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An Educational Approach: Increasing College Freshmen's Knowledge Regarding Sexually Transmitted Infections

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AN EDUCATIONAL APPROACH: INCREASING COLLEGE FRESHMEN'S KNOWLEDGE REGARDING SEXUALLY TRANSMITTED INFECTIONS

by

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DEDICATION

This project is dedicated to the students I have the pleasure of serving.

ACKNOWLEDGMENTS

I would like to thank my children for their encouragement. A special thank-you to my husband for all his support during this process. My colleagues at the Health Center for their assistance and encouragement. The instructors of the DNP program for their assistance and wisdom. Last but not least, my advisor for her understanding and guidance along this long rough road.

PREFACE

This is an evidenced-based practice project to increase college freshmen's knowledge of sexually transmitted infections. This topic was chosen because I have an interest in women's and college health. Freshmen are exposed to many different experiences soon after arriving to campus. They are often not armed with accurate information regarding sexual health. This project allowed freshmen to attend a program regarding sexually transmitted infections and sexual health. By attending the program, it was anticipated that the participants would be able to evaluate their current and future risk of sexually transmitted infections, and have the knowledge and skills to protect themselves.

TABLE OF CONTENTS

Chapter **Page**

DEDICATION……..iii

ACKNOWLEDGMENTS……..……...iv

PREFACE……v

TABLE OF CONTENTS ……vi

LIST OF TABLES…….....viii

LIST OF FIGURES ….....ix

ABSTRACT…….……..x

CHAPTERS

CHAPTER 1 – Introduction ……1

CHAPTER 2 – Theoretical Framework and Review of Literature …..…….15

CHAPTER 3 – Implementation of Practice Change ……59

CHAPTER 4 – Findings……65

CHAPTER 5 – Discussion……..……..77

REFERENCES……..……..……92

AUTOBIOGRAPHICAL STATEMENT……..……..……98

ACRONYM LIST……..……..……99

APPENDICES

APPENDIX A-- PRETEST……..…….....100

APPENDIX B- POSTTEST……..……101

APPENDIX C –ONLINE LETTER……...102

APPENDIX D- ONLINE SURVEY……..103

APPENDIX E- PowerPoint……104.

APPENDIX F- PROPOSAL ……..109

APPENDIX G- PRETEST INTERRATER ……..112

APPEBDIX H- POSTTEST INTERRATER…….115

LIST OF TABLES

Table **Page**

Table 2.1 Identification Grid……29

Table 2.2 Review of Literature Graded..…… 33

Table 2.3 Review of Literature ……38

Table 4.1 Sample Characteristics and Survey Online Results …… 67

Table 4.2 Pretest Posttest Differences ……....75

LIST OF FIGURES

Figure **Page**

Figure 2.1 Project Manager-Developed Logic Model……20

ABSTRACT

An Educational Approach: Increasing College Freshmen's Knowledge Regarding STIs

Jennie McClain MSN, RN, FNP

According to the Centers for Disease Control (2009), young adults account for only 25% of sexually active persons in the United States, but account for 50% of the newly diagnosed cases of sexually transmitted infections (STIs). Some young adults may not have received appropriate or credible information on sexual health by which to make knowledgeable decisions that may influence the rest of their lives. High schools are not required to offer comprehensive sex education. Therefore, some students may have received abstinence-only sex education. Risk reduction and disease prevention are important in college health. This evidenced-based practice project included the creation, implementation, and evaluation of an evidenced based sexual-health intervention to increase what college freshmen currently know regarding STIs. The project took place at a mid-sized, faith-based university in the Midwest. The constructs of Bandura's Social Cognitive Theory (SCT) were used to formulate the intervention. A logic model guided the intervention and evaluation of outcomes. Roger's Diffusion of Innovation model (DOI) was used to guide change within the organization. Pre-intervention data were collected by online survey and a pretest. The online survey had 196 participants and the intervention had 20 participants. The intervention was offered over six weeks to gain enough participants. After the intervention, a posttest was administered to the same participants. Data were analyzed by descriptive statistics, frequencies, and an independent t-test to determine statistical significance. There was a statistical increase in knowledge of STIs post-intervention ($p < .05$). The results suggest there is a need for sexual health programming for freshmen.

Keywords: sexual health, young adults, college students, sexually transmitted infections, knowledge

CHAPTER 1

INTRODUCTION

The transmission of sexually transmitted infections (STIs) on college campuses is a significant health concern. The Centers for Disease Control (CDC, 2009) estimates that 15- to 24-year-olds account for nearly half of all new STIs in the United States (US). Risk reduction and disease prevention are important in decreasing STIs. To reduce the number of STI cases in this age group, youths need accurate, culturally relevant, and age-appropriate information about the transmission of STIs. Young adults also need information on how people protect themselves from STIs. This protection includes safer sex practices, and why and where to be tested for STIs. In a study conducted by the American College Health Association, only 36% of students reported ever receiving information from their college or university related to STI prevention (Williams, Zenilman, Nanda, & Mark, 2008). To prevent possible long-term consequences from STIs, risk reduction and disease prevention need to occur early in the students' transition to college life (Okwuokenye et al., 2010). Academic achievement and health status of students are interrelated and should be recognized as such (Future of Sex Education Initiative, 2012).

The purpose of this project was to implement an evidence-based sexual-health education program for freshmen students at a midsize university in the Midwest. The school is faith-based with students of varied religious affiliations and cultures. Students are required to take a general education class, KIN 100: Healthy Lifestyles (previously called PE 100). This course does offer a chapter on STIs but is not offered early in the semester. The chapter on STIs occurs just before winter break. Current research suggests that programming needs to be earlier in the students' transition to college life before they have engaged in risky behaviors (Ege, Akin, Can, & Artioz, 2011; Okwuokenye et al., 2010).

Health Center staff had noticed that many students who present with questions regarding STIs have experienced their first sexual encounter while at college. In addition, many of those students do not use condoms at every sexual encounter. The Health Center staff diagnosed five chlamydia, three herpes (confirmed by lab test), four trichomoniasis, three genital warts, and three human papillomavirus virus (HPV) cases (confirmed by digene thin preps) in the 2011-2012 school year. In fall of the 2012-2013 school year, there were three chlamydia, two herpes, and two trichomoniasis cases diagnosed and treated (retrieved from Health Center records). However, an exact account of students affected by STIs was difficult to determine because students are tested and treated at other health clinics in the area. The Health Center staff implemented an outreach program for freshmen regarding sexual health to increase knowledge of STIs promoting safe sex practices. The program was set up to be available early in the first semester while freshmen were still transitioning to college life away from home. It was hypothesized that students arrive on campus with limited knowledge of STIs, and an educational program regarding STIs would increase current knowledge of STIs. In addition, it was hypothesized that an increase in knowledge would increase students' self-efficacy in current or future sexual encounters. Therefore, the outreach program's aim of increasing knowledge of STIs would decrease risky sexual behaviors, decrease the number of STIs, and increase future condom usage.

Background

In 2010, in the state of Indiana, there were 22,825 cases of chlamydia reported (Indiana Department of Health, 2011). Of those reported cases, 8,697 were young adults ages 20 to 24. There were 6,496 diagnosed cases of gonorrhea, and of the people involved, 2,347 were aged 20 to 24 years. This age range has the highest incidence of STIs. Also in 2010, there were 66 Hepatitis B infections reported, as well as, 5,954 cases of Hepatitis C. Since 1981, there have been 7,444 HIV-related deaths in Indiana (Indiana Department of Health).

Because of these statistics, young adults need to be educated to promote safe sexual practices in the college community.

According to the CDC (2009), 19 million STIs are diagnosed every year. The cost to the United States (U.S.) health care system is 17 billion dollars. The cost to the individual is even more if the possible long-term effects are included. Young adults represent only 25% of the sexually active U.S. population but account for half the STI diagnoses every year (CDC, 2009; Kirby, Laris, & Rolleri, 2007; Weinstein, Walsh, & Ward, 2008). Data from the CDC surveillance report depicts an increase in STIs for 20- to 24-year-olds of 7.5% in 2008-2009.

According to the surveillance reports on March 23, 2010, the Sexuality Information and Education Council of the United States (SIECUS, 2004) reported that the federal government created the Personal Responsibility Education Program, which is the first-ever dedicated funding for comprehensive sexual-health education. However, the legislature also reauthorized the failed Title V abstinence-only program that originally expired on June 20, 2009. States have the choice to request funding for comprehensive sexual-health education funds, abstinence-only funds, or both. Depending on the state and school districts, all young adults will not necessarily receive a comprehensive sexual-health program. Therefore, when young adults reach the college campus, they may not be adequately prepared to make educated decisions to keep themselves safe and healthy.

Current evidence suggests a positive impact on sexual-health behaviors when a comprehensive curriculum is introduced to young adults (SIECUS, 2004). The college setting poses a potential for increased risk of STIs as young adults are on their own for the first time, with many peer influences and sometimes the influence of alcohol (Okwuokenye et al., 2010; Orchowski & Barnett, 2012). In a study by Mogobe and colleagues (2007), students described their transition from home to university life as difficult, trying to find some structure from day to day. According to Okwuokenye et al. (2010) and Orchowski and Barnett (2012), studies

showed that STIs are more probable during the first few years of college; therefore, the sexual-health curriculum needs to begin early in students' first year. Many students have had some sexual-health education, but to what extent is unknown, as many high schools offer abstinence-only education. It is hard to gauge the amount and the accuracy of information this age group has received via school, home, peers, or media.

According to the Guttmacher Institute (2007), a comprehensive sexual-health program that incorporated abstinence and the use of condoms and contraception for sexually active adolescents had positive behavioral effects. The report concluded that such a program delayed or reduced sexual activity, reduced numbers of sexual partners, and increased condom and contraceptive use. Evidence has suggested that comprehensive approaches to sexual health help young people both to withstand the pressures to have sex too soon and to have healthy, responsible, and mutually protective relationships when they do become sexually active (Kirby et al., 2007).

The U.S. National Prevention Strategy vision is "Working together to improve health and quality of life by moving from a focus on sickness and disease to one based on prevention and wellness" (National Prevention Council, 2011). Nationwide, one in four teenagers between 2006 and 2008 learned about abstinence without receiving any instruction in schools about contraceptive methods (National Prevention Council, 2011). According to an analysis by the Guttmacher Institute (2007), there has been no evidence that abstinence-only education reduced sexual activity or delayed the sexual début. By providing comprehensive sex-education programs, schools support student health.

Staff at the University Health Center, where this project was implemented, acknowledged the need for freshmen to be educated about sexual health. The University does require freshmen to take a life-skills course that has a brief lecture on STIs and relationships, but the lecture is not until just prior to winter break which contradicts current evidence. The

Health Center staff cannot prescribe contraception for birth control because of the schools faith-based theology, and the University has no policy barring sexual-health education. Due to the faith-based theology of the University, abstinence was to be strongly encouraged. The Health Center Director and the Dean of Student Affairs approved this evidence-based practice (EBP) project. Student Affairs had shown interest in presenting freshmen the option to attend a program regarding sexual health, but Residence Life had its reservations.

Residence Life oversees the student residence halls and resident hall activities. After reviewing the proposed program, Residence Life gave their approval to provide this education to freshmen in the residence halls. They had reservations due to the subject matter and possible parental disapproval.

Statement of the Problem

Because high school administrators can choose abstinence-only or comprehensive sex-education curriculum, there remains a vast variation within the type and depth of sexual-health education offered to young adults in high school. Until the federal government funds only comprehensive sexual-health programs, and not abstinence-only programs, it cannot be assumed that all young adults are equipped with the necessary information to make informed educated decisions regarding sexual health. A comprehensive sexual-health program needs to be provided to all freshmen at the University early in their first semester, before they are exposed to situations that may pose lifelong consequences.

