2021

Staff Education Program for Chlamydia and Gonorrhea Self-Collected Vaginal Swabbing

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Abstract

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MS, Lehman College, 2013

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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November 2021

Abstract

Girls and women carry the burden of negative consequences of untreated sexually transmitted diseases (STDs), such as chlamydia and gonorrhea. Screening for chlamydia and gonorrhea by increasing self-collected vaginal swabbing (SCVS) can improve access of care and prevent delayed treatment. Nurses may support their patients if they receive training in how to teach screening for sexual self-healthcare. The purpose of this project was to develop and conduct a staff education program in an urban primary care clinic. The project addressed whether the education program would increase nurses' knowledge of SCVS. The goal is to ultimately increase female patients' access to chlamydia and gonorrhea screening and prevent them from contracting more extreme illnesses. Incorporating Knowles' adult learning theory and Orem's' self -care theory became the foundation for creating an education program that increases nursing staff's knowledge and augments patient self-care engagement. A total of 13 participants volunteered and completed the one hour SCVS staff educational program and completed the pre- and post-assessments. The findings for the pre-assessment (M = 50.0; SD = 19.09) and post-assessment (M = 88.5; SD = 9.49) indicated a learner gain, with the difference in means being 38.5 (SE = 4.9963). The t-test results indicated a significant difference between pre- and post-assessment scores: t = -7.698, df = 12, $p < .001$. In future, integrating SCVS training into nursing practice is essential for increasing patient access to care and providing positive social change in urban communities' sexual healthcare.

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Dedication

I am dedicating my doctoral project to my mother, Carlys Mae Mullings for her lifelong promotion of higher education. As you live daily with dementia your legacy lives on in the completion of my doctoral degree. I love you mom.

Acknowledgments

I would like to thank God for carrying me through this program. During times when I wanted to give up, God lifted me. I want to thank my husband, Barrington Tugman, for his dedication and commitment to our family and my education. My children, Ashley, Chelsea, and Tommoi, were my inspiration to help make the world a better place for them. Special dedication goes to my parents, Donald and Carlys Mullings, who gave up their dreams and aspirations to immigrate to a new country. Their hard work enabled me to strive for a doctoral degree in nursing. Thank you also to my siblings for your encouragement.

Special thanks go to the doctoral academic team at Walden University. Thank you for expanding our knowledge of nursing and our influence in healthcare. I sincerely want to thank Dr. Braswell for her knowledge, expertise, and guidance during this process. Dr. McWhirt, I thank you for planting a seed of hope that this project will make a difference to underserved communities. Dr. Burton, I appreciate you challenging me by broadening my perspective on how the SVCS method can impact all women patients' quality of sexual healthcare.

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Section 1: Nature of the Project

Introduction

Untreated chlamydia and gonorrhea have been a burden on women, especially young women, and adolescent girls (Centers for Disease Control and Prevention [CDC], 2019) for many years now. Recently, there has been an increase in the rate of newly diagnosed cases for chlamydia and gonorrhea, by 4.7% and 18.5% respectively, and the annual cost for diagnosing and treating these patients is over half a billion dollars (Fyle-Thorpe, 2019). According to the CDC (2019), adolescents and young adults are the most likely at risk of contracting these diseases, and 25% of sexually active girls and women between the ages of 15 and 19 have been exposed to a sexually transmitted disease (STD). Over 95% of women who reported chlamydial infection cases are between 15–44 years old (CDC, 2019). In addition, the rate of gonorrheal infection increased by 3.6% from 2017 to 2018. Consequently, sexually active females aged 15–24 years have a higher than average chance of acquiring an STD (CDC, 2019).

Multiple factors cause the transmission of chlamydia and gonorrhea, and even while they are whole preventable infections, the negative consequences of not treating or underdiagnosing them can result in pelvic inflammatory disease (PID), infertility, and recurrent pelvic pain (CDC, 2019; Fyle-Thorpe, 2019). According to the CDC (2019), screening is essential to reducing and monitoring the transmission of chlamydia and gonorrhea. Evidence-based screening techniques can therefore help to optimize sexual healthcare.

For this project, I created a staff education program, of which the main intention was to provide nurses with knowledge about the Self-Collected Vaginal Swabbing (SCVS) process. The program improved testing procedures, and when implemented, it will lead to quicker diagnoses and thus earlier treatment of patients.

In addition, the staff education program reflects Walden University's commitment to social change by enabling nurses to participate meaningfully in female sexual health wellbeing. It is my hope that this program will have a significantly positive impact on the lives of the patient population, the community, nursing practices, and other aspects of healthcare.

Problem Statement

In 2018, the New York State Department of Health (NYSDOH) reported that New York City had the highest diagnosed cases of gonorrhea infections and the second highest diagnosed cases of chlamydia (NYSDOH, 2018). The population in the metropolitan area that had the highest rates was young women, between the ages of 15 to 29 (NYSDOH, 2018). In a particular primary care clinic, the medical director reported unexplored opportunities to engage the nurses in providing sexual healthcare for these potential patients. A licensed practical nurse, with over five years of service employed at the primary care clinic noted that using self-vaginal swabbing for chlamydia and gonorrhea screening teaching had never been implemented. From there, the main issue that I sought to address was primary care nurses' lack of training in how to instruct SCVS patients to perform chlamydia and gonorrhea screening.

Pearson et al. (2018) recently noted the many barriers to diagnosing and treating chlamydia and gonorrhea, including limited access to care, feelings of humiliation associated with positive diagnoses, and lack of medical insurance. The researchers also proposed that due to the high cost of care for chlamydia and gonorrhea infection, it would be beneficial if the healthcare industry were to implement methods that improve patient care delivery.

According to the Morbidity and Mortality Weekly Report (CDC, 2014), the CDC recommended using vaginal swabbing during the collection of chlamydia and gonorrhea specimens for women who do not require vaginal exams. Experts, such as Lunny et al. (2015) and others, proposed vaginal swabbing as an effective method of screening women patients due to its equivocal sensitivity and specificity. Typically, the nucleic acid amplification test (NAAT) platform is the gold standard for diagnosing chlamydia and gonorrhea infection in laboratories, and specimen can be collected cervically and vaginally, or from the urethra or urine (Lunny et al., 2015; CDC, 2014). In comparison studies, researchers such as Lunny et al. (2015) showed that SCVS's sensitivity and specificity results from a NAAT are equally as reliable as those conducted by a healthcare worker. As Hlatshwayo et al. (2019) assert, SCVS is an approved clinical practice of screening women for chlamydia and gonorrhea.

