



Sexually Transmitted Infections and Vaginitis Screening in Urgent Care

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Introduction

- ▶ 20 million new cases of sexually transmitted infections (STIs) each year, and half are among individuals aged 15 to 24 years (CDC, 2016)
- ▶ Nationwide, the prevalence of STIs is 110 million cases
- ▶ Direct cost of treatment approaching 16 billion dollars per year (CDC, 2016)
- ▶ STIs have disproportionately adverse sequelae for women, if untreated
 - Gonorrhea and chlamydia infections often remain asymptomatic
- ▶ If left untreated these STIs may cause pelvic inflammatory disease, infertility, ectopic pregnancy, and chronic pelvic pain (CDC, 2016)

Problem Statement

Indigo Urgent Care

Wide variation in practice for addressing STI screening and vaginitis complaints from infectious organisms

- Clinician-Collected Swabs
- Self-Collected Vaginal Swabs
- Urine Only Samples
- History Alone

Reasons:

- Several Diagnostic Options
- Time Constraints
- Knowledge Deficiency

Scope

- Problem extends beyond Indigo Urgent Care and includes other urgent care platforms in the department
- Pickett et al. (2017) conducted a national survey of physicians, nurse practitioners, and physician assistants (PA), exposing a similar variance in practice.

Consequences

- Incorrect diagnoses
- Delayed treatment leading to complications
- Continually rising STI rates
- Overall poorer patient outcomes

(CDC, 2016)

Purpose/Aim/Objectives

Purpose

- To use web-based education to standardize STI and vaginitis screening/diagnostic methods, in adolescent and adult women presenting to the urgent care setting

Aim

- To change urgent care clinicians' current beliefs and practices, for vaginitis and STI screening methods, to reflect current evidence-based practice (EBP), with emphasis on self-collected vaginal swabs (SCVS)

Objectives

1. To identify current beliefs, practices, and knowledge gaps about STI and vaginitis screening/diagnostic methods.
2. To educate urgent care providers via evidence-based e-learning on best practices for STI and vaginitis screening/diagnostic methods.
3. To monitor provider practice change to EBP

Background

- ▶ 74% of notifiable diseases in Washington state were STIs (2015)
- ▶ Chlamydia rates have sharply increased since 2007 in Washington state
- ▶ Gonorrhea has also been on the rise in Washington state
- ▶ One of the most affected groups was 20 to 24 years old females
- ▶ 24,000 women experience infertility each year due to untreated STIs
- ▶ Use of specialized STI clinics for screening has decreased
- ▶ Patient Preference versus Clinician Practice
 - Adolescent females prefer less invasive methods
 - Clinicians' practice does not align with patient preference
- ▶ At Indigo Urgent Care...
 - Approximately 24% of the patients are in the 15 to 24 years' age range
 - Frequency of STI and vaginitis complaints is approximately 14 percent

Synthesis of Literature

- ▶ Search Strategy
 - ❑ Two Searches Conducted
 - Self-Collected Vaginal Swabs (SCVS)
 - E-learning
 - ❑ Databases
 - CINAHL, EBSCOhost, Google Scholar, Ovid, and PubMed
 - ❑ Key Words
 - *self-collected vaginal swabs, self-obtained vaginal swabs, and self-sampling*
 - *e-learning, web-based training, education of nurses, education of physicians, education of physician assistants, and clinician education*

Literature Synthesis

Description of SCVS Studies

- ▶ 9 peer-reviewed articles
 - 3 cross-sectional studies
 - 4 observational studies
 - 1 systematic review of observational studies
 - 1 mixed methods (observational and descriptive) study

Description of E-learning Studies

- ▶ 5 peer-reviewed articles
 - 2 randomized control trials (RCT)
 - 1 nonrandomized control trial (NRCT)
 - 1 observational pilot study
 - 1 systematic review of RCTs

SCVS Literature Results

- ❑ Widely accepted among young and older women
(Fielder et al., 2013; Holland-Hall et al., 2002; Paudyal et al., 2015; Schick et al., 2015; Singh et al., 2012)
- ❑ Easy to perform (Fielder et al., 2013; Paudyal et al., 2015)
- ❑ Less pain and more comfortable than a speculum exam performed by a clinician
(Singh et al., 2012)
- ❑ Preferred over urine and clinician-collected samples by most women
(Fielder et al., 2013; Holland-Hall et al., 2002; Paudyal et al., 2015; Singh et al., 2012)
- ❑ Female participants would increase STI testing frequency if offered SCVS
(Fielder et al., 2013)
- ❑ Holland-Hall et al. (2002): 14% of participants who needed pelvic examinations refused, yet 28% of those participants were found to have STIs after performing SCVS