Data from the literature supporting the need for the project. There are 19 million newly diagnosed STIs every year in the US, and young adults account for 50% of them (CDC, 2009). These statistics suggest that young adults are not being sufficiently educated in safe sex practices. A curriculum with accurate information regarding STIs and prevention methods will increase knowledge, increase self-efficacy, decrease risky sexual behaviors, and decrease STIs (SIECUS, 2004).

Kirby and colleagues (2007) reviewed 83 studies measuring the impact of curriculum-based sex- and HIV-education programs on sexual behavior among youth under the age of 25 in various parts of the world. They found that two-thirds of the programs significantly improved one or more sexual behaviors, and the majority of programs encouraged abstinence but also promoted the use of condoms. The U. S. was the only place that had abstinence-only programs. Social learning theory and social cognitive theory formed the basis for more than 54% of the programs in that review. Sixty percent of the studies examined increased knowledge of STIs, increased awareness of risk, increased self-efficacy, as well as decreased risky sexual behavior. Mogobe and colleagues (2007) found that students felt a sexual-health course increased their knowledge of STIs and improved their attitudes toward HIV-positive individuals. However, students did not decrease their risky sexual behaviors. Mogobe and colleagues (2007) hypothesized that this result could be because young adults tend to believe they are invincible and are unlikely to suffer ill effects of poor lifestyle choices.

A national survey done by the Kaiser Family Foundation (2003) surveyed 1800 young people from the U.S. in three different age groups ranging from ages 13 to 24; it revealed that young people want to increase knowledge and recognize the signs and symptoms of STIs. Also, students want to know how to use condoms, what STI and HIV testing involves, and where students can go to get tested. The survey reported that 79% of those surveyed who were not yet sexually active are concerned about how sexual-health issues may affect them. Also, the survey from Kaiser Family Foundation indicated that one third of the young people surveyed have engaged in oral sex, but one in five are unaware that oral sex can transmit STIs. The survey suggested there are dangerous gaps in young people's knowledge of STI transmission. One-fifth of young people surveyed believed they would simply "know" if someone had an STI even if this person were not tested, and one-sixth believed that STI transmission can only occur when obvious symptoms are present. Nine out of 10 young people surveyed regard sex with a

condom as safer sex, while 71% of the young adults surveyed considered sex with other forms of contraception safer sex even though other forms of contraception do not provide protection from STIs.

Several studies and government agencies have recognized that young adults lack knowledge of STIs and preventive measures (CDC, 2009; Kaiser Family Foundation, 2003; Kirby, 2007; Kirby et al., 2007; Rutledge, Siebert, Chonody, & Killian, 2011; Synovitz, Hebert, Kelley, & Carlson, 2002; Yazici, Dolgun, Zengin, & Bayram, 2012). The best methods by which to educate students have been studied by Moore, Smith and Folsom (2012). They suggested introducing topics of STI and prevention through the media of lecture, videos, and Internet websites. Their participants were 302 students in an introductory college class. The students were randomly assigned to one of three groups; each group participated in a different intervention: lecture, video, or Internet websites. The researchers pretested all participants, assessing their knowledge of STIs, motivation to use condoms, and condom self-efficacy. The results from a posttest one week after the interventions indicated that the lecture medium was most effective. The researchers concluded this was possibly due to having an actual person in charge of the learning process resulting in higher knowledge attainment and highlighting student preference for discussion-based learning. Students indicated they were impacted by pictures of STIs, hearing real life experiences, and consequences of unprotected sex (Moore et al., 2012).

An extension to the previous study provided a postexamination at one week postintervention. Moore and Smith (2012) had the participants (from the previous study) write a two-page summary of what they learned and how much of the information was new to them. The researchers separately analyzed the identified learning statements and organized them into eight categories. Of the 242 papers turned in by the participants, 19% did not indicate they learned anything new from the intervention. Knowledge of new STI types were documented by 18% of the paticipants' responses. Most participants stated they knew a lot about HIV/AIDS but

knew very little about other STIs. Symptoms and health effects of STIs on the body was new information for 20% of the participants. Knowledge increase on transmission of STIs, treatment, and testing was documented in 12% of participant responses. Prevalence and statistics of STIs in their age group were new knowledge for 16% of participants, and 4% wrote about learning new information concerning sexual behavior and relationships. Sixteen percent of the participants wrote about learning something new about condoms and condom use. Misinformation postintervention was written by 4% of particpants. Those who were in the lecture group were more likely to report new knowledge on statistics and prevalence of STIs. From the previous study by Moore et al. (2012), those who were in the lecture intervention had a greater increase in knowledge on the posttest.

To determine what type of sexual-health education should be provided to college students, a randomized controlled study by Kanekar, Sharma, Cottrell, Succop, and Bernard (2010) tested a theory-based educational intervention against a knowledge-based intervention in terms of efficacy in developing safer sex behaviors. A pretest, posttest, and a six-week follow-up test were administered to assess knowledge of STIs and self-efficacy. A convenience sample of 141 students was randomized into two groups and placed into either the knowledge-based or the theory-based intervention. The knowledge-based intervention was based on factual information about STIs. The theory-based intervention was based on the constructs of self-efficacy, expectations of safer sex, and self control for safer sex. The study suggested no difference between a theory-based educational program and a knowledge-based intervention. Both groups improved between pretest and posttest scores for both knowledge of STIs and self-efficacy.

Research has suggested that stigma related to STIs may decrease with increase in knowledge of STIs (Foster & Byers, 2008). The links between STIs knowledge and STIs stigma have been examined primarily on HIV and not on other STIs. A lack of knowledge of STIs and

the stigma associated with STIs may hinder a person from seeking care or testing for STIs (Foster & Byers). The researchers recruited 218 college students from a midsized Canadian university, who signed up voluntarily via the Internet. A background questionnaire was administered, which included history of sex education at school or at home. Participants evaluated the sex education they received at school or at home. Of the 218 participants 7.3% never received any sex education at school, and 52% never received any education from parents. Participants' knowledge was assessed by using a STIs knowledge scale, a test made up of questions from a sex-education textbook used in the postsecondary school. Participants also took a sexual attitudes test and a sex anxiety inventory. The participants rated their home sex education as poor and their school education as *neither good nor poor*. Seventy-four percent of participants were knowledgable about STIs and exhibited a moderate level of STIs related stigma. The study revealed that participants who were more conservative with sexual attitudes and less satisfied with their school-based sexual-health education were more likely to associate STIs with both stigma and shame (Foster & Byers).

Two studies evaluating young adults' knowledge of STIs revealed that young adults in these studies believed that having a STI does not increase a person's risk of getting HIV (Jones & Haynes, 2006; Swora, 2003). Swora (2003) considered participants to have high level of STI knowledge, as evidenced by approximately 65% of correct scores on survey items. Jones and Haynes (2006) found 70% of participants were knowledgeable of STIs. Both found there was no relationship between STI knowledge and safe sex behavior. In a sample of 20 men and 20 women, Swora (2003) found that more women were knowledgable about STIs than men; the researcher attributed this finding to the possibility that women obtain STI-related information from their gynecology exams. In a study by Rouner and Lindsey (2006), at a Western university, 18-year-old women were interviewed regarding their perceived and actual knowledge of STIs; they revealed that perception of STI knowledge was high, but actual STIs knowledge

was low. Although the sample was small (15 total participants), the qualitative study revealed that these women were confident in their knowledge of STIs but were not able to name STIs, symptoms of STIs, or adequate measures for prevention of STIs. These women were found to be empowered but ill informed.

In a study at a Louisiana university, 915 students age 18 and above participated in a study correlating the relationship between sexual knowledge and their previous sexual-health education (Synovitz et al.,2002). Sixty-four participants indicated having sex education in high school and 43% indicated having sexual-health education in college. Students in each of the four years were equally represented. In general, the students performed poorly on the sexual-health knowledge test, only averaging 55.3% of correctly answered items. Knowledge increased with each year of college attendence. Overall, participants rated their previous sexual-health education more highly than researchers expected, as their ratings were inversely related to their scores on sexual-health knowledge (Synovitz et al., 2002). The students who stated they had sexual-health education in college only rated four points higher than those with college plus previous sexual-health education in high school (Synovitz et al., 2002). Weinstein et al. (2008) assessed current knowledge of 347 U. S. college students; they found that the sexual-health knowledge of these students was poor, as they scored only 64% on the STI knowledge tests. These studies justify the need for college sexual-health education.

Klein and Knauper (2003) found that women with low sexual self-efficacy, low assertiveness toward discussing safer sex practices, and lower knowledge about STIs had a higher tendency to avoid STI-related thoughts. The higher the women's tendency to avoid STI thoughts, the less likely they were to engage in discussions of safer sex practices. The study consisted of 71 women aged 18 to 24 recruited from a university.Those having increased knowledge of the threat of STIs were more likely to take action to prevent infection—action

including safer-sex discussions with partners. To facilitate safer sex practices, women need to have knowledge of the threat that STIs pose (Klein & Knauper).

Results from a study done at Georgia Southern University (GSU), Okwuokenye et al. (2010) suggested that primary-prevention interventions are needed to combat the increased number of STIs among students. These interventions include providing STI knowledge and reinforcing the perceived threat of STIs through the use of posters, pamphlets, and media on the GSU campus. GSU researchers instituted required programming for all entering freshmen based on the health belief model. The researchers realized that STIs are more likely to occur during the first few years of college. Studies were conducted on college students' beliefs about contracting STIs, whether college students believe the consequence of contracting STIs is high, and whether students believe that taking protective action can minimize the threat of contracting an STI. Okwuokenye and colleagues (2010) also employed social cognitive theory (SCT), based on the premise that change in behavior is achieved by empowering individuals to take control of their behavior and their social environment. Using the the diffusion-of-innovation (DOI) theoretical framework, the health services at GSU communicated the incidence of STIs on their campus to the university community. The outcome of this project resulted in administrative authorities funding the office of health promotion.

The literature suggests there is a need for sexual-health education among young adults. Students need knowledge of STIs and how to prevent them. Students have a higher perception of their knowledge of STIs than evidenced by test scores. Empowering students with knowledge increases self-efficacy. The studies suggest that stigma and attitudes toward STIs decrease with an increase in knowledge of STIs. Although students prefer Internet-based information; lecture-based programs had the most impact in increasing knowledge of STIs.

Data from the clinical agency supporting the need for the project. The clinical agency was a Health Center at a faith-based, midsize university in the Midwest. The Director of

the University Health Center wanted to increase outreach offerings to students. The main topics for outreach were influenza awareness and breast health for women. Staff at the Health Center recognized that many students come to the Health Center with STI questions, and many of those who come for information do not practice safe sex. It was also recognized that often students have their first sexual encounter during their first year on campus. There were a number of STI diagnoses each semester, but because students did not utilize the Health Center exclusively for these sensitive situations, it was difficult to determine the actual number of STIs on campus. In the 2011-2012 school year, the Health Center staff diagnosed five chlamydia, three genital herpes, four trichomoniasis, three genital warts, and three HPV cases. In fall semester 2012-2013 school year, there were three chlamydia, two genital herpes, and two trichomoniasis cases diagnosed and treated.

Students are required to take a life-skills course that offers a chapter on STIs, but this chapter is studied just before winter break. It was the goal of the Health Center staff to reach freshmen during their first few weeks on campus, before they are exposed to sexual situations putting them at risk. This EBP project was offered through the Health Center as an outreach educational program.

Purpose of EBP Project

Compelling clinical question. The purpose of this EBP project was to assess current knowledge regarding STIs in freshmen university students, and provide an educational intervention to increase their knowledge. This EBP project aimed to answer the compelling clinical question: In college freshmen, would an evidence-based safe sex program, as compared to current knowledge, increase awareness of STIs?

PICOT format. The PICOT format was used to formulate this clinical question for this EBP project. This format involves the identification of the population of interest (P), intervention

of interest (I), comparison of interest (C), outome of interest (O), and (T) time as demonstrated by:

P- The targeted population of interest for this intervention was freshmen students at a midsize university in the Midwest who were18 years of age or older. All participants had to be English-speakers since the project manager only speaks English. Freshmen were chosen because the literature supports that freshmen are at increased risk for STIs because of their newfound freedom and transition to college life (Okwuokenye et al., 2010).