Lunny et al. (2015) noted that despite current data on the effectiveness of SCVS in collecting specimens that test for chlamydia and gonorrhea, healthcare continues to lag in adopting the practice. In part, this hesitance to implement the SCVS process in clinical practice may be due to insufficient education on the subject. In the primary care doctoral

project setting, I observed inconsistencies in self-sampling for collecting urine to test for chlamydia and gonorrhea, and other researchers have similarly noted these inconsistencies in their studies. For example, Mancada et al. (2003) showed how patients incorrectly collected first-void urine, thereby frequently gathering over 30 ml of urine and potentially diluting the sample and increasing the risk of a false negative.

Medical providers in the doctoral project primary care setting indicated to me that they often instructed their patients on SCVS because nurses did not feel confident doing so. Indeed, I discovered in exploratory conversations with some of these nurses that none had received training to teach SCVS. In a July 2019 staff meeting which I attended, the acting nurse manager furthermore disclosed clinical practice gaps in training nurses for SCVS testing for chlamydia and gonorrhea, further corroborating my other observational data. And yet, with some education and training on how to teach SCVS, nurses could become the frontline of educating patients about vaginal swabbing, and thereby make significant contributions to managing societal sexual health.

During COVID-19, the clinic began to limit the number of patients for nonurgent medical visits. In a team meeting, staff members mentioned that the pandemic and the steps taken to manage it would restrict access to STD screening. In May 2020, the medical director told me that she supported the use of SCVS, as it could increase access to STD screening for asymptomatic women in the walk-in clinic. Other nursing leaders, such as the chronic care nurses and nurse practitioners, indicated to me that self-collected vaginal swabbing could reduce waiting time for asymptomatic women.

Addressing the nursing SCVS educational gap therefore played a significant role in chlamydia and gonorrhea screening. The primary care clinic was pivotal in meeting the patients' needs to receive optimal care. The doctoral project encouraged nurses to improve the sexual healthcare of their patients by instructing them on how to self-collect a vaginal swab. Informed by the staff education program that I developed for this project, I instructed nurses on how best to incorporate evidence-based practice into the routine workflow and equipped them to educate patients on methods of SCVS. This staff education program may be implemented in other primary care clinics throughout healthcare organizations. Other nurse managers and nursing educators may likewise teach SCVS screening of chlamydia and gonorrhea to nurses during their annual in-service training.

Purpose Statement

The purpose of this staff educational doctoral project was to address the lack of knowledge among nurses regarding how patients may collect their own vaginal specimens to test for chlamydia and gonorrhea. In researching the primary care setting, I noticed limitations in encouraging patients to collect their own SCVS specimen. I therefore developed and presented a staff education program for this purpose. The program enabled nurses to introduce SCVS as a reliable specimen collection method. As the CDC (2015) has established, SCVS has high sensitivity and specificity (Lunny et al., 2015).

The practice focused question for this doctoral staff education project was "will a staff education program for primary care nurses on the collection of vaginal swabs to

screen for chlamydia and gonorrhea increase their knowledge towards the goal of improving access to testing for women?" In my experiment, collecting SCVS specimen that tested for chlamydia and gonorrhea increased patient outcomes and sexual health management.

In this doctoral project I created a staff educational program. I assessed how a staff education programs may effectively educate nurses in a primary care setting to teach patients how to collect vaginal swabbings that screen for chlamydia and gonorrhea. Increasing staff nurses' knowledge of SCVS may allow them to advocate the same to their patients. Ultimately, this instruction enables nurses to participate in managing asymptomatic patients' sexual health and to help in reducing the spread of sexually transmitted diseases.

Nature of the Doctoral Project

In this doctoral project, I focused on educating nursing staff at a primary care clinic to teach patients to self-collect vaginal specimens. I used empirical data and scholarly sources to provide evidence that patients self-collecting vaginal specimens is a dependable method of obtaining samples to test for chlamydia and gonorrhea. I conducted a literature review to gather and examine the content for the staff education program, and I assembled a team of individuals to evaluate the success of the program.

The doctoral project enabled nurses to inform their patients about the SCVS method. The staff education program's PowerPoint presentation included an outline of the current problem, the risk associated with chlamydia and gonorrhea disease, indications for SCVS, and instruction on SCVS collection. I provided pre- and post-

knowledge-based assessments to evaluate the nurses' understanding of the SCVS method. All participants remained anonymous, and I identified their knowledge-based assessments with four-digit codes.

Significance

Stakeholders such as nurses, other medical providers, and clinic senior administrators were essential to advancing SCVS within this primary care setting. Nurses and medical providers' participation in their patients' sexual healthcare and education can be pivotal in reducing chlamydia and gonorrhea transmission within the clinic and the surrounding community. In turn, the clinic administrators and other senior leaders gained a reliable method of prevention and cure that may increase the quality of care provided at the clinic. When stakeholders invest in the sexual health of a clinic population, they may reduce from urgent care or emergency room settings.

Chlamydia and gonorrhea rates in women have increased from 2017 to 2018 (CDC, 2019). Individuals within underserved communities are at greater risk to pick up those infections, and girls and young women aged 15–24 at greater risk still (CDC, 2019). The ability to reduce the transmission rate of chlamydia and gonorrhea via the SCVS method could potentially impact the targeted population's quality of life.

The CDC's (2019) national strategic plan includes promoting sexual health, reducing transmission of STDs and increasing access to sexual healthcare. In developing this staff education program, I sought to help shape how nurses use sexual health education to strengthen the community's approach to sexual healthcare, improve its delivery, and reduce the local and national cost of STD healthcare. Additionally,

educating women patients on the SCVS method may prove useful for other screening methods within the clinic. SCVS may also contribute to positive social change by increasing the wellbeing of high-risk patients in underserved communities. Finally, SCVS could also create opportunities for patient to increase and promote a healthy sexual lifestyle.

Summary

The impact of untreated chlamydia and gonorrhea can be devastating to the lives of women. Nurses' current lack of knowledge of the SCVS collection method is a barrier to improving sexual healthcare for these women. In this doctoral project, I evaluated the effectiveness of the staff SCVS education program for nurses within a primary care setting. The staff education program educated nurses on how to instruct patients to collect a vaginal swab specimen to test for chlamydia and gonorrhea. The aim of the project was to increase knowledge on the collection of SCVS among the nursing staff. In Section 2, I will discuss the theoretical framework that underpins the study; the project's relevance to the nursing problem; the local background and context of my intervention; and my and the project team's roles.