SCVS Literature Results

- ❑ Just as effective as clinician-collected samples for diagnosing chlamydia, gonorrhea, and trichomonas (Holland-Hall et al., 2002)
- ❑ Greater number of diagnoses using SCVS over urine or clinician-collected samples for chlamydia, gonorrhea, and trichomonas testing (Shafer et al., 2003)
- ❑ Higher rates of recurrent VVC diagnosis using SCVS as opposed to an clinician performed vaginal culture (Vergers-Spooren et al., 2013)
- ❑ Healthcare professionals are aware of patients' preferences for less invasive STI screening methods but still select more invasive methods (Pickett et al., 2017)
 - Believed not recommended and lacked trust in the patients' abilities to perform accurate self-testing (Pickett et al., 2017)

Opposition...

- ❑ Singh et al. (2012): history plus SCVS alone lacks accuracy in correctly diagnosing BV and VVC in symptomatic women
 - However, eliminating speculum examination would not cause a significant amount of missed diagnoses

SCVS Literature

Strengths

- Vast number of systematic reviews and meta-analyses
- Studies with varying focus ranging from 1997 to the present
- Systematic review using STROBE/PRISMA guidelines and pooled data
- Triangulated data
- Inclusion of studies evaluating various high-risk populations

Weaknesses

- Poor descriptive statistics of study participants
- Discussion of validity and reliability varied among the studies
- Issues of bias existed in some of the studies

Limitations and Knowledge Gaps

- Most studies only included adolescents and young adults under 24 years of age
- Knowledge gap in the necessity of pelvic exam in symptomatic women
- Unable to determine practice differences for STI screening between the diverse health disciplines

E-Learning Literature

Results

- ❑ Healthcare professionals' knowledge and confidence in performing various skills improved (Liaw et al., 2015; Hersey & McAleer, 2017; Lee et al., 2012)
- ❑ Viewed as useful and satisfactory method of learning by healthcare professionals (Hersey & McAleer, 2017; Liaw et al., 2015)
- ❑ Observed improvement in healthcare provider skills (Lee et al., 2012)
- ❑ E-learning was just as effective as traditional (face to face) learning methods and superior to no education (Sinclair et al., 2016)
- ❑ Opposition...
 - E-learning has not shown proven effectiveness on overall patient outcomes (Schopf & Flytkjaer., 2012; Sinclair et al., 2016)

E-learning Literature

Strengths

- Several individual studies dated from the early 2000s to present
- Systematic reviews and meta-analyses are available
- Many RCT available

Weaknesses

- Few studies with mixed disciplines or postgraduate licensed healthcare providers only samples
- Smaller sample sizes
- Most studies did not discuss reliability or validity
- Only one study discussed basing the intervention on learning theories

Limitations and Knowledge Gaps

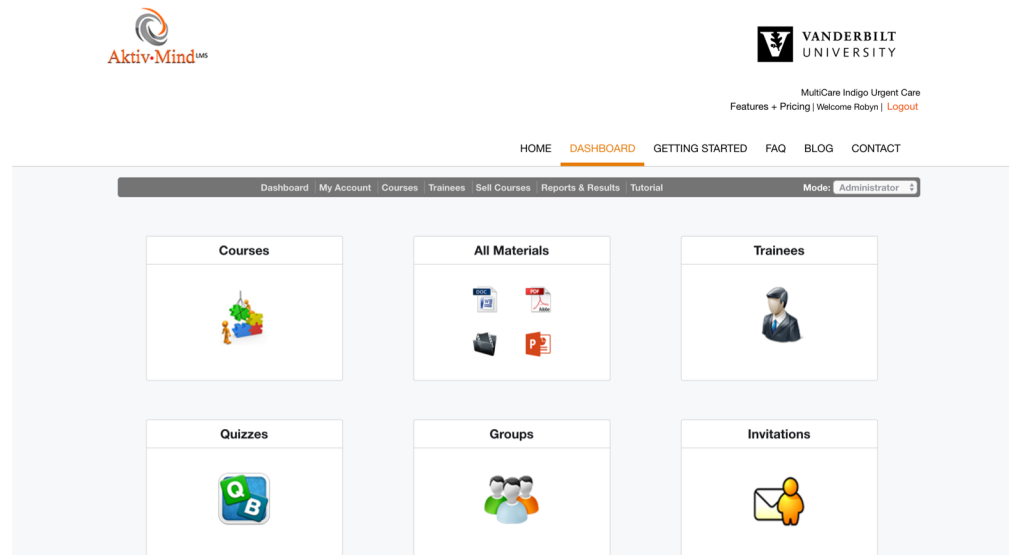
- Effects of e-learning on HCP behavior change and patient outcomes needs further evaluation
- Studies did not assess the long-term effects or degree of retaining knowledge/skill
- Each study used different techniques to implement e-learning
- Most of the studies included students or novice practitioners