I- The intervention of interest was an evidence-based sexual-health education program. Before the intervention, a pretest was administered. The sexual-health program was a PowerPoint presentation, presented by the project manager, that was approximately 45 minutes long with a question and answer (Q&A) session following the presentation.

C- The comparison of interest was the pretest and posttest to see whether the intervention increased STI knowledge among the freshmen.

O- The outcome was increasing knowledge of STIs from the intervention.

T- Time for intervention completion was early first semester during students' transition to college life.

Significance of the Project

This EBP project included the creation, implementation, and evaluation of an evidence-based sexual-health intervention to increase current knowledge regarding sexually transmitted infections among freshmen. If STI knowledge is increased, it was hoped that self-efficacy regarding sexual-health would increase, thus increasing safe-sex practices and condom usage.

It was anticipated that this EBP project would be successful, warranting a change in the freshmen outreach programming. This EBP project would fill the gap in STI knowledge among freshmen who did not receive adequate sexual-health education in high school. It was also

anticipated that this EBP project would increase the health and safety of freshmen providing them with the information in which to make educated choices regarding their sexual health.

CHAPTER 2

FRAMEWORKS AND REVIEW OF LITERATURE

The EBP project was guided by social cognitive theory (SCT) (Bandura, 1986, 1989, 1998, 2002, 2004) and a logic model (Helitzer et al., 2010). SCT and a logic model were used to design and identify the effects of an education-based sexual-health program for freshmen aimed at increasing both knowledge of STIs and self-efficacy concerning safe sex behaviors. The constructs of SCT were used to formulate the intervention and the logic model guided the intervention and evaluation of outcomes.

Theoretical Framework: Social Cognitive Theory

SCT has been applied to primary prevention and has been used in HIV prevention programs in adolescents, nutrition education programs, smoking-cessation, and developing problem solving skills (Kanekar et al., 2010). This model incorporates principles of accurate information, motivation, and behavior-skill's training, and it has been effective in changing high-risk behavior for STI/HIV at both individual and community levels (CDC, 2009.). The CDC (2009) recommends programs that are designed to estimate the size of populations at risk for STIs. Successful programs need to monitor knowledge and attitudes about STIs and sexuality, as well as monitor recognition of symptoms and the need for medical care. Several research studies evaluated for this EBP project have utilized the SCT by Bandura as the theoretical underpinnings for their studies (Kanekar et al., 2010; Kirby et al., 2007; Okwuokenye et al., 2010; Rouner & Lindsey, 2006). Bandura (2004) states knowledge of health risks and benefits creates the precondition for change.

Bandura's (1986) SCT is a theoretical framework for analyzing human motivation, thought, and action from a social cognitive perspective. SCT is useful to understand and predict individual and group behavior and to identify avenues in which behavior may be modified or

changed. Major concepts of Bandura's SCT are observational learning, self-efficacy, and self-regulation.

Observational learning is achieved by observing others (Bandura, 1986). This process is also described as vicarious learning or modeling. Who or what serves as a model is broadly described (Denler, Wolters, Benzon, 2006). Denler and colleagues posit that live demonstations of a behavior or skill by an educator or peer, verbal or written materials, video or audio recordings, and other less direct forms of performance are all considered forms of modeling. The theory posits five basic assumptions: (a) learning occurs by observation**,** (b) learning is internal, (c) behavior is goal-directed, (d) behavior is self-regulated, and (e) reinforcement can have indirect as well as direct effects (Bandura, 1986). Social cognitive analyses that follow this observational-learning model posit that influences operate principally by informing (Bandura, 1986). Informing is broken down into four learning processes: (a) attentional process regulates exploration and perceptions of modeled activities, (b) retention process converts modeled experiences into memory or symbolic concepts that later serve as internal models for response production and standards for response correction, (c) production process is the organizing of subskills into new response patterns, and (d) motivation process determines whethter or not observationally acquired competencies will be put to use (Bandura, 1986).

However, informing is not the only relevant process. *Self-efficacy* reflects an individual's belief he/she can achieve a given level of success for a given task (Bandura, 1998) Self-efficacy beliefs regulate human functioning through cognitive, motivational, affective, and decisional processes. These processes affect whether individuals think in self-enhancing or self-debilitating ways and how well they motivate themselves and persevere (Bandura, 2002). Knowledge of factors that can alter life's paths provides a guide on how to foster valued futures (Bandura, 1998). Those who enter adulthood poorly equipped with skills and plagued by self-

doubts about self-efficacy find many aspects of their adult life stressful and depressing (Bandura, 1986).

Self-regulation is the capability to influence one's own motivation and actions, therefore taking responsibility for life's path (Bandura, 1986). If people do not believe they can produce desired effects by their actions, they will have little motivation to act or persevere in the face of difficulties (Bandura, 2004).

Application of SCT to EBP project. This EBP project utilzed the major concepts of Bandura's SCT observational learning, self-efficacy, and self-regulation to guide the intervention.

As the SCT emphasizes observational learning and information, its model was appropriate to undergird an evidence-based educational program giving scientific information that would educate freshmen regarding STIs and safer sex practices. Such an informative program empowers students to explore and examine their beliefs on the subject. By displaying pictures of STIs in the program, symbolic concepts are converted to memory. Information gained is organized into memory for future use to either change risk taking behavior or prevent it. Those students who are not yet sexually active may decide to delay sexual activity, and those who are sexually active may decide to decrease risky sexual behaviors.

Through education about sexual health, students have the knowledge to make informed choices regarding risky behaviors that may impact the rest of their lives. Knowledge acquired can be drawn upon as needed to create new understanding and to guide judgment and action. The aim of this EBP project was to increase the knowledge base of freshmen about STIs and empower them to make informed choices regarding their health. By gaining new knowledge, and gaining confidence discussing the topic of safe sex with potential partners, freshmen may have a greater sense of self-efficacy in practicing safer sex. Weinstein and colleagues (2008) found, in their study of 347 people at a Midwestern university, that sexual-health knowledge was

a positive indicator for sexual communication and confidence as well as for an increase in self-efficacy.

An example of self-regulation is evaluating one's own perceived risk for STIs and taking action to reduce that risk. This EBP project enabled participants to reflect on their sexual risk-taking behaviors. Freshmen were exposed to information that could guide informed, educated decisions regarding their sexual health. In a systematic review by Kirby and colleagues (2007), evidence suggested that sex-education programs do not hasten sexual behavior but instead delay or decrease sexual behavior and increase condom and contraception use.

Strengths and weakness of the SCT. Bandura's (1986) SCT accounts for changes in behavior seen with abrupt changes in controlling stimuli, either environmental or self-induced. SCT suggests that, given the right environment, behavior can be changed. Students away from home for the first time have a change in their controlling environmental stimuli and therefore, are at risk for changing their behaviors negatively. The importance of self-regulation of behavior is a strength of SCT. For a college student, often a parent controlled most of the needs and set most of the boundaries that affects behaviors; now, the student is responsible for tending to his/her own needs and self-regulation. SCT can be broad or specific, depending on the behavior to be changed. Health promotion education can be directed at the individual or social group (Bandura, 2004).

This EBP project utilized SCT to format the EBP intervention for behavior change in the individual. The constructs of observational learning, self-efficacy, and self-regulation were utilized to guide the intervention. In the future, SCT could be used to increase campus awareness as a public health initiative. A weakness of SCT is that people do not always remember what they have learned or lack confidence and motivation to make the changes for safe sex. In addition, for sexually active students, SCT does not account for the financial ability

to afford condoms to practice safe sex. Although, abstinence would be an option for safe sex.

EBP Model of Implementation

Effects of the educational intervention were evaluated using a logic model created by the project manager (see Figure 2.1).

Figure 2.1 Project Manager Developed Logic Model for Sexually Transmitted Infection Education Project

Conditions	**Activities**	**Outcomes**			**Impact**
		Immediate	Intermediate	Long-term	
Freshmen lack sex education. They arrive with varying degrees of knowledge.	Email for online survey on Zoomerang.com.	Number of online surveys completed.	Increased knowledge of sexually transmitted infections and prevention.	Student adopts preventative behaviors.	Increased use of condoms or choice for abstinence.
Transition to college from home puts them at increased risk for sexually transmitted infections.	Develop a sexually transmitted infection educational intervention with a pretest and posttest to evaluate new knowledge.	Core credit approval received.	Increased self-efficacy for prevention of sexually transmitted infections.	Knowledge and behavior retention for safe sex practices.	Decreased number of sexually transmitted infections diagnosed.
If educated on sexual health, safe sex practices, and self-efficacy will increase.	Seek core credit approval for attendance of sexually transmitted infection educational intervention. Advertise educational intervention with flyers and display boards. Implement the sexually transmitted infection educational intervention.	Students participate in the educational intervention by attending and taking tests.		.	Continued safe sex programming for freshmen.

Logic models have been widely used in community health initiatives, and increasingly in participatory evaluation efforts. The logic model forms the basis for process evaluation, to assess whether program interventions were implemented as planned (Helitzer et al., 2010). The logic model provides a tool for conceptualizing relationships between short-term outcomes produced by programs, intermediate and long-term outcomes, as well as impact on community goals (Julian, 1997). A logic model can help program stakeholders ensure that evaluation was based on the program's underlying foundation and principles, and can enhance linkages between program elements and outcomes (Helitzer et al., 2010). The logic model is a graphic representation of a program consisting of four columns: (a) *conditions*, (b) *activities*, (c) *outcomes*, and (d) *impact*. The United Way has used the logic model for program planning at the local level (Julian, 1997). The Florida Department of Justice used the logic model successfully in the WISE-UP project, whose goals were to reduce the risk that youth would engage in dysfunctional behavior (Cato, 2006).

The conditions column represents the theoretical assumptions and problem. Evidence suggests young adults are lacking sexual-health knowledge (Kaiser Family Foundation, 2003; Moore & Smith, 2012). For this EBP project, the assumptions were (a) freshmen come to college with varying degrees of sexual health knowledge, (b) transition from home to college life puts freshmen at increased risk for STIs, and (c) sexually active young adults, if educated on health risks of STIs, students will increase their safe sex practices. The activities column represents responses to a specific condition in the community. It encompasses the programs or interventions to address the problem. The activities for this EBP project included; (a) an e-mail survey to all freshmen, (b) advertising an educational program with core credit awarded, (c) a pretest prior to educational intervention, (d) an evidenced-based educational sexual-health program, and (e) a posttest immediately following the program.

The outcomes column is comprised of immediate, intermediate, and long-term outcomes. Immediate outcomes evaluate activities. Intermediate outcomes evaluate the objectives. Long-term outcomes were the impact of the EBP project on future safe sex practicies. For this EBP project, the immediate outcomes were (a) the number of e-mail surveys completed to determine knowledge of incoming freshmen, (b) participation in the scheduled sexual-health program, and (c) the number of pretests and posttests completed. Intermediate outcomes for this EBP project were statistical data of knowledge increase and perceived self-efficacy. Long-term outcomes for this EBP project were increase of students' knowledge and behavior retention. If there were more time, the impact of the EBP project would include measurement of the number of STIs diagnosed and condom use over time.

Strengths and weakness of Logic Model. Learning and using tools from logic models can serve to increase the practitioner's voice in the domains of planning, designing, implementing, analyzing, and knowledge generating (Kellogg, 2001). The strength of a logic model is that it provides a road map or clear picture for program development. Logic models clarify program theory by defining (a) problem, (b) community needs, (c) desired results, (d) influential factors, (e) strategies, and (f) assumptions (Helitzer et al., 2010). The model demonstrates a program's progress and details criteria for program evaluation. The weakness of a logic model is that it may encourage trying to answer too many questions at one time (Helitzer et al., 2010). It is important to have a clear picture of what success would look like (see Figure 2.1). For this EBP project there were no weaknesses noted using the logic model.

