutional Review Board approval.

The Graduate Nursing Review Committee recommends approving this project, *Sexually transmitted diseases consultation and education for adolescents and young adults*.

Donna Hamby GNRC Committee Chair  
 Donna Hamby, DNP, RN, ACNP-BC

August 15, 2021

Committee:

Tamara Eades, DNP, RN

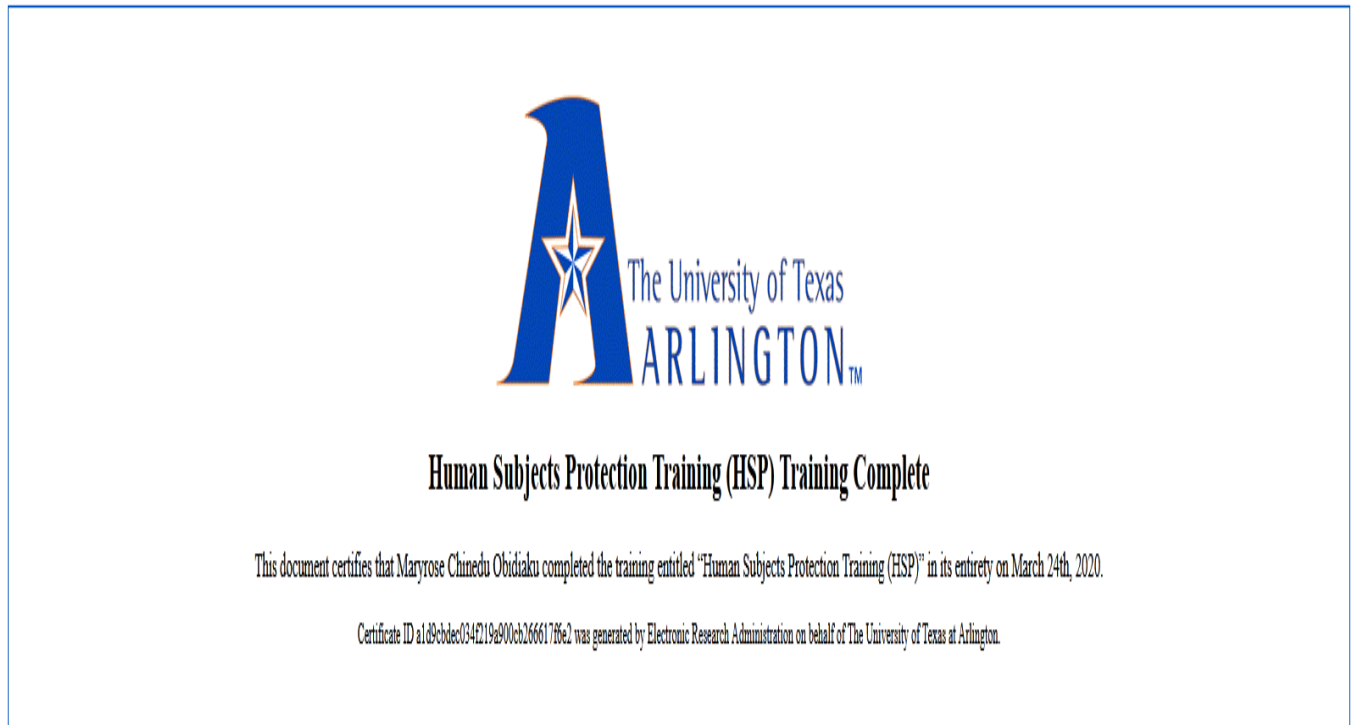
Deborah Lewis, DNP, RN, FNP-BC

Deborah Behan, PhD, RN,  
 Chair of UTA University IRB

Lynda Jarrell, DNP, RN, FNP-BC

**Appendix H2**

**Figure 2. Human Subjects Protection Training Certificate**



**Appendix H3**

**Project Site President/CEO Approval Letter**



*Improving the Lives of the People*

**My Health and Success Consulting, LLC**  
**DBA Healthy House Call Providers**  
**DBA HealthSuccess Clinic**  
Phone: [469-577-4009](tel:469-577-4009)  
Fax: [214-553-7778](tel:214-553-7778)  
Email: [limoh@myhealthandsuccess.com](mailto:limoh@myhealthandsuccess.com)

June 14, 2021

Re: Project Approval

To whom it may concern.

This letter verifies for Maryrose Obidiaku to implement her DNP project proposal, sexual health consultation, and education on sexually transmitted diseases to increase disease knowledge and preventive measures for adolescents and young adults ages 18-24 at HealthSuccess|clinic. This Approval is effective today, June 14, 2021, and remains in effect throughout the project's tenure.

Sincerely,

Dr. Linda N. Imoh, DNP, MBA, MSN, APRN, FNP-BC

President/CEO