Section 2: Background and Context

Introduction

The number of newly diagnosed cases of chlamydia and gonorrhea in women is alarming and increasing yearly (CDC, 2019). Female patients in the primary care setting may thus benefit from SCVS chlamydia and gonorrhea screening. The practice problem was primary care nurses not knowing how patients may collect their own vaginal swab specimens to screen for chlamydia and gonorrhea. The purpose of this staff educational doctoral project was to address this clinical practice gap. The practice-focused question for the doctoral staff education project was ""will a staff education program for primary care nurses on the collection of vaginal swabs to screen for chlamydia and gonorrhea increase their knowledge towards the goal of improving access to testing for women?"

In Section 2, I will discuss the theoretical underpinning of the doctoral project. In my review of theories, I will focus on Knowles' adult learning theory and Orem's self-care model due to their relevance to the doctoral project. I will summarize the significance of the doctoral project's nursing practice and the local background context, and I will discuss my and the doctoral project team members' roles in creating and implementing the doctoral project.

Concepts, Models, and Theories

I based this doctoral project on Knowles' adult learning theory (ALT) as the main theoretical underpinning. Knowles provides five assumptions in this theory, all centering on an adult's transition from a childish learning pattern to a mature one (Knowles, 1973). The ALT principles can provide educators with frameworks that implement educational

content, facilitate learning, and assess effectiveness (Loeng, 2018). ALT may expand the learner's understanding of the subject content and the educator's ability to increase knowledge in the content area.

For ALT to be beneficial to both learner and teacher, the approach must align with Knowles' five key assumptions (Knowles, 1973). First, an adult's sense of independence and self-direction should foster an interest in learning (Nguyen et al., 2016). Second, adults' lived experience should bring awareness to their role as learners, thus enabling them to engage in future learning (Loeng, 2016). Third, there should be a sense of engagement that shifts the adult learner's personal development and educational objectives towards learning (Knowles, 1973). Fourth, learning for adults should primarily focus on the knowledge required to perform a specific task (Knowles, 1973). Fifth and finally, the adult learner's desire to learn should be internally driven. (Knowles, 1973; Loeng, 2016). I used these principles to enhance the staff education instruction for adult nurses and their adolescent and adult patients, for as Nguyen et al. (2016) propose, ALT's principles are highly useful in developing content that effectively increases adult knowledge and participation.

Another key concept for this project is Orem's self-care theory, which is based on the patient's needs and the nurse's ability to engage the patient in self-care (Khademian et al., 2020). Self-care is a set of actions taken by patients to achieve a state of wellbeing (Khademian et al., 2020). Orem's self-care theory is a system that depends on the interaction between human beings to meet an established need (Whelan, 1984). According to Whelan (1984), the four goals related to self-care theory are first to fulfill

self-care needs; second, to collaborate to meet the needs; third, to sustain health; and fourth, to manage the treatment and interventions designed to address these self-care needs.

Orem's theory of self-care assumes that the patient can manage their care efficiently by using available resources. Fawcett (2004) points out that factors in one's environment and cultural elements can impact the process of self-care. Self-care is useful only to the extent that the patient is willing to consistently care for themselves (O'Shaughnessy, 2014); however, it is here that nurses may play a crucial role. Nurses who know how may help patients to engage in self-care by seeking healthy living and performing self-care activities (Whelan, 1984).

Using Orem's theory allows me to support my project by creating interventions and new processes for adolescent and adult patients to self-collect vaginal swabs for chlamydia and gonorrhea screenings. Likewise, my project seeks to develop nurses who, because they know these theories, may more pro-actively promote self-care to their patients in many ways. These frameworks work together to increase positive health outcomes.

Relevance to Nursing Practice

Adolescent and young Black and Hispanic women are more at risk than White, non-Hispanics to acquire a sexually transmitted disease (CDC, 2019). Moreover, asymptomatic female patients are at a high risk for developing chronic reproductive problems (Fyle-Thorpe, 2019). Therefore, the nursing discipline must safely optimize the management of the sexual health of these disadvantaged populations, including

empowering them to practice self-care. According to Maria et al. (2017), nurses are essential to providing sexual healthcare to minority female populations. Nurses can impact the screening of chlamydia and gonorrhea in both asymptomatic and symptomatic patients in healthcare settings (Eade & Henning, 2013); however, inadequate training may cause even well-meaning nurses to overlook these opportunities (Eade & Henning, 2013). The lack of in-service training therefore leads nurses to deliver inadequate treatment or sexual health education to their patients (Eade & Henning, 2013). Inversely, nurses can play important roles in fostering sexual healthcare by educating girls and women on SCVS (Eade & Henning, 2013).

In Sadang et al.'s 2019 study, 147 rural nurses reported that they did not receive adequate training from their organization on how to treat sexually transmitted diseases in their patients. Their research suggested that nurses crave training in this field; they often opt to attend sexually transmitted disease educational programs and express that they receive insufficient training if they do not take the initiative on their own. The researchers concluded that training and education for nurses are essential for competent sexual healthcare.

Sadang et al. (2019) also purported that conducting trainings or seminars for nurses on patient sexual healthcare correlated with increased positive attitudes and behaviors in the nurses when it comes to dispensing sexual healthcare to their patients. Educational interventions therefore can significantly impact sexual healthcare quality in healthcare settings. The researchers recommended adequate training for nurses and other healthcare professionals in primary care settings on screening, diagnosing, and treating

sexually transmitted diseases. Price and Reichert (2017) likewise concluded that ongoing professional training ensures competency, optimal healthcare, nursing development, and quality care based on evidence. In these lines, my staff education program project aims to provide nurses with the opportunity to address gaps in SCVS.

Local Background and Context

The doctoral project clinical site was a multidisciplinary medical practice, in a large metropolitan area in the northeast of the United States, that provides services to an underserved population. In 2010, my primary clinic participated in a quality improvement initiative to increase chlamydia and gonorrhea screening for underserved pediatric patients aged 13–19. Participants in this initiative worked with nurses to increase the screening and the collection of their first void specimens.

My interviews revealed that physicians, nurse practitioners, nurse educators, and the medical director of this clinic all noted that the nurses did not assemble the urine collection mechanism according to clinical guidelines. The patients often collected over the recommended 30 milliliters and after cleaning the vaginal area with towelettes. O'Byrne and Orser (2018) asserts that specimen cups with too much urine collected when collecting a urine chlamydia and gonorrhea specimen could lead to the diluting of the sample and false-negative test results. Likewise, the CDC (2015) recommends that the first-catch urine sample be collected without cleaning the labia when performing chlamydia and gonorrhea screening. Contrary to those professional requirements, the primary care clinic's guidelines allowed self-collected vaginal swabbing, endocervical

swabbing, and first void urine collection as methods for collecting specimens for chlamydia and gonorrhea screening.