Evidenced-Based Framework: Diffusion of Innovation for Organizational Change

There are many evidenced-based models available to guide health care providers in disseminating evidence into practice. Evidence-based practice is a systematic approach to clinical problem-solving, which allows for the integration of the best available research evidence with clinical expertise and patient values (Akobeng, 2005). The basic steps in most evidenced-

based models include selecting a topic or identifying a problem, appraising the evidence, adapting the evidence for a specific practice, implementing the EBP change, and evaluating the outcomes. After reviewing the literature, the project manager decided that Diffusion of Innovation (DOI) would be the model used for the EBP change within the Health Center.

Diffusion is the means by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 2003). An innovation is an idea, practice, or object perceived as new by an individual or other unit of adoption. The reaction to the innovation depends, in part, on the newness of the idea. The DOI model has been used in both public health and medical sociology (Rogers, 2003). AIDS-prevention strategies have utilized the DOI model. For organizational change, stages in the innovation-decision process are similar to those in change theory (Rogers, 2003). The DOI model includes five stages: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation.

In the DOI model, the characteristics of innovations, as perceived by individuals, help to explain rates at which people adopt an innovation. Relative advantage is the degree to which the new idea supersedes the idea being replaced (Rogers, 2003). Is the innovation advantageous? The innovation—an evidenced-based sexual-health program early in the semester for freshmen—would be in addition to the chapter on STI imformation students receive late in the fall semester in the life-skills course. Evidence suggests that a sexual-health educational intervention early in the college transition period is more beneficial than waiting, because freshmen cope with newfound freedom and may not be adequately educated regarding sexual-health (Kirby et al., 2007). Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters (Rogers, 2003). Although the University is a school grounded in its faith-based traditions, it encourages resourcefulness in seizing new curricular and learning opportunities. An evidenced-based sexual-health program presented to freshmen early in their transition to

college did not conflict with the values of the University. The program discussed both abstinence and safer sex practices. Although the Health Center cannot prescribe oral contraceptives for birth control, there was no restriction on educating students about safe sex.

In the DOI model, complexity can cause an innovation to be rejected by adopters; simpler ideas are more readily adopted (Rogers, 2003). This EBP project did not require extra resources from the University or the Health Center. The EBP project did enlist help from RLCs, the communications department, and the Core professor for advertising of the project. Trialability is the degree to which an innovation may be experimented on a limited basis (Rogers, 2003). This program was a short intervention, so no trial was needed. The EBP project itself was the trial to validate whether a practice change was warranted at the University. Observability is the degree to which the results of an innovation will be visible to others (Rogers, 2003). The EBP project results were disseminated to the Health Center, Life- skill's Professor, and Student Affairs to advocate for freshmen to attend a sexual-health seminar early in their transition to college.

Stages of the Innovation-Decision Process Applied to EBP

Knowledge stage. This stage corresponds to the precontemplation stage, when a problem is identified and an individual begins to think about overcoming it (Rogers, 2003). The idea for an innovation comes to life. The quest for evidence of practice change begins and the literature evaluated.

Staff at the University Health Center had recognized that many sexually active students do not practice safe sex by utilizing condoms, and many students have their first sexual encounter while at college. The University faculty recognized students lack knowledge and required freshmen to take a first-semester life skills course, but the content about STIs is limited and at the end of the semester. The literature suggests that sexual health education should be

early in the students transition to college life. The project manager began an EBP search for recommendations on educating college students about STIs.

Persuasion stage. Once adequate evidence was found in the literature that supported a practice change, discussion of the problem with others took place. Lack of sexual-health knowledge in college students has been studied and found to be a problem in this age group (Foster & Byers, 2008; Kaiser Family Foundation, 2003; Kanekar et al. 2010; Rouner & Lindsey, 2006; Okwuokenye et al., 2010; Weinstein et al., 2008). Evidence supporting the practice change was brought to the attention of key stakeholders (Health Center Director, Health Center staff, Student Affairs, and the Life-skills course professor). Discussion of the problem of inadequate sexual-health knowledge began first with the Health Center Director and staff. These stakeholders began brainstorming about types of possible interventions. Student Affairs had their concerns about the topic, After reviewing the plan for the educational intervention, Student Affairs gave their approvel. The Life skill's professor was immediately on board with the proposed educational activity.

Residence Life and the communications department were not as easily persuaded. The University is faith-based and advocates abstinence. Residence Life and the communications department reviewed the intervention and the advertisements prior to assisting with the intervention. They both had reservations due to the subject matter. The project manager was able to review the literature supporting the need for STI education with both departments. Permission to proceed was then granted.

***Decision stage*.** It was decided to use a PowerPoint presentation on STIs with a question and answer (Q&A) discussion at the end of the program. The project manager developed a PowerPoint presentation, e-mail survey, pretest and posttest surveys. IRB approval was granted to collect information and disseminate findings.

The professor for the Life-skills course was contacted and dialogue began. That professor, the Health Center Director, and the Health Center staff were early adopters of the innovation. The professor of the freshmen core class (which is different than the life-skills course) was contacted for class credit for attendance (class credit for this course is often given for attending different offerings on campus), and the intervention was discussed with the professor of the Life-skills course. Freshmen core credit was granted for the EBP project, and the core professor also assisted in advertising the various sessions.The reason for obtaining core credit was to give incentive for students to participate.

Implementation stage. IRB approval was requested and granted. An e-mail request for student participation in an online survey was sent out, for all freshmen 18 or older. The communications department assisted in the email distribution. The online survey was not sent out as early as the project manager would have liked. Ideally the online survey would have been during the first two weeks of classes. The project manager did not anticipate having to get the approval of the communications department due to the subject matter. The communications department sends out mass surveys for the University. The online survey and project proposal had to be approved. Thus the online survey was posted four to five weeks into the school semester.

The program was advertised via flyers.The residence hall assistants were to help hang flyers in the residence halls, but this was delayed because the Director of Resident Life had to approve them and the program. The subject matter was of concern because of the faith-based culture of the University.This was another road block this project manager did not anticipate. After the flyers were approved and presentation times were finalized, the flyers were to be posted in freshmen residence halls by the residence hall assistants. The intervention was projected to begin the second and third weeks of scheduled classes. In reality, after all the approvals were received, the intervention actually started six weeks into the semester. The

core professor advertised the sessions in class. The Director of the Health Center was informed of all activity as the project proceeded.

Confirmation stage. The project manager reported results of the EBP project to the Health Center Director, Student Affairs, and the Life-skill's professor. Participation by the students for the EBP project was low. Those students who participated did reflect an increase in knowledge on the posttest. The sexual health program will not be offered in it's current format. Further discussions on more effective approaches to reach students will take place so this important topic will in some form reach students in a timely fashion as EBP suggests.

Strengths and Limitations of the DOI Model

A strength of DOI model is that it applies to both organizations and individuals, and it is a tool to enhance communication with stakeholders. For this EBP project, the DOI model served as a roadmap to get all stakeholders involved. The persuasion stage was most often revisited, mostly because of the topic, and the faith-based culture of the University. A limitation of the DOI model was having to persuade participants and stakeholders to adopt the intervention; but such resistance can be found in any model of change. Also, the project manager did not identify all key stakeholders from the beginning of the project. Identifying key stakeholders in advance would have been beneficial in gaining support for the EBP project in a timely fashion.

Literature Search

Sources examined for relavant evidence: Search engines and key words.

After developing the PICOT question, the project manager conducted a comprehensive literature search to obtain the best and most relavent evidence regarding college students' knowledge of STIs. Seven computerized databases were searched: Cochran Collaboration and Library, Joanna Briggs Institute (JBI), Academic Premier, Culmulative Index to Nursing and Allied Health Literature (CINAHL), MEDLINE via PubMed, Google Scholar, and Educational

Resources Information Center (ERIC). Keywords used were *college students, young adults, knowledge, sexual health, and sexually transmitted infections.*

Inclusion and exclusion criteria. Inclusion and exclusion criteria were identified in order to locate articles relevant to answering the PICOT question and to provide the best evidence for practice change. Inclusion criteria for this literature review were that studies must be research-based, peer-reviewed or government-led, written in English, focused on college students or young adults ages 18-25, and published after 2002. The 10-year span was chosen due to advances in technology and availability of online information.

Excluded references were those that focused on HIV/AIDS prevention only, focused only on a particular STI, did not evaluate previous knowledge of participants, or were implemented in STI clinics. Abstracts were evaluated against inclusion and exclusion criteria. Full text copies of relevant articles were obtained. A hand search of the *Journal of American College Health* was conducted in order to identify articles that met inclusion and exclusion criteria. In all articles, the reference lists were also reviewed for potentially missed references not retrieved by databases.

Initially the search identified a total of 84 articles. An identification grid was developed and used to track the number of articles included or excluded from the various databases (see Table 2.1).

Table 2.1

Identification Grid

Search Engine	*Abstracts retrieved*	*Excluded*	*Duplicate*	*Included*
Cochran Collaboration	1	0	0	1
JBI	0	0	0	0
Academic Premier	43	35	24	8
CINAHL	26	21	12	5
MEDLINE via PubMed	7	5	2	2
Google Scholar	3	0	0	3
ERIC	4	3	3	1
Hand Search	0	0	0	0
Total	84	64	41	20

Twenty articles met inclusion criteria. Twelve articles focused on participants' previous STI knowledge and did not provide an intervention. Thus, these articles validated the need for some form of educational intervention. Three national guidelines for creation of sexual-health programs were identified. Although they were not specific to college students, they did include part of that age group, so the guidelines were utilized. Five articles provided interventions as well as pretest and posttest data .

Levels of Evidence Research evidence can be evaluated according to three standards: (a) validity, (b) importance, and (c) applicability to the patient or patients of interest (Akobeng, 2005). Some research designs carry more weight than others in their ability to answer the clinical question. This evaluation was based on the Haynes model (2006), a pyramid in which research evidence is assigned to levels of confidence but utilized Schmidt and Brown (2012) leveling descriptions. Schmidt and Brown (2012) extend the levels further to eleven levels of evidence. Systems is at the top of the pyramid; evidence from systems has the highest confidence rating. Level 2 and 3 are summaries and synopses, which carry a high level of confidence. Level 4 includes meta-analyses, systematic reviews, integrated reviews and studies governed by evidence-based practice guidelines. Level 5 is randomized controlled trials and Level 6 is other experimental designs. Quasi-experimental designs are Level 7. Nonexperimental designs are Level 8. Qualitative systematic designs are Level 9. Single Qualitative designs are Level 10 and expert opinions carry the least confidence at Level 11(Schmidt & Brown). For this EBP project, there were three level 4 studies, two level 5, one level 6, two level 7, eleven level 8, and one level 10 study.

Appraisal of Relevant Evidence

Broughton and Rathbone (2001) stated that a good clinical guideline should be (a) valid; (b) reproducible;(c) cost effective; (d) representative and multidisciplinary; (e) clinically applicable; (f) flexible, clear, reveiwable; and (g) amenable to clinical audit. An instrument was

used to assess the validity and quality of the clinical guidelines. The Appraisal of Guidelines for Research and Evaluation (AGREE) instrument which consists of six different domains was used to appraise the guidelines (The AGREE Collaboration, 2001). The first domain evaluates the scope and purpose of the guideline including: the overall aim of the guideline, the specific clinical questions, and the target population for the guideline.

The second domain considers the magnitude that the guidelines represent the views of its intended audience, or stakeholer involvement (The AGREE Collaboration, 2001). Information about the intended audience should guide the development of the guideline. Information about the composition, disipline, and relevant expertise of the guideliine development group should be provided (The AGREE Collaboration, 2001).