Project Design

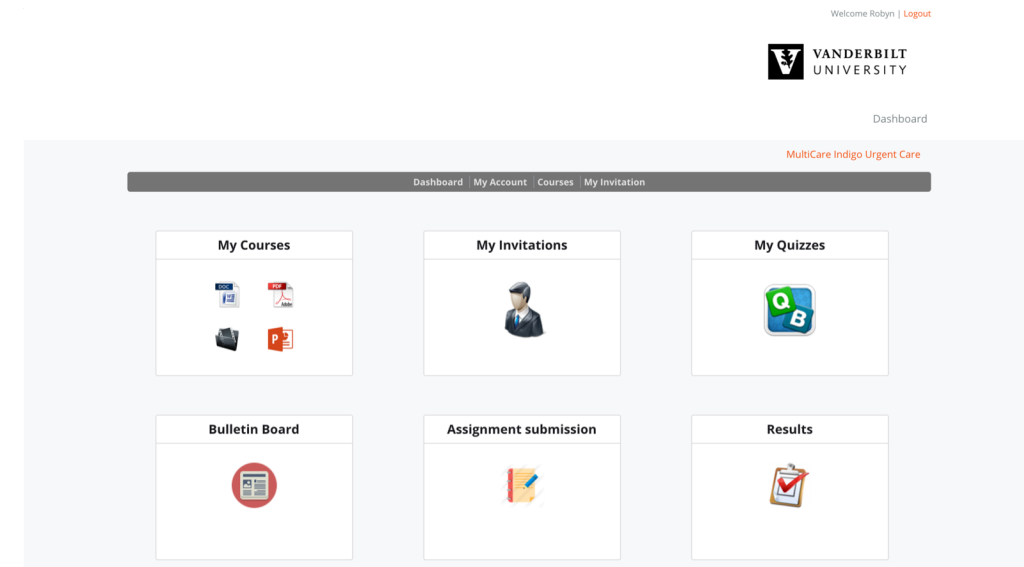
- ▶ E-learning module created in the AktivMind Learning Management System (LMS)
- ▶ All eligible Indigo Providers invited to participate
- ▶ Topics:
 - STIs
 - Gonorrhea, Chlamydia
 - Vaginitis
 - Bacterial Vaginosis (BV), Vulvovaginal Candidiasis (VVC), and trichomonas
 - Screening Methods with an emphasis on SCVS
- ▶ Purpose: to evaluate for increased knowledge and intended use of SCVS for STI and vaginitis screening
- ▶ Evaluation
 - Pre-test and Post-Test
- ▶ Project leader implemented intervention
- ▶ Time Frame
 - Less than 30 minutes to complete Module
 - Clinicians given 2 weeks to finish training

E-Learning Module

Course Administrator



Trainee



Data Collection Tools

Pre-Test

- ▶ 10 Test questions
 - Screening methods
 - STIs
 - Vaginitis
- ▶ Demographic Questions
 - Sex, Professional Training, Years of Practice, Education Level
- ▶ Current use of SCVS
 - Asymptomatic
 - Symptomatic

Post-Test

- ▶ Same 10 questions as pre-test
- ▶ Intent to increase use of SCVS
 - Asymptomatic Patients
 - Symptomatic Patients