In my conversations with the nurses, they expressed that they felt comfortable when instructing patients on first-void urine collection but not when teaching them on SCVS. They stated that they had not received formal training for educating patients on that subject, and they agreed that more education would give them that confidence. They also indicated that patients find collecting multiple urine specimens confusing and suggested eliminating the first void urine catch method from their instructions to the patients. The nurses further indicated that substituting the SCVS method would be ideal. They stated it would improve their workflow and reduce the time they had to spend collecting specimens.

The clinic was in a large metropolitan area in the Northeast region of the United States. The clinical site has 26 physicians, 16 medical residents, three nurse practitioners, and 31 nurses. The clinic attends to estimated 320 patients daily and about 80,000 patient visits annually. This densely populated region comprises about 1.4 million people (United States Census Bureau, 2019), most of whom identify as Black and non-White Hispanic. Approximately 13,400 patients seek care at this primary care clinic, 9000 of whom are female; the majority of these women identify as Black and non-White Hispanic. The facility has regulatory agencies that govern their practice on the local, state, and federal levels, including the provincial Department of Health; The Joint Commission, the Occupational Safety and Health Administration; the Center for Medicare and Medicaid Services; and the College of American Pathologists Laboratory

Accreditation Program. These agencies ensure maintenance of high-quality clinical processes.

The primary care clinic's mission focuses on optimizing and improving healthcare in local and surrounding communities by educating patients, nurses, doctors, and medical residents. One of the clinic's goals in 2021 was to increase screening for chlamydia and gonorrhea for patients, and my project to increase nurse education on the subject via SCVS is part of meeting this objective. In addition, the United States' national strategic objective was to promote healthier lives and to prevent sexually transmitted diseases that if untreated may result in secondary disorders or death (CDC, 2019). According to the CDC (2019), Healthy People 2020 aimed to increase care access without bias and to decrease health inequalities.

Role of DNP Student

For this doctoral research project, I created and conducted a staff education program for nurses to educate female patients on self-collecting vaginal swabbing. The Essentials of Doctoral Education for Advanced Nursing Practice program prepared me to engage in opportunities that educate nurses on evidence-based guidelines. As recommended by the American Association of Colleges of Nursing (2006), the principles allowed me to participate in professional nursing research and to operationalize research evidence into nursing practice. My role was to create a staff education program with a project team, establish the learning objectives and to educate the nurses. During the program, I conducted pre-and post-knowledge-based assessments, collected data, and

analyzed the results. I also increased my understanding and awareness of the challenges of accessing and screening women within the primary care clinic setting.

During the COVID-19 pandemic in 2020, the clinic's medical director approached me in my role as a healthcare team member at this clinic, to discuss the need for a staff educational program. The director's intent was to educate nurses in patient screening in the Walk-In Urgent Care, thereby increasing patient access to care and promote health.

Role of the Project Team

The doctoral project team consisted of a nurse manager, the medical director, a chronic care nurse, and me. I proposed the content of the staff education program to these team members via one-to-one meetings, telephone conferences, ZOOM conferences, and in emails. As a group, the team evaluated the projected program based on its stated objectives, proposed content, and potential effectiveness in screening patients for chlamydia and gonorrhea within the primary care setting. I used the recommendations from these evaluation sessions to improve and revise the staff education program.

Summary

In this section, I will discuss Knowle's adult learning theory and Orem's self-care theory, the theoretical underpinnings of my project; my role; and the doctoral project team's role in developing the staff education program. I will rely on research evidence to develop this staff educational program to teach nurses how to instruct women patients on SCVS. Together the project team members will collect evidence from the program, which became our analyzable data. In Section 3, I will present the practice-focused question;

sources of evidence; and the data from the doctoral project. I will also offer analysis and synthesis of this data.

Section 3: Collection and Analysis of Evidence

Introduction

In this doctoral project, I concentrated on educating nurses how to teach self-collecting vaginal swab collection (SCVS) techniques in the primary care setting. I constructed the doctoral problem after noting missed opportunities to increase screening for chlamydia and gonorrhea within the primary care clinic due to nurses' lack of education on SCVS. The purpose of this staff educational doctoral project was to address this clinical practice gap, which is why I centered the practice-focused question on developing a staff education program that trains nurses on how to instruct patients on SCVS.

As I discussed in Section 2, I grounded the staff education program in Knowles' Adult Learning Theory (ALT) and Orem's self-care theory. Knowing ALT helped me to devise ways of engaging adult learners, i.e., the nurses, and to optimize their learning of SCVS. I implemented Orem's self-care theory in the program to enable nurses to themselves become teachers who instruct their patients on how to engage in self-administered vaginal swab screening. Given that nurses play a relevant role in educating patients and promoting healthy sexual behaviors, educating nurses can optimize such practices. With the doctoral team, I facilitated the education of nurses for that objective. In Section 3 I will focus on the practice-focused question; discuss the sources of evidence; and examined and synthesized the relevant literature. I will also outline how I collected the pertinent evidence and the program data to support my doctoral project.

Practice-Focused Question(s)

The clinical site lacked processes necessary to optimize patient screening for chlamydia and gonorrhea. Nurses may use the SCVS method to collect chlamydia and gonorrhea specimens from patients in the clinical setting, but many do not know how. How patients collected the first void urine specimen for screening posed significant concerns due to the inconsistencies in the volume of urine; some collected more than 30 milliliters and others less.

I developed a staff educational program that delivered an hour of training aimed at increasing nurses' knowledge on how to instruct patients on self-collecting vaginal swabbing. The practice-focused question was "will a staff education program for primary care nurses on the collection of vaginal swabs to screen for chlamydia and gonorrhea increase their knowledge towards the goal of improving access to testing for women?"

The staff educational program's purpose was to increase access to chlamydia and gonorrhea screening using the SCVS method. The staff education program created an opportunity to enhance quality sexual healthcare for underserved women most at risk for chlamydia and gonorrhea infection within the community. The SCVS process can enable nurses to be more proactive in the sexual healthcare.

Sources of Evidence

As sources of evidence for this research project, I analyzed scholarly articles; collected staff observations; and reviewed national and local governments' statistical data. I also evaluated the primary care clinic's workflows and policies. Finally, I conducted pre-and post-knowledge-based assessments on teaching SCVS techniques.

The research evidence I read reinforced the importance of SCVS high sensitivity and specificity results. Lunny et al. (2015) investigated six studies in which stakeholders assessed self-collected vaginal chlamydia and gonorrhea samples to find that vaginal, urine/urethra, and urine/cervix self-sampling—when compared to clinician-collected cervical swabs—yielded the highest sensitivity and specificity, 92% [95% CI, 87–95] and 98% [CI, 97–99], respectively. Arias et al. (2015) revealed that 80.9% (140/173) of women surveyed preferred self-collected testing over physician-collected sampling; 96.2% (177/184) reported that personally inserting the swab into the vagina was "easy" or "very easy," and 93.4% (171/183) that turning the swab in the vagina was "easy" or "very easy" (Arias et al., 2015). I used the staff educational program to help to close the knowledge deficit in the SCVS method and promoted using it in screening chlamydia and gonorrhea. I employed the staff education program as an intervention to utilized adult learners invested in increasing their knowledge in their nursing practice.