The third domain is rigor of development which details the strategy used to search for the evidence, including search terms used, sources consulted, and the dates of the literature covered (The AGREE Collaboration, 2001). Also included in this domain is the criteria for including and excluding evidence identified by the search. A description of the methods used to formulate the recommendations and how final decisions were arrived at and areas of disagreement and methods of resolving them should be specified (The AGREE Collaboration). A guideline should be reviewed externally before it is published and the reviewers should not have been involved in the development of the guideline (The AGREE Collaboration). In addition, there should be a clear statement about the procedure for updating the guideline.

Claritiy and presentation is the fourth domain of the AGREE instrument. The recommendations should provide a substantial and precise description of the appropriate management of a sitiuation and a defined patient group as defined by the body of evidence (The AGREE Collaboration, 2001). Any uncertainties should be included in the guideline as well. The guideline should also present other options for the subject matter it covers (The AGREE collaboration).

The fifth domain refers to applicability of the guideline. Applying the recommendations may require organizational changes, or additional resources which may be a barrier to using the recommendations in daily practice (The AGREE Collaboration, 2001). The guideline should be cost-effective to reduce strain on limited resources. A guideline should also present clearly defined review criteria. Measuring adherence of a guideline can enhance its use (The AGREE Collaboration).

The sixth and final domain of the AGREE instrument is editorial independence. There should be an explicit statement that the views or interests of the funding body have not influenced the final recommendations of the guideline (The AGREE Collaboration, 2001). All conflicts of interest of the development group must be clearly presented. It is most agreeble to have a guideline that receives no external funding to alleviate conflict of interest.

The instrument uses a Likert scale one through four, with one being strongly disagree and four being strongly agree. Domain scores are calculated by summing up all the scores of the individual items in a domain and by standardizing the total as a percentage of the maximum possible score for that domain (The AGREE Collaboratio, 2001). The six domains scores are independent of each other and should not be aggregated together into a single quality score. The overall assessment requires the appraiser to make a judgement as to the quality of the guideline, taking each of the appraisal criteria into account (The AGREE Collaboration). Overall assessment of the guideline contains a series of options, strongly recommend, recommend with provisions, would not recommend, and unsure (The AGREE Collaboration).

The Joanna Briggs Institute (JBI) ConNect Grades of Recommendation (JBI, 2008) were used to evaluate recommendations for application to clinical practice (see Table 2.2 for levels and grades of recommendation).

Table 2.2
Review of Literature Leveled and Graded or Scored in Alphabetical Order

Reference	Schmidt and Brown Level and JBI Quality Grade or AGREE scores	Strength	Weakness	Application to EBP
(Ergene,Cok, Turner & Unal, 2005)	5 B	Was a controlled study, Peer educators were pre-tested, trained and post-tested which revealed an increase in knowledge. Peer education to participants then post-test compared to those in the lecture and control groups. The aims of the study were clear.	Pretest was only given to peer educators so it is hard to tell what the participants already knew.	Examined the effects of lecture compared to no education, and peer education. Lecture education is more beneficial than peer education in improving knowledge of STI. Recommendation is lecture based curriculum.
(Foster & Byers, 2008)	8 C	All scales were tested for internal consistency.	Homogenous sample may not be generalizable to other populations.	Determination of STI knowledge in relation to stigma and seeking care are important factors to consider in programming.
(Future of Sex Education Initiative, 2012)	4 AGREE: Strongly recommend Domain Scope/Purpose 88% Stakeholders 88% Rigour 83% Clarity 83% Applicability 88% Editorial independence 100%	National survey of sex education in the United States grades k-12. Guidelines use criterion from the most successful curriculums. Government funded .	Guidelines not specific to college students but do apply to adolescents.	Could be used as guide for the educational intervention, as it displays the best evidence for an educational curriculum.
(Gokengin, et al., 2003)	8 B	Target group was first and fourth year college students. Researchers recruited a large sample.	Study was done in Turkey. Validity and reliability of questionnaires was not discussed.	Researchers surveyed, knowledge, attitudes and risk. Recommendation strongly recommends STI education.
(Jones & Haynes, 2006)	8 C	Intervention included appropriate age groups and consisted of a survey and focus group intervention.	Self-report 2 surveys given between 2 different settings, a college in the UK and a university in UK.	Assessed knowledge of STI and provided an intervention. Researchers found that students were knowledgeable of STIs but continued risk taking.

Reference	Schmidt and Brown Level and JBI Quality Grade or AGREE scores	Strength	Weakness	Application to EBP
(Kaiser Family Foundation, 2003)	8 B	Target Population 13-25 Random survey Measured self-efficacy, knowledge of STI , Provided recommendations. National survey updated periodically. Representative oversamples of racial and ethnic subgroups.	On a national level 1800 participants seems small. In addition, were they from all regions of the nation? Did not specify how the participants were gathered. Researchers did not evaluate economic status of participants.	Measured knowledge of 13-25 year olds found that youths would like accurate reliable information. Survey was a cost effective means of obtaining baseline data. It supported the need for comprehensive sex education for young adults.
(Kanekar, Sharma, Cottrell, Succop, & Bernard, 2010)	5 B	Randomized controlled trial: Included pretest and post-test data. Testing measures were valid and reliable.	Self-report data and social desirability. Small sample. Homogenous sample of African American students.	Evaluated a knowledge-based program to a theory-based intervention. No difference between the two.
(Kirby, 2007)	4 AGREE; Strongly recommend Scope/Purpose 88% Stakeholders 88% Rigor 83% Clarity 83% Applicability 88% Editorial Independence 50%	National survey was basis of guidelines funded by CDC and National Association of School Health and government funded.	Study was not specific to college students.	Parts of program could be applied to the young adult and was theory based. Recommendation theory based sex education at the appropriate age.
(Kirby, Laris, & Rolleri, 2007)	4 A	Reviewed 83 different programs for best evidence for curriculum development for STI prevention.	Study was not specific for college students.	The best evidence could be adjusted to be age appropriate. Recommendation curriculum based sex education.
(Klein & Knauper, 2003)	8 C	All scales used were recorded valid and reliable.	Confusing with parts of study for women only then mixed sampling.	Researchers measured knowledge to perceived self-efficacy.
(Lou & Chen, 2009)	8 B	Pilot done. Valid scales were used.	Cultural ideas were different from United States.	Researchers did not find a correlation between knowledge and safe sex.

Reference	Schmidt and Brown Level and JBI Quality Grade or AGREE scores	Strength	Weakness	Application to EBP
(Moore & Smith, 2012)	7 B	Was an extension to a previous study at the same institution Consisted of pre-test survey, 1 week written response to not guide what should be learned but for participant to relay what new knowledge they gained from the intervention and 2 month posttest survey Generalizable to other colleges.	This study evaluated perceived knowledge but not how it would translate into safer sex skills. The paper component did not give cue reminders of what was covered in the programs so difficult to ascertain what they improved on from the program.	Evaluation of increased new knowledge of STI.Measured sexual health information college students were unfamiliar with, prior to taking a sex education class. Suggests lecture sex education is needed based on survey of what students already know..
(Moore, Smith, & Folsom, 2012)	7 A	Tested 3 interventions and provided posttest results 302 freshmen students IMB model based intervention, Pre and Posttest survey. Study aims were clear.	Groups were of varied sizes did not specify how groups were assigned. Class size could have had an impact on results. Internet time not identified Discussion could be impacted by class size.	Intervention measured ways of relaying knowledge of STI. Lecture over internet sites with Q&A. Study done with college freshmen. Supports use of lecture format to increase knowledge base of STI.
(Okwuokenye et al., 2010)	8 A	With campus wide initiatives, there was a marked decrease in STIs. It was comprised of a multi-faceted intervention. Participants were university students. Made changes in the individual, community and organizational levels.	Report was difficult to follow. Several interventions were employed and difficult to determine which one or all were effective. This school was much larger than the one for EBP and funding was better for programming.	Study incorporated an educational component to their intervention. Researchers used a behavioral theory as its basis. Intervention at the individual level was based on HBM. At the Organizational, level DOI was used.
(Rouner & Lindsey, 2006)	10 B	Theory based. Interviewers were trained to seek patterns.	Small sample consisted of women only. Self-report	Information studied was relevant to participants' knowledge of STI. Recommendation was women need educational intervention to increase knowledge of STIs. Specific intervention not identified.

Reference	Schmidt and Brown Level and JBI Quality Grade or AGREE scores	Strength	Weakness	Application to EBP
(Rutledge, Siebert, Chonody, & Killian, 2011)	8 A	Undergraduate students were the focus of study. Researchers studied satisfaction of sex ed. In addition, perceived knowledge of sexual health was measured.	Students were enrolled in a college sex education course at the intervention. Self-selected selected. Self-report data of past experience or recall.	Survey of pre sex education of perceived knowledge supports that students really do not know what they think they know. Recommendation first year sex education.
(SIECUS, 2004)	4 AGREE: Strongly recommend Scope/Purpose 88% Stakeholders 88% Rigor 83% Clarity 83% Applicability 88% Editorial Independence 100%	Designed by a government entity. Best evidence for successful sex ed curriculum. Government funded.	Not geared specifically to college students but can be generalized to the young adult.	Best evidence for curriculum creation. To be used as a guide for this EBP intervention.
(Synovitz, Herbert, Kelley, & Carlson, 2002)	8 A	Study recruited a large sample Content of questionnaires were checked for validity. Study compared old knowledge to new knowledge.	There were more females than males. Researchers used systematic selection of participants.	New knowledge was measured by pretest and posttest. Recommendation of sexual health education to be provided for college students.
(Weinstein, Walsh, & Ward, 2008)	8 A	Study was representative of population of interest. Study was well diverse. No students declined to participate. Scales used were valid and reliable	Study incorporated limited information on safe sex.	Measures perceived knowledge to actual knowledge of STI. Knowledge and safe sex practices are mutually exclusive. Recommendation students need sex education.
(Yazici, Dolgun, Zengin, & Bayram, 2012)	8 B	Ample participants representative of the population of interest. All participants were volunteer.	Cultural influences different from US students.	Study measured perceived and actual knowledge as well as sexuality attitudes. Most information regarding sexuality came from friends. A lack of knowledge was noted. Recommendation was nurses and midwives take an active role in educating young people.

Note. DOI = Diffusion of Innovation; JBI = Joanna Briggs Institute; HBM = Health Belief Model; IMB = Information Motivation Behavior; STI = sexually transmitted infection

JBI grade A = strong support that merits application; B = Moderate support that merits application; and C = Not supported

The JBI grades of recommendation follows the process recommended by AGREE . Recommendations are graded on the basis of both the level of evidence that underpins them and their clinical relevance (JBI, 2008). The grading system evaluates feasibility, appropriateness, meaningfulness, and effectiveness. The system utilizes three grades with A meaning strong support of the recommendations, B meaning moderate support that merits consideration of application, and C meaning the recommendations were not supported (JBI) .

A table was designed for reviewing the literature in alphabetical order according to author. It includes reference, design, sample and setting, methods used, theory, and outcomes of the study (see Table 2.3).