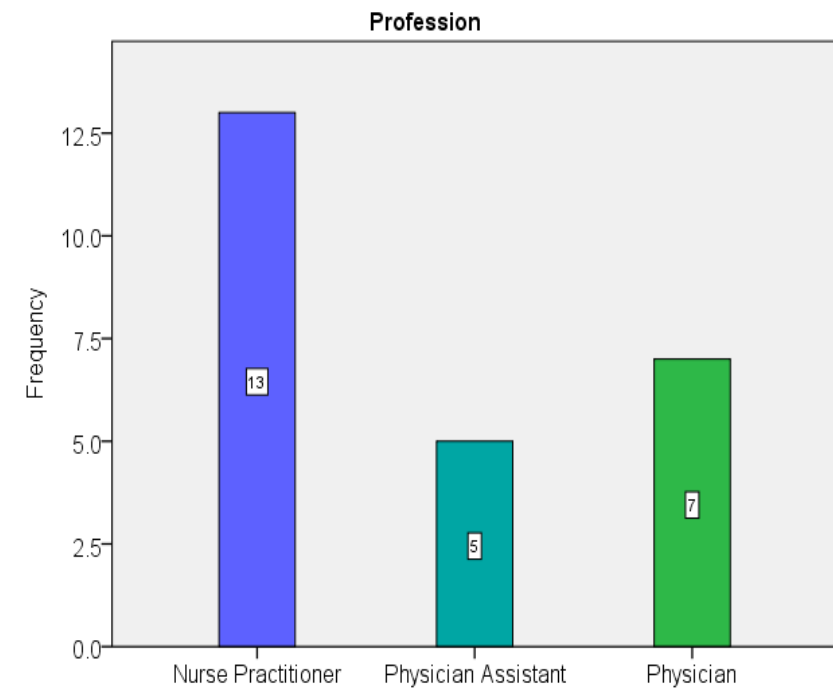
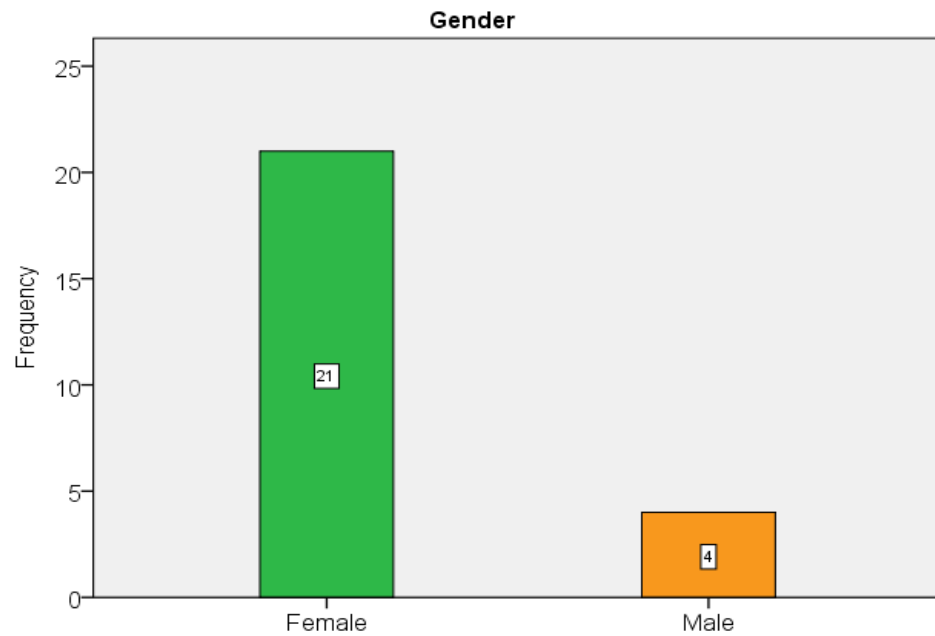
Data Analysis

- ▶ Participant information De-identified
 - (i.e. PR01, PR02, PR03)
- ▶ Statistical analysis
 - IBM Statistical Package Social Science software
- ▶ Data collection
 - AktivMind LMS Student Dashboard
- ▶ Descriptive Statistics
 - Percentages
- ▶ Knowledge Acquisition
 - Paired Sample T-test
- ▶ Intent to change practice
 - McNemar Test