I engaged the following databases to conduct a literature review: CINAHL; MEDLINE; EMBASE; Google Scholar; ProQuest Nursing; and Allied Health. I applied the search terms *self-vaginal swabbing; self-collected vaginal swabbing; chlamydia and gonorrhea screening; female self-collection;* and *self-swabbing*, to obtain sources from peer-reviewed academic journals from 2015 to 2020. I reviewed the articles for content on building a body of knowledge around self-collected vaginal swabbing for chlamydia and gonorrhea screening.

Participants

Nurses from the primary care clinic volunteered for and took the staff education program. The project team members emailed all nursing staff and posted flyers on the premises asking for volunteers, offering a ten dollar lunch as an incentive. As another incentive, we emphasized in these recruitment materials how nurses would learn to play essential roles in increasing patient healthcare and wellbeing.

Procedures

The doctoral project team consisted of the medical director, a nurse manager, a chronic care nurse, and me. The team members communicated with each other via telephone conference calls in adherence to the coronavirus social distancing guidelines. The members began by reviewing the preliminary staff education program to ensure that it upheld the organization's mission and vision. The administrative director and nursing manager established the date and time to perform the staff education program after I informed them that I had obtained Institutional Review Board (IRB) approval.

I conducted the staff education program with nursing staff members in a large conference room for 1 hour while upholding social distancing policies, and I provided them with knowledge-based assessments before and after the training. The deidentified knowledge-based assessment had eight questions, each with four response options, which I collected and aggregated on a spreadsheet.

Protections

Walden University's IRB members approved the study. I did not include patient participation in my study, and the nursing staff volunteered their time. The nurse

participants received consent forms and did not face ramifications if they chose to withdraw from the study at any time. I anonymized the knowledge-based assessments and aggregated the data to use as evidence. During the project, no unforeseen ethical issues arose that prevented maintaining IRB standards.

Analysis and Synthesis

Using a paired *t* test in SPSS, I analyzed the differences between the scores from the assessment forms that the nurses took before and after completing the education program; first, however, I collected and organized this data onto an Excel spreadsheet. In these knowledge-based assessments, I sought to evaluate the participants' understanding of chlamydial and gonorrheal infections; how these infections are transmitted; and how nurses may instruct patients to perform SCVS. After discarding any incomplete forms, I analyzed the data from before and after they undertook the training, comparing the deidentified scores for differences between knowledge-level. I used the resulting information to address the practice-focused question.

Summary

I began by creating a one-hour staff education program to teach nurses how to train patients to use the SCVS technique; 13 members of the nursing staff volunteered to participate, with the option to withdraw from the program at any point without repercussions. To evaluate the efficacy of the program, I developed pre- and post-knowledge-based assessments, conducted a paired *t* test, and aggregated and analyzed all these data. In Section 4, I will discuss the findings, implications, and recommendations of

the study; highlight the contributions of the doctoral project team; and evaluate the strengths and limitations of the project.

Section 4: Findings and Recommendations

Introduction

In the urban areas of the northeastern region of the United States, women have reported high rates of chlamydia and gonorrhea infections (NYSDOH, 2019). There are different methods of screening for these infections that healthcare workers have not implemented. In a certain primary care clinic, I noted a clinical gap in practice that emerged from nurses' lack of knowledge about SCVS when it came to collecting chlamydial and gonorrheal specimen. In response I implemented a staff education program to educate nurses on how to instruct patients on SCVS collection methods, for which I developed the following DNP practice-focused question: "will a staff education program for primary care nurses on the collection of vaginal swabs to screen for chlamydia and gonorrhea increase their knowledge towards the goal of improving access to testing for women? As stated, the purpose of this education program was to address the lack of knowledge about SCVS amongst the nursing staff in the outpatient primary care clinic.

I gathered my sources of evidence for the DNP project via a comprehensive literature review by searching for articles on CINHAL; Medline; Embase; Google Scholar; ProQuest, and Allied Health. I analyzed and evaluated the 52 articles that emerged in response to the search terms *self-swabbing, female, chlamydia, and gonorrhea*. Based on the data I obtained from the pre- and post-assessment forms, I established that nurses' knowledge increased after taking the one-hour staff education program. I incorporated a paired *t* test to provide inferential statistical data from

comparing the pre and post-assessment results. I used Word Excel and SPSS to collect and analyze the descriptive and inferential data.

Findings and Implications

Findings

There were 15 participants that initially participated in the staff education program, and 13 of them completed the pre- and post-assessments. One participant arrived late to the program, and the other left before it ended. I presented the assessment scores in percentages in Table 1. I set the “acceptable level” of competent knowledge at 75%. Three of thirteen participants met the competent knowledge bar, per the pre-assessment scores; all thirteen of the participants met the competent knowledge bar, per the post-assessment scores. I concluded that the training program was highly effective based on these scores.

Table 1

Self-Collected Vaginal Swabbing Staff Education Scores

Participant #	Pre-Assessment Scores	Post-Assessment Scores
1	62.5	100
2	37.5	87.5
3	50	87.5
4	25	75
5	37.5	75
6	25	87.5
7	75	87.5
8	75	75
9	50	87.5
10	50	100
11	62.5	100
12	25	87.5
13	75	100

I designed the pre-assessment form with multiple modes of 25, 50, and 75 (Table 2), and the post-assessment mode with one mode of 87.5 (Table 1). The participants scored significantly lower in the pre-assessment scores for the mean and median than they did on post-assessment scores (Table 2). This change indicated that there was an increase in knowledge after the staff education program.

Table 2

Descriptive Statistics Pre-Assessment and Post-Assessment

Assessment N=13	Mean	Median	Mode	Std Dev.	S.E
Pre-Assessment	50	50	25,50,75	19.09	5.3
Post-Assessment	88.46	87.5	87.5	9.49	2.63

The standard deviation and the standard error for the participants during the pre-assessments, (19.09, 5.3, $p< 0.05$), was higher than those of the post-assessment scores, (9.49, 2.63, $p<0.05$), (Table 2). This change, and the fact that there was a higher pre-assessment standard deviation when compared to the post-assessment, further supported my conclusion that the participants' knowledge increased after taking the program.