Table 2.3

Review of Literature and Level of Evidence

Reference	Design / Level of Evidence	Sample &Setting	Methods	Outcomes
(Ergene, Cok, Tumer, & Unal, 2005)	Randomized Controlled Trial (RCT)/ 5	2 metropolitan universities in Ankara, Turkey.387 participants 157 men and 230 female's ages18-21.	Voluntarily recruited by peer educators 2 experimental groups and one control *N* =204 for peer education, *n* = 74 for lecture and *n* = 109 for control Pre-test of HIV/AIDS Knowledge test and the HIV? AIDS attitude Questionnaire were administered to all peer educators as pre-test. 50 peer educators were selected and 45 were trained. Lecture consisted of 1 hour with 15 Q&A sessions. No theory identified.	Knowledge was significantly higher in the lecture group but both were higher than the control p <.05 Peer education was more significant than lecture in increasing attitude change in females of HIV/AIDS. Attitude change in lecture group was the same for males and females.
(Foster & Byers, 2008)	Survey / 8	Canadian university 218 undergraduates signed up voluntarily, no one lost to attrition. 125 females and 93 males.	Background questionnaire, STI knowledge scale, sexual attitudes scale, sex anxiety inventory, Right wing Authoritarian scale, Attitudes toward women scale, internal consistency during study was high. Participants were place in a private cubical to ensure privacy. Length of time 40 minutes and participants were debriefed afterward. Theories used: Attribution-value model, conservative and sexual ideology.	Overall home sex ed poorly rated .Neither satisfied or dissatisfied with their school ed.. Neither conservative or liberal in terms of sexual attitudes Moderate levels of sexual anxiety, Overall participants were knowledgeable about STIs, Participants reported moderate levels of STI stigma and shame They found that those who reported their school sex ed highly had less STI stigma and shame.
(Future of Sex Education Initiative, 2012)	Guideline / 4	Kindergarten thru 12th grade.	Social cognitive theory. Key indicators: Core concepts, Analyzing influences, Assessing information. Interpersonal communication, decision making, goal setting, self-management, advocacy.	National Sexuality Education Standards 13 Characteristics of effective sexuality education.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Gokengin, et al., 2003)	Randomized survey / 8	University in Turkey, first and fourth year students. Classroom meeting of student population. 2,2217 mixed male and female.	Survey developed by researchers a 28 item questionnaire ,9 sociodemographic,, 4 on STI knowledge,, 5 on sexual history, ,2 on sexual behavior 1 on source of knowledge, one on contraception and 5 on sexual attitudes. Contacted 2401 students and 2217 agreed to participate. No theory identified.	36% of students were sexually active. 10% did not answer. 71% of sexually active students had their first encounter between ages 15-19. No difference noted between male or female. Those sexually active males 38% never use condoms, 21% of females no condoms. 31% indicated they had sex with different partners. Males 39% were more likely to have sex with different partners than females .Students in middle socioeconomic class reported higher use of condoms than lower class. Only 9.7% reported being suspicious of having an STI and 3% reported having one. Condom use was most common form of contraception 67% followed by OCP's 29%. Some students use both. Knowledge of HIV was96%, Gonorrhea ,70%, syphilis 66%b HepB 41%, Hep c 25%, Herpes 14%, chlamydia 13% and genital warts 6% Knowledge of transmission was high 94% , Signs and symptoms were poor roughly 50%, Newspaper and magazines were the most common source for knowledge 77% , school was not listed. Sexual attitudes males were more careless and less concerned with getting an STI as well as they used condoms less frequently than females.

Reference	*Design/ Level*	*Sample &Setting*	*Methods*	*Outcomes*
(Jones & Haynes, 2006)	Questionnaire And qualitative / 8	United Kingdom 16-24 year-olds from local college. 2 surveys were done at different times. First survey 94% response rate or 303 responses. Second 289 response rate or only 14% of those sent out.	Surveys X 2 prior to an intervention of focus groups during a class setting 45-75 minutes long., followed by a post intervention discussion group for themes. 8 focus groups. No theory identified.	Increased knowledge did not reduce risk-taking behavior. Young adults had high STI knowledge but still engaged in risky behaviors. Four of six STI questions answered correctly by 69% of participants. The focus groups displayed a higher degree of STI knowledge but that could be that they are more motivated. 49% of students reported to not using condoms consistently.
(Kaiser Family Foundation, 2003)	Non-experimental with Random survey / 8	Nationally representative sample of !800participants in 3 different age groups 13-14, 15-19, and 19-24 year olds.	Survey questionnaire. No theory identified.	Identified that young people feel pressured to have sex in about one third of those surveyed. 3 out of five young adults state that delaying sex is a nice idea but nobody really does it. Oral sex plays a large role in America's young peoples' life, approximately 25% of those sexually active, and many are unaware of the health risks associated with this type of activity. Dangerous gaps in knowledge of STI . One fifth of participants believe they could tell if someone had an STI,and one sixth believe that STI transmission can only occur when obvious symptoms are present. Young people view safer sex more in regard to terms of reducing pregnancy. Seventy-one percent consider sex with other forms of birth control safer sex. One third of young people surveyed consider oral sex as safer sex even though STI's can be transmitted this way. More than three fourths of the participants expressed a need for more information about sexual health topics. And how to use condoms appropriately.

Reference	Design	Sample &Setting	Methods	Outcomes
(Kanekar, Sharma, Cottrell, Succop, & Bernard, 2010)	RCT/ 5	College in Pennsylvania, convenience sample of 141 African- American undergraduate and graduate students. Recruited with assistance from the cultural organization on campus and use of fliers and posters on campus. None lost to attrition.	Randomized into one of 2 groups the theory group and the knowledge-based group. Seventy-three participants in the theory (experimental group) and 68 in the knowledge group. Workshop based intervention each 2 hours in length. Theory based used constructs of situational perceptions of safe sex,, self-efficacy for safe sex, self-efficacy in overcoming barriers for safe sex, expectations for safer sex and control for safe sex. The knowledge-based intervention was education on STIs. Theory: social cognitive theory. Pre-test, post-test at one week and six weeks. $4 cash at each survey.	63% had never taken a sexuality class. At one week and six weeks there was no significant difference between groups regarding the five constructs of SCT.Measured situational perceptions for safer sex 5 constructs SCT, self-control, self-efficacy for safer sex, self-efficacy for barriers of safer sex and self-control for safer sex. There was no difference between groups. They only significant factor was time as both scorwed overall higher at post-test at 6 weeks.
(Kirby, 2007)	Guideline / 4	Kindergarten through 12th grade. Government funded.	Evaluation of successful programs. Utilizes a logic model and theory for behavior change.	A Theoretical Guide for developing and adapting curriculum based programs. Parts can be applied to young adults. Reproducible and cost effective.

Reference	Design/ Level	Sample &Setting	Methods	Outcomes
(Kirby, Laris, & Rolleri, 2007)	Systematic Review / 4	Reviewed 83 studies that measured the impact of curriculum based sex and HIV education programs of youth 25 and under. Studies were experimental or quasi-experimental group based education. Studies had to have intervention and comparison groups with pre-test and post-test.Sample size of 100 at least. Had to measure one or more sexual behaviors identified. Measure results of those behaviors that change quickly at 3 months or 6 months. Studies from 1990-2007. Did not have to be peer reviewed.	All effects on behaviors were considered significant if they were p <0.05 or significance was based on either total study population or a large sub-group that was roughly one third of the study population. 54% of studies in review used the social cognitive theory for the basis of their intervention. 51% used experimental design with comparison groups and pre-test post-test.	The evidence is strong that sex education programs do not hasten or increase sexual behavior but instead some programs delay or decrease sexual behavior, and increase contraceptive and condom use. Virtually all programs discussed abstinence but also discussed prevention and condoms. Three interventions were replicated the original positive effects confirmed. Lists characteristics of effective curriculum based programs. Involve different people with varied backgrounds in theory, research and sex/HIV ed. To develop curriculum. 2 Assess relevant needs and assets of target group**.** Used a logic model approach to develop the curriculum. 4 designed activities consistent with community values and available resources, time, staff skills and facility. 5 Pilot the program. The contents of the curriculum should focus on clear health goals; the prevention ofSTIs. Focus narrowly on specific behaviors leading to these goals. Give clear messages and address situations that may lead to them. Address psychosocial risk and preventive factors affect the behavior (knowledge, risk, values self-efficacy Create safe social environment, include multiple activities that target risk and protective factors. Employ instructionally sound teaching methods. Employ activities that include behavioral messages appropriate for the age group.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Klein & Knauper, 2003)	Questionnaire based study Multi study / 8	First study 71 female students in a Canadian university. Second study 26 female and 16 male students from same university. Ages 18-24.	Recruitment was via poster and fliers on campus and course credit or $10. 138 signed up, only 71 met inclusion criteria sexually active, in a relationship at least 1 month, and using condoms. The second study investigates assoc. of mental representations of condoms, and STI thought avoidance with consistency of condom use. STI knowledge 19 items, 14 items on avoidance, 10 assertiveness and 7 self-efficacy questions taken from various scales. The discussion of safe sex practices had 5 items. Seven items on mental representation of condoms and on1 on consistent use were included. No theory identified	Women with lower sexual self-efficacy, assertiveness, and lower STI knowledge are more likely to avoid STI thoughts. The second part of study had to do with condom use and thoughts; knowledge was not measured. Second study found that certain mental representations of condoms as well as cognitive avoidance were assoc with condom use consistency. Associations differed between men and women.
(Lou & Chen, 2009)	Crossectional survey / 8	Nine hundred students at junior college in Central Taiwan. Of 900 only 823 surveys were valid.	Sexual knowledge scale, sexual attitudes scale and safe sex behaviors scales were administered by Survey. No theory identified.	They found that sexual knowledge did not affect safe sex behaviors p = 0.05. There was a direct effect on sexual knowledge and sexual attitudes. The findings indicate that adolescents with higher sexual knowledge have lower sexual attitudes. Sexual attitudes and sexual knowledge both did not affect safe sex behaviors. This contradicts the idea that more sex education will increase condom usage. Students with more sex knowledge had negative sexual attitudes.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Moore & Smith, 2012)	Qualitative Content analysis / 7	Expansion of a previous study in a Midwestern university. 224 students enrolled in an introductory college class. Average age 19.5 mostly female with mixed races and ethnicity.	Intervention; video, lecture and internet sites referred to; then participants wrote a 2 page summary of any new knowledge they obtained from the intervention. No participants lost to attrition Length of follow-up one week post intervention Assessment tools authors used content analysis to analyze papers. No theory identified.	Findings can be used to develop future sex education programs for college students. 18% of participants learned new information regarding STI and correct condom use. 20% learned symptoms of STI, 12% mentioned learning something new on transmission of STI. 12% learned something new on testing and treatment of STI. 4.1% learned something new on sexual behavior. 16% learned something new on the prevalence of STI. 17% learned something new about condoms. The study suggests that most learning took place in the lecture groups as opposed to the video and internet groups.
(Moore, Smith &Folsom, 2012)	Quasi-experimental / 7	Midwestern University 302 students enrolled in an introductory college course.	Students were enrolled into one of three intervention groups, Pre and post survey was administered. All groups had the same pre intervention surveys. Intervention group 1 viewed a video followed by class discussion, group 2 listened to a lecture and had a condom demonstration, and group 3 was provided a list of 10 sexual health websites and was asked to visit 3 and wrote a 2 page evaluation of the intervention. Pre and post survey consisted of 21 t/f questions regarding general sexual health and 3 questions regarding motivation to use condoms and 2 condom self-efficacy questions. No theory identified.	There was a significant difference between pre and post survey indicating an overall improvement in knowledge of sexual health. Analysis of variance revealed that lecture and video interventions were more helpful than internet for gaining new knowledge. , $p<.001$ They found that having an instructor guide the learning process has more impact than independent research on the internet.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Okwuokenye, et al., 2011)	Retrospective Multifaceted / 8	Georgia State University male and female students who utilized the health center. In a three year span. Sample total not specified.	Theory for the individual level based on health belief model assessed attitudes. At community level, the social cognitive theory was used to assess STI knowledge. At the institutional level diffusion of innovations for increased funding for the office of health promotion. Primary prevention campus wide educational series of STIs.	Increased funding for health promotion office due to positive outcomes. Statistical data not present. With the advent of STI education there was a documented decrease in STIs diagnosed.
(Rouner & Lindsey, 2006)	Interview Qualitative / 10	Western University in US fifteen first year students age 18 all women. Random sample of 68 female freshmen names was retrieved. The researchers decided they needed a sample of 15 so they took the first 15 women who agreed to participate. There were 4 refusals so response rate was 79%.	Interviews 45-85 minutes in length. Pattern identification was used to organize data. Questions such as previous formal STI education, their perceived knowledge about STI, symptoms of STI and their perception of their risk level for STI. Theory: social cognitive theory.	The participants generally displayed a strong self-confident demeanor in their ability to make sound decisions because of their perceived knowledge about STIs relating this confidence to their ability to be open communicators and their ability to find information. 13 perceived themselves to be quite knowledgeable. Those that perceived themselves to be knowledgeable about STIs could not name symptoms of STI or many names of STIs. Only 2 women exhibited information seeking behavior. They noticed there is a disconnect between perceived and actual knowledge. These women were found to be empowered but ill informed.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Rutledge, Siebert, Chonody, & Killian, 2011)	Survey / 8	Southeastern university convenience sample of students attending a human sexuality course. Two groups 18-23 and 23 and over. Mixed undergraduate and graduate.	Pre-test on first day of class and post-test on last day of semester. 333 pretests and 269 post-tests. No theory identified.	67% participants felt parents should have primary responsibility of educating them but only 15% received info from parents. Most received info from friends 39%. Less half discussed STIs in school. 37% dissatisfied with the way they learned about sex. 68% of students perceived themselves to be knowledgeable about sex.
(SIECUS, 2004)	Guideline / 4	Kindergarten thru 12th grade	Evaluation of many school programs	Key Concept 1: Human Development Key Concept 2: Relationships Key Concept 3: Personal Skills Key Concept 4: Sexual Behavior Key Concept 5: Sexual Health Key Concept 6: Society and Culture Effective programs: • Focus on reducing one or more sexual behaviors that lead to unintended pregnancy or STI infection. • Are based on theoretical approaches that have been demonstrated to influence other healthrelated behavior and identify specific important sexual antecedents to be targeted. • Deliver and consistently reinforce a clear message about abstaining from sexual activity and/or using condoms or other forms of contraception. This appears to be one of the most important characteristics that distinguish effective from ineffective programs.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Synovitz, Herbert, Kelley,& Carlson, 2002)	Survey / 8	Southern college 915 students. Female 602 and male 313 18 years and above. During class periods.	Survey 947 sent 915 filled out 32 lost. No theory identified. Recruitment was not clear. Of 55 classrooms in 4 universities, researchers were able to enter 37. Instrument developed by researchers contained 27 multiple choice on sexuality knowledge, 5 demographic, 3 on previous school sites, 4 pertaining to previous sex ed, 15 on perceptions of quality of previous sex ed, Instrument verified by sex educators.	The participant on a whole performed poorly on sexual knowledge 55%. Perceptions of the quality of their sex education was average. Women scored significantly high in knowledge than men p<.0001. Determined a need for better pre-college sex education instruction.
(Weinstein, Walsh, & Ward, 2008)	Survey / 8	Midwestern University: 347 inclusion Criteria: undergraduates in a study of sexual health knowledge for course credit age 18-23 both male and female. Included mixed races. Fifteen lost due to incomplete surveys.	55 questions regarding knowledge of sexual health on the topics of reproductive health, contraception, condom use, STIs and HIV/AIDS. Eighteen questions regarding content of previous sex education in school. Three measures that assessed sexual communication and confidence in relationships and a second measure to assess self-efficacy. 3 items about confidence with condom use, Tools All surveys were taken from other sources and modified. No theory identified.	Overall college students demonstrated fairly poor understanding of sexual health scoring 64% correct on the sexual health measure .Women were slightly more knowledgeable than men especially on contraception and STIs. T-tests were used. Sexually active participants were slightly more knowledgeable than non-sexually active Bivariate analysis mainstream reproductive health education had the strongest connection with global knowledge. Sexual health knowledge was a positive indicator for sexual communication and confidence. P=<0.5. Reliability of scales was high.. More knowledge did not ensure consistent condom use.