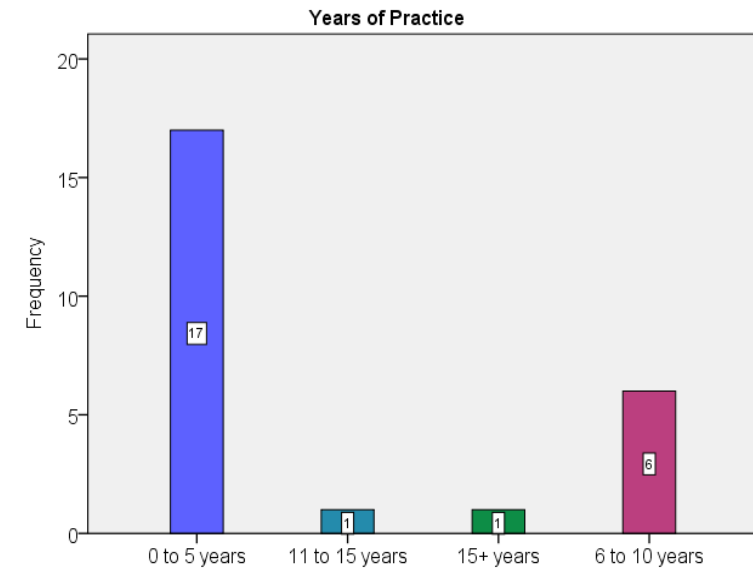
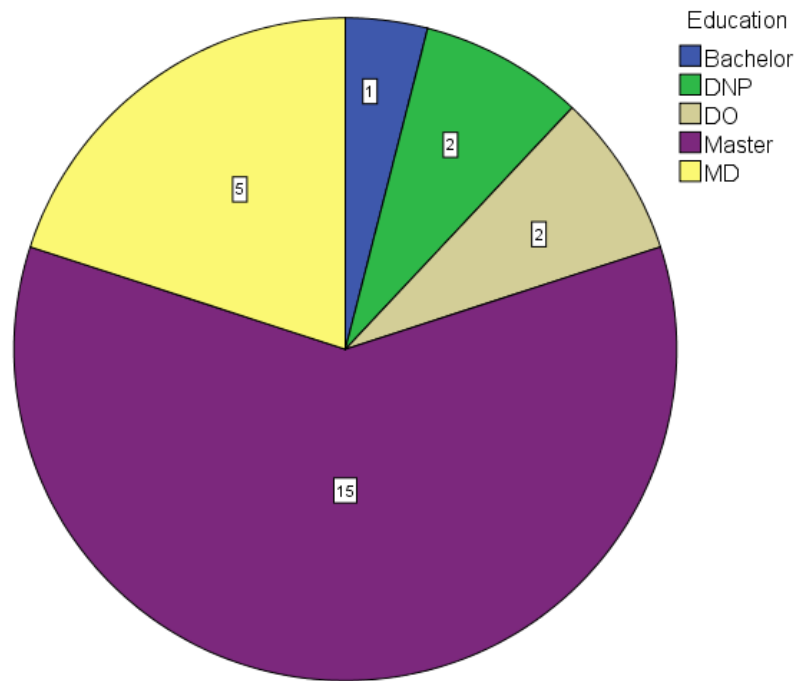
Participant Demographics

- ▶ 25 Participants
- ▶ ARNPs, PAs, and Physicians
- ▶ Males and Females
- ▶ Bachelor's Degree or Higher