I employed SPSS to analyze the difference between the means of the pre- and post-assessment percentage scores. I applied a Shapiro-Wilk test to determine the normal assumption, as Wang and Lee (2019) recommend for such studies. The W statistics were 0.914 and a *p*-value of 0.207. The *p*-value was greater than the significance level (0.05), which indicated that there was no significant difference from the normal distribution. I perceived that the W statistics confirmed normality, as per Wang and Lee's (2019) recommendation, which allowed me to analyze the *t* test. The difference in the means of the pre-assessment and post-assessment scores was -38.461, with a standard deviation of 18.0144, and a standard error of 4.9963 (Table 3). I found these results to be further confirmation that the staff educational intervention significantly increased the knowledge of the nurses (t = -7.698; df = 12; sig 2 tailed <.001).

Table 3

Difference in Means of Pre-test and Post-test Results

				95% CI				
	Means	Std Deviation	Std Error	Lower	Upper	t	df	Sig 2-tailed
Pre-test Post-test	-38.461	18.0144	4.9963	-49.3475	-27.5755	-7.698	12	<.001

Limitations

The study had unanticipated limitations that may have impacted the results. Because the sample size was small, I am unable to generalize the outcomes; I was also not able to capture more nursing particpiants because of their unavialibility due to illness or shift assignments. I had to discard two particpants scores, for example, because they did not complete the knowledge assessment surveys. I also found that the one-hour training period and complying with the social distancing rules to be a constraint, as it did not allow us sufficient time for multiple role-playing exercises.

Despite these limitations, the staff education program did, however, significantly increase the nurses' knowledge of SCVS. From the experience and the results, I extrapolate the fact that further education programs in sexual healthcare would benefit the nursing profession and the patients impacted. More trainers who take the time to translating evidence from literature to improve and enhance the quality of care and SCVS would benefit all stakeholders. Such programs, and the nurses who take them, participate in helping the community, promoting a high quality of sexual healthcare, and increasing organizational involvement. As I discovered in this particular intervention, primary care stakeholders who offer SVCS training may potentially increase care for the many underserved women unable to seek treatment within their communities due to the lack of transportation, financial resources, and/or social support.

Recommendations

The purpose of this staff education doctoral study was to address a primary care clinic's nurses' lack of knowledge regarding how to instruct patients in SCVS for

chlamydia and gonorrhea screening. Pearson et al. (2018) identify this endemic problem, noting that current practice in many clinics often limits quality and access to care. The data I obtained from implementing this SCVS staff education program suggested that nurses effectively increased their knowledge about chlamydia and gonorrhea infections and how to instruct patients to become pro-active in managing their diagnoses. As Kovar et al. (2019) have noted, increasing nursing knowledge via clinical practices is vital to improving the wellbeing of patients.

I shared recommendations with the medical director, nurse manager, chronic care nurse and administrative director, proposing a formal educational program for this primary care clinic and others within the medical organization from which all staff nurses and medical providers may learn proper SVCS patient-teaching techniques. Kardong-Edgren et al. (2019) have previously observed that administrators who offer staff education within actual work environments may prevent the decay of knowledge and improve nurse retention and patient care. In line with their recommendations, and also with those of Altmiller and Hopkins-Pepe's 2019 study, I propose that to increase the quality of care in sexual health, it is essential to include SCVS instruction as a yearly competency to ensure mastery.

To increase awareness of STD screening and care, I recommended offering continued staff education training by the DNP team. As mentioned previously, nurses lack confidence and knowledge when it comes to providing this SCVS-screening and instruction to patients. A robust program would benefit patients, staff members, the community, and the organization. As Kovar et al. (2019) have previously noted, giving

staff members opportunities to participate in education and training in turn allows them to empower patients to partake in self-care activities and comply with healthy sexual practices. My project collaborates with Kovar et al.'s 2019 proposal that activity in SCVS screening may also enhance nurses' cultural sensitivity where necessary, leading them to assist patients to overcome potential stigma associated with chlamydia, gonorrhea, and other sexually transmitted diseases.

Contribution of the Doctoral Project Team

The doctoral project team was crucial to the development, implementation, and execution of the staff education project. The medical director and administrative director immediately realized the need for another method to screen women for chlamydia and gonorrhea and increase access to care and treatment. I analyzed the notion and incorporated the best options into the doctoral study. Nursing leadership created opportunities to interview and observe staff clinical practices. The team members made themselves available to communicate with emails and in small groups. The team met and discussed available time, space, staff resources, and technological resources accessible to the doctoral student.

The doctoral team shared their recommendations. They suggested conducting a "Plan Do Study Act" quality initiative in the clinic to increase access to and screening of asymptomatic women with SCVS. They also suggested that I should create a PowerPoint presentation to show at the providers' medical meeting and to the nursing director. The team discussed how the staff appreciated participating in the study and requested more education and training on sexual health clinical practices.

Strengths and Limitations of the Project

Strengths

I designed this doctoral project to increase nursing staff's knowledge of SCVS in the primary care clinic. The strength of the project was the willingness of the leadership team and staff members to engage in the doctoral study. Some staff members participated in a study that increased chlamydia and gonorrhea screening in adolescents aged 13–19 years in 2010. The primary care clinic members eagerly embraced learning and engaging in the social and clinical change. The nurses invested in learning a new skill and being able to offer their female patients another method of screening. They recognized that the SVCS method would help their workflow and increase patient access to care. Another strength of this project was that it was inexpensive, and the leadership team made the resources to execute the doctoral project readily available.

Limitations

There were a few limitations to this doctoral project. The sample size was small, meaning that I could not generalize the data. The sample participants were all day-shift nurses who were working on the day of the study, and I was not able to offer the program to other shifts or on other days. I decided not to solicit descriptive data, which is another limitation. Descriptive data from the participants could have offered additional evidence relevant to creating other effective staff education programs.

Recommendations

Overall, the staff education program was successful in increasing the knowledge of the nurses who participated. There are multiple opportunities to use the self-swabbing

technique within the clinic. Self-collecting rectal and throat swabbing for chlamydia and gonorrhea would also benefit both female and male patients in the clinic and community. Using self-collected vaginal swabbing is also a possible intervention to screen for vaginal human papilloma virus. Enabling patients to participate in their own self-care can increase the quality of care and access to sexual healthcare.

Section 5: Dissemination Plan

Introduction

Women are disproportionately affected by chlamydia and gonorrhea, and there are disparities based also on their age, race, region or residence, and socioeconomic status (CDC, 2019). In my project, I knew that preparing, establishing, and implementing a SCVS program in a primary care outpatient clinic would be paramount to screening, assessing, and treating patients with possible chlamydial and gonorrheal infection. The dissemination of this new screening method may help to create other programs that teach and prepare nurses to participate more fully in sexual healthcare and prevention.