Reference	Design/Level	Sample &Setting	Methods	Outcomes
(Yazici, Dolgun, Zengin, & Bayram, 2012)	Descriptive cross-sectional / 8	Istanbul University volunteers 877 students 17-28 ages. 83% were female Classroom after final exams.	877 students volunteered to fill out questionnaire. Data analysis SPSS. No theory identified.	Only 27% of students had any formal sex education. 39% perceived their sexual knowledge as sufficient.16.6% perceived their knowledge as insufficient. 36% of students voiced friends as the source of sexual health.51% girls and 70% males against premarital sex. 8% sexually active of the 8% 5.9 % used protection and 3% had an abortion. Reasons for abstaining from sex social norms 28% of girls and 24% of boys, Family 19.5% of girls and 5.4% of boys, risk of STI 3% of girls and 12.2% of boys. 50% rely on friends for information The lack of sex ed in schools pushes them to other means.

Note; ed = education; STI = sexually transmitted infection; t/f = true/false

Construct EBP

Synthesis of Appraised Literature in Decending Order

The three guidelines for structuring and implementing an educational sexual-health curriculum (Future of Sex Education Initiative, 2012; Kirby, 2007; SIECUS, 2004) were evaluated; all reached a Level 4 in the Schmidt and Brown model, with an AGREE score of strongly recommend. All three guidelines advocated programs based in behavioral theory. Advocating for comprehensive programs, all three guidelines focused on education about STIs, prevention, increasing self-efficacy, and behavior change. Kirby (2007) and the Future of Sex Education Initiative (2012) emphasize the use of a logic model to create and evaluate sexual-health curriculums. As discussed earlier, the guidelines were appraised using the AGREE tool. The Future of Sex Education Initiative (2012) and SIECUS (2004) were both government funded and Kirby (2007) was funded by an anonymous donor. All three did not explicity identify a specific clinical question but the recommendations included an outline which indicated core concepts, values, and standards for sex education curriculum. The key recommendation of all three guidelines was the provision of effective sexual health education for adolescents. The recommendations are to provide medically accurate, developmentaly appropriate, and evidence-based sexual health eduacation to provide students with the skills and resources to make informed and responsible decisions.

The stakeholders in all three guideliines were identifiable. The core concepts, values, and standards can easily be applied to the young adults for this EBP. All three did identify needed resources but did not discuss funding or budgeting for additional resources. Plans for future updates were not easily identified, but all three did have evauation tools for the identified curriculum. The scores on the AGREE scale were slightly higher for the Future of Sex Education Initiative guidelines and they were most recent. Therefore it was decided to use the standards of this guideline for this EBP project. All three rated a strong recommendation.

The only systematic review for this EBP project was appraised using the JBI critical appraisal tool for systematic reviews. Kirby et al. (2007) conducted a systematic review of 83 different sexual-health curriculums (Level 4 and JBI grade of A) that measured the impact of curriculum-based STIs and HIV education programs for youth under age 25. All studies examined were experimental or quasi-experimental designs with group-based sex education. All studies had to have an intervention and comparison group with a pretest and posttest. The researchers also excluded sample sizes of less than 100. Studies had to measure at least one sexual behavior, (such as STI diagnosis and pregnancy) at three and six months. Included studies were from 1990 to 2007 from all around the world. Peer review was not required. Fifty-four percent of the studies reviewed utilized the SCT as a basis for their program, and 51% were experimental design with comparison groups along with pretests and posttests.

Kirby and colleagues (2007) determined that there was strong evidence that comprehensive sex-education programs did not hasten or increase sexual behavior, but instead some programs delayed or decreased sexal behavior as well as increasing contraception and condom use. The results of this systematic review were later developed into guidelines for successful creation of sexual-health curricula.

The MAStARI appraisal tool by JBI was used to evaluate the remaining studies for this EBP project. The basis for this EBP project included two randomized controlled studies, a Level 5 with a JBI rating of B. Ergene, Cok, Tumer, and Unal (2005) did a two-part study (at a college in Turkey) where they trained peer educators, and the peer educators then led focus groups. Participants were randomly placed into a focus group, a lecture group, or no group. Pretest and posttest information was only retrieved by the peer educators, who were trained by the researchers. The pretest and posttest scores were significant for an increase in knowledge of the peer educators. Posttest data were collected from the peer focus groups, lecture group, and

those receiving no education. They reported that there was a signficant benefit to having a lecture format for STIs education compared to peer-education *(p* < .05).

In a college in Pennsylvania, Kanekar et al. (2010) conducted a randomized controlled study with a convenience sample of 141 African American students. Two groups were identified: a theory-based intervention group and a knowledge-based lecture group. Five constructs of SCT were measured at one week and six weeks; researchers determined there was no significant difference between the results from the groups. The only significant factor in the study was time, as both groups improved at the six-week posttest. Recommendation of sexual health education being needed but does not need to be theory based.

One study was a Level 7 with a JBI grade of B (Moore & Smith, 2012) and one Level 7 with a JBI grade of A (Moore et al., 2012). These were quasi-experimental studies done on the same campus in the Midwest. Three different interventions were implemented with pretest and posttest data collection. The interventions were based on the information motivation behavior (IMB) model. In the study by Moore et al. (2012), participants were enrolled into either a video group, a lecture group, or an Internet group. Overall, all three groups showed a significant increase in knowledge of STIs scores from pretest to posttest. Analysis of variance revealed that lecture and video interventions were more helpful than Internet for gaining new knowledge (*p* < .001). Those data also suggested that having an instructor guide the learning process had more impact than independent learning by video or Internet. The second study (Moore & Smith, 2012) was an extension of the first. A survey was administered to students who had participated in the previous study. Those participants from the previous study were then asked to write a two-page summary of their perceived knowledge of sexual health. There were no cue reminders of what had been covered in the presentations. Results from the summaries compared to the pretests concluded that sex-education programming is needed for young adults.

The appraisal also included four studies at Level 8 with a JBI grade of A (Okwuokenye et al., 2010; Rutledge, et al., 2011; Synovitz et al., 2002; Weinstein et al., 2008). Okwuokenye et al. (2010) increased STIs programming campus wide and then compared STI rates from past and current years to determine if there were fewer STIs diagnosed after increased campus-wide programming was instituted. This study made changes at the individual, community and organizational levels. By the results of this study, the researchers were able to gain organizational funding for future sexual health education programs.The researchers recommend sexual health education for college students in any medium.

Results indicated at a university in the southeastern U.S., Rutledge et al. (2011) surveyed two groups of undergraduates, ages 18-23 and over 24, regarding perceived and actual sexual-health knowledge.These pretests preceded a semsester class. Thirty-nine percent of participants were educated by friends regarding sexual health. Thirty-seven percent were dissatisfied with the way they learned about sex. Sixty-eight percent perceived themselves to be knowledgeable about sex. Fifty-one percent of the posttest participants viewed themselves as being knowledgeable prior to taking the course. This study recommends sexual health education for college freshmen.

Synovitz et al. (2002) surveyed 915 students from four different universities and found that participants, as a whole, performed poorly on sexual knowledge (55%), demonstrating a profound need for pre-college sex education instruction. They also found that women scored significantly higher than men ($p < .0001$). Weinstein and colleagues (2008), at a university in the U.S. midwest, surveyed 347 undergraduates ages 18-23 regarding sexual-health knowledge, STIs, contraception, and condom use. Overall, the participants demonstrated poor understanding of sexual-health issues, scoring only 64% correct on the sexual-health measure . Women were slightly more knowledgeable than men. Sexually active participants were more knowledgeable than nonsexually active participants. Sexual-health knowledge had a positve

effect on communication and confidence ($p < .05$). Knowledge did not affect condom use. Although knowledge did not affect risk taking behaviors, sexual health education is recommended for college students.

Also appraised were five Level 8 studies with a JBI grade of B (Gokengin et al., 2003; Jones & Haynes, 2006; Kaiser Family Foundation, 2003; Lou & Chen, 2009; Yazici, et al., 2012) because the studies evidence was moderate that knowledge of STIs increased. Gokengin et al.(2003) surveyed 22,217 students in a Turkish university. The researchers collected data on STIs knowledge and safe sex behaviors. The survey only included four questions on STIs, five on sexual history, and two on sexual behaviors. The results did not show evidence that sexual-health knowledge affected safe sex behaviors but did support sexual health education for college students.

A mixed survey and qualitative study by Jones and Haynes (2006) was designed to determine if increased knowledge of STIs decreased sexual risk-taking behaviors; results suggested that high STI knowledge does not affect risk-taking behaviors. The survey only consisted of six questions regarding STIs.