Participants



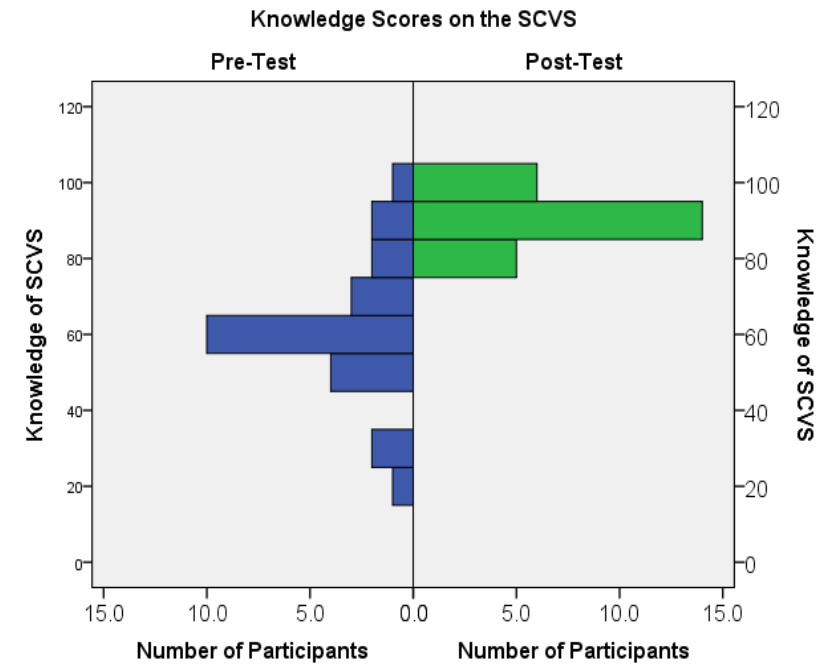
Participants



Results

Knowledge Acquisition

- ▶ Paired Sample T-test
 - Pre-test ($M = 61.20$, $SD = 18.556$)
 - Post-test ($M = 90.40$, $SD = 6.758$), $t(24) = -8.559$, $p < 0.001$
- ▶ Statistically Significant
 - Mean difference increase of 29.2%



Results

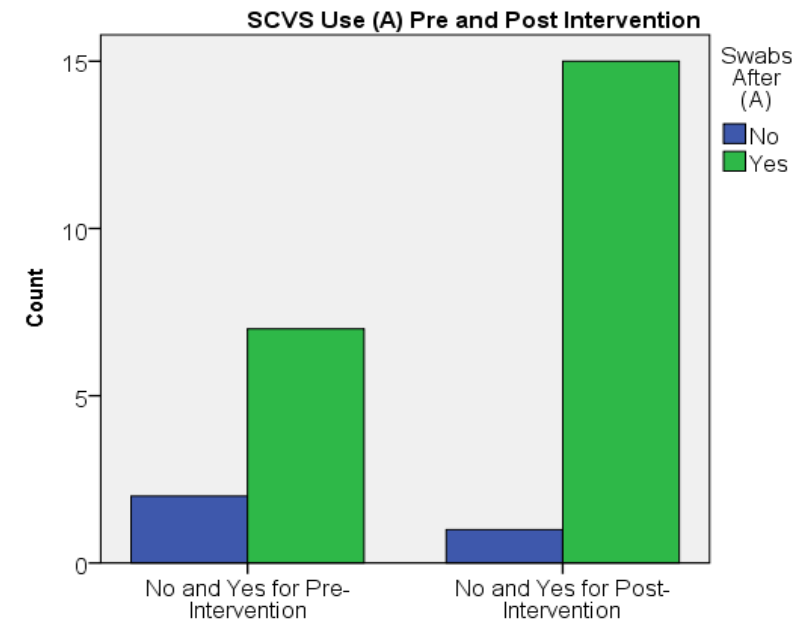
SCVS Asymptomatic Use

► McNemar Test

- Pre-Intervention (Yes or No)
- Post-Intervention (Yes or No)
- $\chi^2(1) = 4.500, p = 0.034$

► Statistically Significant

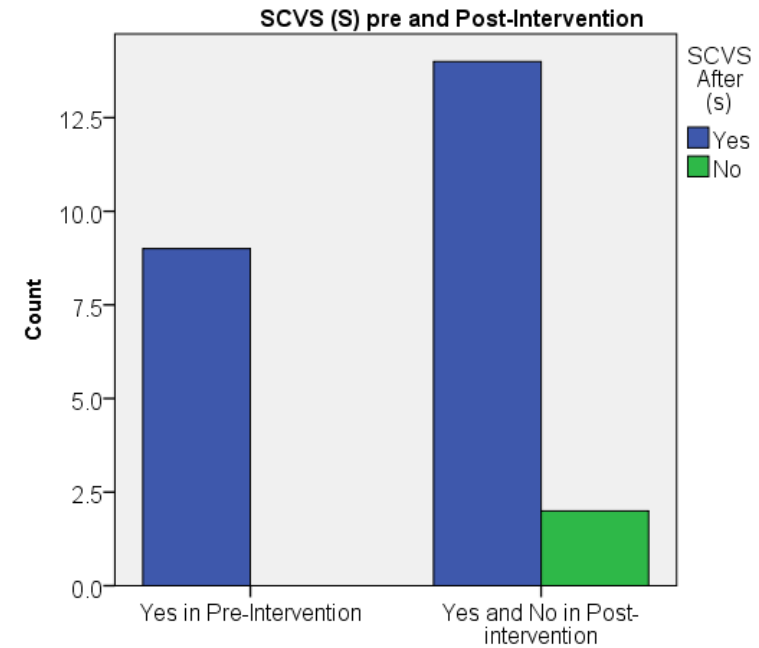
- Intent to use of SCVS in asymptomatic patients increased