I foresee disseminating the SCVS method based on organizational needs to increase screening. Medical providers have been increasing patient awareness of self-screening methods for STD care during their grand rounds. They are excited that the nurses are using education and training to align themselves with their patients by increasing their options for chlamydia and gonorrhea screening.

I would like to present the results of the staff education program to nurses in a staff meeting. It may increase their confidence that the program genuinely augments trainees' knowledge for SCVS screening. The administration recognized the potential of incorporating SCVS training in onboarding and annual competency review. A medical provider meeting, and a small group meeting with the executive leadership team that included the nursing director, the quality director, and the chief medical director, could aid in disseminating the advantages of the SCVS staff educational program to other clinics. Leaders may find that the outcomes emphasize the need to increase screening and

access to care, and they can establish a Plan Do Study Act quality improvement initiative to evaluate the impact of the SCVS method on patient care. I may furthermore publish these findings in professional nursing peered-reviewed journals, thereby disseminating the knowledge further. It is my hope that others may further the SCVS education program to flourish and prompt exploring other sexual health self-collecting swabbing screening methods for all patients in primary care.

Analysis of Self

As I reflected on the past four years of my DNP studies, I was truly grateful to have had the opportunity to increase my knowledge, leadership skills, and clinical practice techniques. As a scholar, I had the opportunity to apply the information I learned during my doctoral studies and to translate them within an organizational structure to design and implement this staff education program. The standards set by the doctoral program prepared me to bring this doctoral study to fruition.

The biggest challenge in implementing the staff education program was the COVID-19 pandemic, which resulted in social distancing changes and a delay in completing the study. My leadership skills improved as I had to collaborate and coordinate with different disciplines to ensure a seamless event. Despite the changes due to the COVID-19 pandemic changes, I was able to plan, prioritize, and execute my goals for the program. The experience has enabled me to advance in my long-term goals of prompting primary care clinics within underserved communities to increase screening for chlamydia and gonorrhea. This scholarly journey has given me keener insight into the bigger picture of how healthcare may positively impact patient care.

Summary

The purpose of the staff education program was to address the lack of knowledge of the nursing staff regarding SCVS with chlamydia and gonorrhea screening. These infections have continued to have long-term effects on female patients particularly, and public health generally (CDC, 2019). The practice-focused question was "will a staff education program for primary care nurses on the collection of vaginal swabs to screen for chlamydia and gonorrhea increase their knowledge towards the goal of improving access to testing for women?

I performed pre- and post-assessments to demonstrate that a staff education program could indeed increase nurses' knowledge of SCVS. I determined that the results yield a positive finding which can impact the screening and access to care for chlamydia and gonorrhea treatment. Through this doctoral project, I, my team members, and the participant nurses succeeded in bringing awareness to other options of screening for chlamydia and gonorrhea, and we increased the knowledge of nursing to improve care for patients.

References

Altmiller, G., Hopkins-Pepe, L (2019). Why Quality and Safety Education for Nurses (QSEN) matters in practice. *Journal of Continuing Education in Nursing, 50*(5), 199–200. https://doi:10.3928/00220124-20190416-04

American Association of Colleges of Nursing. (2006). *The essential of doctoral education for advanced nursing practice*. https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

Arias, M., Jang, D., Gilchrist, J., Luinstra, K., Li, J., Smieja, M., & Chernesky, M. A. (2016). Ease, comfort, and performance of the her-swab vaginal self-sampling device for the detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae.* *Sexually Transmitted Diseases, 43*(2), 125–129. https://doi.org/10.1097/olq.0000000000000406

Centers for Disease Control and Prevention. (2014). Recommendation for the laboratory-based detection of *Chlamydia trachomatis* and *Neisseria gonorrhoeae*. *Morbidity and Mortality Weekly Report, 63,* 1–19. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6302a1.htm

Centers for Disease Control and Prevention. (2015). *Sexually transmitted diseases treatment guidelines, 2015*. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6403a1.htm

Centers for Disease Control and Prevention. (2019). *Sexually transmitted disease surveillance report 2018*. https://www.cdc.gov/std/stats18/STDSurveillance2018-full-report.pdf

Eade, D. M., & Henning, D. (2013). *Chlamydia* screening in young people as an outcome of a headss: Home, education, activities, drug and alcohol use, sexuality, and suicide youth psychosocial assessment tool. *Journal of Clinical Nursing*, *22*(23-24), 3280–3288. https://doi.org/10.1111/jocn.12393

Fawcett, J. (2004). *Contemporary nursing knowledge: Analysis and evaluation of nursing models and theories* (2nd ed.). F.A. Davis Company.

Fyle-Thorpe, O. (2019). *Chlamydia* and *gonorrhea*: An update. *The Journal for Nurse Practitioners*, *15*(6), 424–428. https://doi.org/10.1016/j.nurpra.2018.12.027

Hlatshwayo, M., Reno, H. L., & Yarbrough, M. L. (2019). STI update: Testing, treatment, and emerging threats. *Cleveland Clinic Journal of Medicine*, *86*(11), 733–740. https://doi.org/10.3949/ccjm.86a.18098

Kardong-Edgren, S., Oermann, M. H., & Rizzolo, M. (2019). Emerging theories influencing the teaching of clinical nursing skills. *The Journal of Continuing Education in Nursing*, *50*(6), 257–262. https://doi.org/10.3928/00220124-20190516-05

Khademian, Z., Kazemi, F., & Gholamzadeh, S. (2020). The effects of self-care education based on Orem's nursing theory on quality of life and self-efficacy in patients with hypertension: A quasi-experimental study. *International Journal of Community-Based Nursing and Midwifery*, *8*(2), 140–149. https://doi.org/10.30476/IJCBNM.2020.81690.0

Knowles, M. (1973). *The adult learner: A neglected species* (4th ed.). Gulf Publishing Co. https://files.eric.ed.gov/fulltext/ED084368.pdf

Kovar, C. L., Fazzone, P., & Bynum, S. (2019). Current challenges and opportunities to providing sexually transmitted disease services in STD clinics: A public health leadership perspective. *Public Health Nursing*, *36*(5), 638–644. https://doi.org/10.1111/phn.12645

Loeng, S. (2018). Various ways of understanding the concept of andragogy. *Cogent Education*, *5*(1), 1–15. https://doi.org/10.1080/2331186x.2018.1496643

Lunny, C., Taylor, D., Hoang, L., Wong, T., Gilbert, M., Lester, R., Krajden, M., & Ogilvie, G. (2015). Self-collected versus clinician-collected sampling for *chlamydia* and *gonorrhea* screening: A systemic review and meta-analysis. *PLOS ONE*, *10*(7), e0132776. https://doi.org/10.1371/journal.pone.0132776