Results

SCVS Symptomatic Use

- ▶ McNemar Test
 - Pre-Intervention (Yes or No)
 - Post-Intervention (Yes or No)
 - $\chi^2(1) = 12.071, p < .0001$
- ▶ Statistically Significant
 - Intent to use of SCVS in symptomatic patients increased



Results

Impact on Practice

- ▶ Informal chart review revealing increased utilization amongst providers

Leading to...

- ▶ Increased Patient Satisfaction
 - Preferred Practice
- ▶ Satisfied Quality Metrics
 - Healthcare Effectiveness Data and Information Set (HEDIS)
 - STI screening in women under 25
- ▶ Decreased *Door to Door* Times
 - Faster process
 - Decreased wait times

Strengths and Limitations

Strengths

- ▶ Incorporation of EBP
 - Module Creation
 - Module Content
- ▶ Alignment with Healthy People 2020's aim:
 - Reducing chlamydia and gonorrhea infection rates
 - Increasing screening rates

Limitations

- ▶ Small Sample Size
 - 25 Participants
- ▶ Sample Demographics
 - Majority female
 - Mostly ARNPs
 - Clinician Location
 - Higher Income Suburban Areas
 - Moderate Volume

Future Implications

- ▶ New Employee Education
 - Ensures education on EBP
- ▶ System-Wide Standardization
 - Potential Implementation in family practice offices or obstetrics/gynecology clinics
 - Increased provider knowledge
 - Affects a larger number of patients
- ▶ Satisfaction of National Quality Metrics
 - Healthy People 2020
 - Increased screening
 - Decreased rates of infection

References

- ▶ Center for Disease Control. (2016, October 19). 2015 STD Surveillance Report. Retrieved January 30, 2017, from <https://www.cdc.gov/nchhstp/newsroom/2016/2015-std-surveillance-report.html>
- ▶ Center for Disease Control. CDC Self-Study STD Modules for Clinicians: Vaginitis. (2013, July). Retrieved March 18, 2017, from https://www2a.cdc.gov/stdtraining/self-study/vaginitis/vaginitis_introduction_self_study_from_cdc.html
- ▶ Fielder, R. L., Carey, K. B., & Carey, M. P. (2013). Acceptability of Sexually Transmitted Infection Testing Using Self-Collected Vaginal Swabs Among College Women. *Journal of American College Health*, 61(1), 46-53. doi:10.1080/07448481.2012.750610
- ▶ Forney, L. J., Gajer, P., Williams, C. J., Schneider, G. M., Koenig, S. S., McCulle, S. L., . . . Ravel, J. (2010). Comparison of Self-Collected and Physician-Collected Vaginal Swabs for Microbiome Analysis. *Journal of Clinical Microbiology*, 48(5), 1741-1748. doi:10.1128/jcm.01710-09
- ▶ Fuller, R.R. (2017, June 30). LMS Software - Online Learning Management System Software | Aktiv Mind. Retrieved June 30, 2017, from <http://indigo.aktivmind.com/>