Maria, D. S., Guilamo-Ramos, V., Jemmott, L., Derouin, A., & Villarruel, A. (2017). Nurses on the front lines. *AJN: American Journal of Nursing*, *117*(1), 42–51. https://doi.org/10.1097/01.naj.0000511566.12446.45

McKee, M., Alderman, E., York, D. V., Blank, A. E., Briggs, R. D., Hoidal, K. S., Kus, C., Lechuga, C., Mann, M., Meissner, P., Patel, N., & Racine, A. D. (2017). A learning collaborative approach to improve primary care STI screening. *Clinical Pediatrics*, *57*(8), 895–903. https://doi.org/10.1177/0009922817733702

New York State Department of Health. (2018). *Sexually transmitted infection surveillance report; New York State*. https://www.health.ny.gov/statistics/diseases/communicable/std/docs/sti_surveillance_report_2018.pdf

Nguyen, M., Miranda, J., Lapum, J., & Donald, F. (2016). Arts-based learning: A new approach to nursing education using andragogy. *Journal of Nursing Education, 55*(7), 407–410. https://doi.org/10.3928/01484834-20160615-10

O'Byrne, P., & Orser, L. (2018). Overfilled urine specimens for gonorrhea and chlamydia testing: Implications for practice. *Applied Nursing Research*, *39*, 121–124. https://doi.org/10.1016/j.apnr.2017.11.014

O'Shaughnessy, M. (2014). Application of Dorothea Orem's theory of self-care to the elderly patient on peritoneal dialysis. *Nephrology Nursing Journal*, *41*(5), 495–497. https://doi.org/https://web-b-ebscohost-com.ezp.waldenulibrary.org/ehost/pdfviewer/pdfviewer?vid=8&sid=fea4e236-441f-4281-9326-2a0f3d701090%40sessionmgr101

Pearson, W. S., Kreisel, K., Peterman, T. A., Zlotorzynska, M., Dittus, P. J., Habel, M. A., & Papp, J. R. (2018). Improving STD service delivery: Would American patients and providers use self-tests for *gonorrhea* and *chlamydia*? *Preventive Medicine*, *115*, 26–30. https://doi.org/10.1016/j.ypmed.2018.08.007

Price, S., & Reichert, C. (2017). The importance of continuing professional development to career satisfaction and patient care: Meeting the needs of novice to mid- to late-career nurses throughout their career span. *Administrative Sciences*, *7*(2), 1–13. https://doi.org/10.3390/admsci7020017

Sadang, J. M., Mala, N. D., Othman, P. C., Feliciano, E. E., Gonzales, F. M., & Tachavijitjaru, C. (2019). Nurses' preparedness in responding to patients with suspected sexually transmitted infections in the rural health unit. *International*

Journal of Advanced and Applied Sciences, *6*(9), 31–37. https://doi.org/10.21833/ijaas.2019.09.005

Tenover, F. C., Jo Baron, E., Gaydos, C. A., & Sunnydale, C. (2017). Self-collected specimens for infectious disease testing. *Clinical Microbiology Newsletter*, *39*(7), 51–56. https://doi.org/10.1016/j.clinmicnews.2017.03.004

United States Census Bureau. (2019). *Quick facts: Bronx county*. https://www.census.gov/quickfacts/bronxcountybronxboroughnewyork

Wang, C.-C., & Lee, W.-C. (2019). Evaluation of the normality assumption in meta-analyses. *American Journal of Epidemiology*, *189*(3), 235–242. https://doi.org/10.1093/aje/kwz261

Whelan, E. (1984). Analysis and application of Dorothea Orem's self-care practice model. *Journal of Nursing Education*, *23*(8), 342–345. https://doi.org/10.3928/0148-4834-19841001-07

Appendix A: Knowledge Assessment Questionnaires

Pre-Knowledge Assessment for Staff Education Program

4-Digit Identifier:_____

Date:

1- What is the most common sign associated with vaginal chlamydia disease?

a. Yellow-colored discharge
b. Abdominal pain
c. Foul odor
d. Asymptomatic

2- The site most common for chlamydia is _____.

a. Uterus
b. Labia minor
c. Cervix
d. Fallopian tube

3- What are major risk factors of gonorrheal infection in women?

a. New and multiple partners
b. Urban area with high rates of gonorrhea
c. Drug/alcohol
d. All of the above

4- What is the gold standard test for diagnosing chlamydia and gonorrhea?

a. NAAT
b. PCR
c. A & b
d. None of the above

5- When collecting the vaginal secretion, the nurse should insert the swab ___ inches into the vaginal vault.

a. 1
b. 2
c. 5
d. 7

6- When instructing the patient, the nurses should inform her to rotate the collection swab on the vaginal wall for how many seconds?

a. 15 seconds
b. 20 seconds
c. 30 seconds
d. 60 seconds

7- When positioning oneself to collect the specimen, I should hold the swab in one hand and with the other hand separate the folds around the urethra.

a. True
b. False

8- Which statement indicates that the patient needs more teaching?

a. When I remove the collection swab, I can touch the swab with my hands
b. I should gently turn the swab in the vagina
c. I should tightly close the collection tube and return it to the nurse or provider
d. None of the above

Post-Knowledge Assessment for Staff Education Program

4-Digit Identifier:_____

Date:

1. What is the most common sign associated with vaginal chlamydia disease?
    a. Yellow-colored discharge
    b. Abdominal pain
    c. Foul odor
    d. Asymptomatic

2. The site most common for chlamydia is _____.
    a. Uterus
    b. Labia minor
    c. Cervix
    d. Fallopian tube

3. What are major risk factors of gonorrheal infection in women?
    a. New and multiple partners
    b. Urban area with high rates of gonorrhea
    c. Drug/alcohol
    d. All of the above

4. What is the gold standard test for diagnosing chlamydia and gonorrhea?
    a. NAAT
    b. PCR
    c. A & b
    d. None of the above

5. When collecting the vaginal secretion, the nurse should insert the swab___ inches into the vaginal vault.
    a. 1
    b. 2
    c. 5
    d. 7

6. When instructing the patient, the nurses should inform her to rotate the collection swab on the vaginal wall for how many seconds?
    a. 15 seconds
    b. 20 seconds
    c. 30 seconds
    d. 60 seconds

7. When positioning oneself to collect the specimen, I should hold the swab in one hand and with the other hand separate the folds around the urethra.
    a. True
    b. False

8. Which statement indicates that the patient needs more teaching?
    a. When I remove the collection swab, I can touch the swab with my hands
    b. I should gently turn the swab in the vagina
    c. I should tightly close the collection tube and return it to the nurse or provider
    d. None of the above