References

- ▶ Hersey, P., & McAleer, S. (2017). Developing an e-learning resource for nurse airway assistants in the emergency department. *British Journal of Nursing*, 26(4), 217-221. doi:10.12968/bjon.2017.26.4.217
- ▶ Holland-Hall, C. M., Wiesenfeld, H. C., & Murray, P. J. (2002). Self-collected Vaginal Swabs for the Detection of Multiple Sexually Transmitted Infections in Adolescent Girls. *Journal of Pediatric and Adolescent Gynecology*, 15(5), 307-313. doi:10.1016/s1083-3188(02)00197-3
- ▶ Hook, E. W., Smith, K., Mullen, C., Stephens, J., Rinehardt, L., Pate, M. S., & Lee, H. H. (1997). Diagnosis of genitourinary Chlamydia trachomatis infections by using the ligase chain reaction on patient-obtained vaginal swabs. *Journal of Clinical Microbiology*, 35(8), 2133-2135.
- ▶ Lee, J. M., Fernandez, F., Staff, I., & Mah, J. W. (2012). Web-Based Teaching Module Improves Success Rates of Postpyloric Positioning of Nasoenteric Feeding Tubes. *Journal of Parenteral and Enteral Nutrition*, 36(3), 323-329. doi:10.1177/0148607111416246
- ▶ Liaw, S. Y., Wong, L. F., Chan, S. W., Ho, J. T., Mordiffi, S. Z., Ang, S. B., . . . Ang, E. N. (2015). Designing and Evaluating an Interactive Multimedia Web-Based Simulation for Developing Nurses' Competencies in Acute Nursing Care: Randomized Controlled Trial. *Journal of Medical Internet Research*, 17(1). doi:10.2196/jmir.3853
- ▶ Melnyk, B. (2014). *Evidence-based practice in nursing & healthcare: a guide to best practice* (3rd ed.). Philadelphia, PA: Lippincott Williams & Wilkins.

References

- ▶ Melnyk, B. (2014). *Evidence-based practice in nursing & healthcare: a guide to best practice* (3rd ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- ▶ Office of Disease Prevention and Health Promotion. (n.d.). Sexually Transmitted Diseases. Retrieved March 23, 2017, from <https://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases/objectives>
- ▶ Ogrinc, G. S., Headrick, L. A., Moore, S. M., Barton, A. J., Dolansky, M. A., & Madigosky, W. S. (2012). *Fundamentals of health care improvement: a guide to improving your patients' care*. Oakbrook Terrace, IL: Joint Commission Resources.
- ▶ Paudyal, P., Llewellyn, C., Lau, J., Mahmud, M., & Smith, H. (2015). Obtaining Self-Samples to Diagnose Curable Sexually Transmitted Infections: A Systematic Review of Patients' Experiences. *Plos One*, 10(4). doi: 10.1371/journal.pone.0124310
- ▶ Pickett, M. L., Melzer-Lange, M. D., Miller, M. K., Menon, S., Visotcky, A. M., & Drendel, A. L. (2017). Perceived Patient Preference and Clinical Testing for Chlamydia and Gonorrhea in Females. *Clinical Pediatrics*, 000992281668733. doi:10.1177/0009922816687331
- ▶ Schick, V., Pol, B. V., Dodge, B., Baldwin, A., & Fortenberry, J. D. (2015). A mixed methods approach to assess the likelihood of testing for STI using self-collected samples among behaviourally bisexual women. *Sexually Transmitted Infections*, 91(5), 329-333. doi:10.1136/sextrans-2014-051842

References

- ▶ Schopf, T., & Flytkjær, V. (2012). Impact of Interactive Web-Based Education with Mobile and Email-Based Support of General Practitioners on Treatment and Referral Patterns of Patients with Atopic Dermatitis: Randomized Controlled Trial. *Journal of Medical Internet Research*, 14(6). doi:10.2196/jmir.2359
- ▶ Sinclair, P. M., Kable, A., Levett-Jones, T., & Booth, D. (2016). The effectiveness of Internet-based e-learning on clinician behaviour and patient outcomes: A systematic review. *International Journal of Nursing Studies*, 57, 70-81. doi: 10.1016/j.ijnurstu.2016.01.011
- ▶ Singh, R. H., Zenilman, J. M., Brown, K. M., Madden, T., Gaydos, C., & Ghanem, K. G. (2012). The role of physical examination in diagnosing common causes of vaginitis: a prospective study. *Sexually Transmitted Infections*, 89(3), 185-190. doi:10.1136/sextrans-2012-050550
- ▶ Vergers-Spooren, H. C., Meijden, W. I., Luijendijk, A., & Donders, G. (2013). Self-Sampling in the Diagnosis of Recurrent Vulvovaginal Candidosis. *Journal of Lower Genital Tract Disease*, 17(2), 187-192. doi:10.1097/lgt.0b013e31826009c3
- ▶ Washington State Department of Health. (2016, November). *STI Fast Facts: Washington State 2015*. Retrieved from <http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/SexuallyTransmittedDisease/MorbidityReports>
- ▶ White, K. M., Dudley-Brown, S., & Terhaar, M. F. (2016). *Translation of evidence into nursing and health care* (2nd ed.). New York, NY: Springer Publishing Company, LLC.