The Kaiser Family Foundation (2003) randomly surveyed young adults to measure self-efficacy and STI knowledge. This was a national survey that Kaiser updates periodically. The survey had 1800 participants in three different age groups: ages 13-14, 15-19, and 19-24. One fourth of those surveyed indicated they would like to know how to use condoms correctly. Dangerous gaps in knowledge were identified, as one fifth of those surveyed believed they could tell by looking if someone had an STI.

Lou and Chen (2009) conducted a cross-sectional survey of 823 college students in Taiwan to determine sexual knowledge, attitudes, and safe sex behaviors; they found that sexual knowledge did not affect safe sex behaviors ($p = .05$). They determined there was a direct effect of knowledge on sexual attitudes. Young adults with increased sexual knowledge

had lower sexual attitudes toward condom usage. Provision of sexual health education to college students was recommended.

In the study by Yazici, et al. (2012) at the Istanbul University, 877 students aged17-28 were surveyed to determine perceived and actual STIs knowledge. The researchers found that 27% had formal sex education, and 39% felt their knowledge of STIs was sufficient. The study did not specify the questions asked about STI and sexual knowledge, but the study supports need for increased STI education.

This review also included two Level 8 with a JBI grade of C (Foster & Byers, 2008; Klein & Knauper, 2003). Foster and Byers (2008) surveyed 218 undergraduates in a Canadian university regarding STI knowledge, sexual attitudes, sexual anxiety, right-wing authoritarian views, and attitudes toward women. The study had 125 female and 93 male participants. The study hypothesis was not supported and the study was difficult to follow. The researchers hypothesized that individuals with litte STI knowledge were more likely to associate STIs with stigma and shame. The study did not support this hypothesis.

Klein and Knauper (2003) performed a two-part study. In one part, women answered two out of five clinical questions, and both men and women answered the remaining three clinical questions. This study was intended to measure knowledge of STIs and cognitive avoidance of STIs. The mixed group focused on safe sex behaviors, mental representation of condoms, and condom use. An increase in STI knowledge was not supported by this study. Knowledge of STIs was thought to account for 3% of the avoidance of STI thoughts.

Rouner and Lindsey (2006), a level 10 qualitative study with a JBI grade of B, was included in this review. This study did not provide an intervention but did examine participants oral report of STI knowledge. The participants were asked a series of questions regarding sexual health. The participants had a strong perception of being knowledgable of STIs but they were overly confident. The women in the study were found to be empowered but ill informed.

This study had a small sample size and all information was self-report. This study strongly recommended sexual health education to young adults.

Best Practice Model Recommedation

Based upon the literature and prior research, it was determined that knowledge, perceived risk, and self-efficacy for prevention of STIs is needed and would increase with an educational intervention. Three of the studies (Kanekar et al., 2010; Klein & Knauper,2003; Weinstein et al., 2008) evaluated self-efficacy. There were three nationally published guidelines for creating an evidenced-based sex-education curriculum. All three guidelines address increasing knowledge , students' perceived risk, and increasing self-efficacy for the prevention of STIs. The standards are similar, sharing the idea that comprehensive sex education that is age appropriate is most effective in increasing knowledge of STIs and safe sex. For this EBP project, the Future of Sex Education Initiative (2012) NSES was utilized because it was the most recent EBP guideline for educating students on STIs. STI-prevention programs using a lecture format that is theory based have been successful in increasing STI knowledge, decreasing STIs, and increasing some safe sex behaviors (Ergene et al., 2005; Okwuokenye et al., 2010). Successful programs provided both education and behavior modification techniques (Ergene et al., 2005; Future of Sex Education Initiative, 2012; Kirby, 2007; SIECUS, 2004). The guidelines suggested a curriculum that is theory based, although Kanekar and colleagues (2010) found no difference between knowledge-based or theory-based interventions.

After reviewing the literature, the best practice recommendation to increase knowledge of college freshmen was to provide scientifically accurate medical information, that is age appropriate and in a comprehensive curriculum in lecture format (Ergene et al., 2005; Kirby et al., 2007; Moore et al., 2012; Rutledge et al., 2011)**.** The curriculum should be theory based to increase knowledge, provide the skills to increase self-efficiacy, and promote behavior change (Future of Sex Education Initiative, 2012; Kirby, 2007; SIECUS, 2004). Some studies found that

an increase in STI knowledge did not affect safer sex practices (Jones & Haynes, 2006; Lou & Chen, 2009; Weinstein et al., 2008). This EBP project was to determine if an educational sex education intervention would increase knowledge of STIs in college freshmen.

Guidelines Used for EBP Intervention

The NSES were designed to (a) outline, based on research and extensive professional expertise, the minimum essential content and skills for sexuality education given student needs, teacher preparation, and available time and resources; (b) assist in designing and delivering sexuality education kindergarten through Grade 12 that is planned, sequential and part of a comprehensive school health approach; (c) provide a clear rationale for teaching sexuality education content and skills at different grade levels that is evidence informed, age appropriate, and theory driven; (d) present sexual development as a normal, natural, healthy part of human development that should be a part of every health education curriculum; (e) offer clear, concise recommendations for school personnel on what is age-appropriate; and (f) translate an emerging body of research related to school-based sexuality education so it could be put to practice in the classroom (Future of Sex Education Initiative, 2012). The goal of the NSES standards was to provide clear, consistent, and straightforward guidance on the essential minimum, core content for sexuality education that is age appropriate (Future of Sex Education Initiative, 2012) (see NSES guidelines at http//:www.futureofsexeducation.org/documents).

The choice of NSES guidelines is consonant with this EBP project's grounding in SCT theory, and can be adapted for use with college freshmen. The NSES guidelines address increasing knowledge related to sexuality reflecting the tenets of the social learning, social cognitive, and social ecological theories. Both social learning theory and SCT recognize that learning occurs not merely within the learner but also in a particular social context. Key concepts of NSES include (a) personalization, (b) susceptibility, (c) self-efficacy, (d) social norms, and (e) skills (Future of Sex Education Initiative, 2012). Personalization is the ability of

the student to perceive core content and skills as relavent to their lives, thus increasing the likelihood that they will both learn and retain what they learned. Susceptibility is when students perceive they are susceptible to the risks of STIs. Self-efficacy is when students develop the confidence to change their susceptibility by learning skills and behaviors to decrease their risk. Social norms is the perception of what other students are, or are not doing; students are highly influenced by their peers. Skill development is critical to students' ability to apply knowledge into their lives.

Recommendations to answer the PICOT Question

The PICOT question utilized the recommendations for theory-based STI education in lecture format (Ergene et al., 2005; Kirby, 2007; Okwuokenye et al., 2010). A logic model was recommended by both the Future of Sex Education Initiative (2012) and Kirby (2007). A logic model for this EBP project was created by the project manager to keep a clear picture of what success would look like. The Kaiser Family Foundation (2003) and Moore and Smith (2012) recommended a survey as a cost-effective means of obtaining baseline data for curriculum development. This project manager constructed an online survey prior to the development of the educational intervention. The recommendations of all three guidelines (Future of Sex Education Initiative, 2012; Kirby, 2007; SIECUS, 2004) suggested that curriculum needs to be tailored to the audience. The educational intervention was developed to be age appropriate. Moore et al. (2012) suggested that students prefer pictures to go along with the lecture. Therefore, the PowerPoint included pictures of various STIs.

This EBP project was guided by the Future of Sex Education Initiative's (2012) 13 characteristics of effective sexuality education. Effective programs (a) focus on specific behavioral outcomes; (b) address individual values and group norms that support health-enhancing behaviors; (c) focuses on increasing personal perceptions of risk and harmfulness of engaging in specific health risk behaviors, as well as reinforcing protective factors; (d)

addresses social pressures and influences; (e) builds personal and social competence;(f) provides functional knowledge that is basic, accurate, and directly contributes to health-promoting decisions and behaviors; (g) uses strategies designed to personalize information and engage the student; (h) provides age- and developmentally-appropriate information, learning strategies, teaching methods and materials; (i) incorporates learning strategies, teaching methods and materials that are culturally inclusive; (j) provides adequate time for instruction and learning; (k) provides opportunities to reinforce skills and positive health behaviors; (l) provides opportunities to make connections with other influential persons, and (m) includes teacher information and plan for professional development and training to enhance effectiveness of instruction and student learning. The NSES guidelines were used to guide the questions for the online survey, pretest, posttest, and formulation of the educational intervention.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

After reviewing the literature, it was evident that freshmen need STI education early during their transition to college life. According to the literature, lecture format was best practice for STI education. The project manager began a plan for change in timing and delivery of STI education for freshmen. Bandura's SCT and a logic model developed by the project manager guided the intervention's development and evaluation. Roger's DOI guided the organizational change within the Health Center for outreach. Standards set forth by Future of Sex Education Initiative (2012) directed curriculum development.

Participants and Setting

Participants were freshmen college students eighteen and older. The setting for this EBP project was a midsize university in the Midwest with a diverse population of students. It was a faith-based school with students of various religious and cultural backgrounds.

Outcomes. The anticipated outcome of this EBP project was increased knowledge of STIs following an educational intervention evidenced by an increase in posttest scores. The PICOT: In college freshmen, would an evidence-based safe sex program, as compared to current knowledge, increase awareness of sexually transmitted infections? was affirmatively answered with a pretest, educational intervention, and a posttest design. Pretest and posttest scores were compared to determine increase in new knowledge (see Appendix A for pretest and B for posttest).

***Intervention*.** An email with a link to an online survey was sent to all freshmen students age 18 and over. The email explained the EBP project and the online survey. It also gave introduction of the project manager and contact information should participants need to contact the project manager (see Appendix C). It was expressed in the email, that by continuing on to the online survey, participants agreed to participate and gave their permission for the results to

be disseminated. All information was confidential and no identifying information was collected. The online survey consisted of 20 questions, seven demographic, four on perceived knowledge, and nine questions on knowledge of STIs. All questions were yes/no except three that were open-ended. Data collected from the online survey assisted the project manager in formulating the educational intervention (see Appendix D, Zoomerang survey questions).

As the literature suggested, STI education by lecture format has been successful. The intervention for this EBP project was a PowerPoint presentation presented by the project manager. The PowerPoint presentation utilized scientific information including pictures. The lecture included talking points about safe sex, and how to talk to a potential partner about past sexual history (see Appendix E). A pretest was given after a brief description of the EBP project detailing blanket consent for their participation. The pretest consisted of 26 questions: five demographic, five relating to self-efficacy, and sixteen on knowledge of STIs, and all in yes/no format except the query about student's age. The posttest consisted of 29 questions, three evaluated the program, five on self-efficacy, one on behavior change, and 20 on STIs knowledge; all were a yes/no format.

Planning. At the time of the EBP project, the University had a life-skills course that freshmen took, which offered a small chapter on STIs education, but that chapter was not covered until late in the semester. Freshmen arrive on campus with varying degrees of sexual-health knowledge as high schools have different sex-education curriculums (SIECUS, 2004). The knowledge stage of DOI began with the Health Center staff noticing that sexually active students did not routinely use condoms. Several STIs were diagnosed every semester. A discussion began among the Health Center staff that lead to a literature search for best practice for educating students about STIs.

The persuasion stage of DOI for organizational change started with the planning. Preparation for the project started with a meeting with the Director of the Health Center. Current

outreach endeavors were discussed. The outreach to students at the Health Center was limited. It included primarily influenza and breast health. The Director, a Nurse Practitioner who sees patients at the Health Center, wanted the outreach program to expand. The project manager is also a Nurse Practitioner. Both have recognized that many students have their first sexual encounter while at college. The topic of STIs and sexual-health education was proposed, and the Director agreed it was a good outreach endeavor. The Health Center staff was invited to give suggestions on content as they often were asked questions regarding STIs and STI testing.

After some investigating into freshmen curriculum, it was clear that freshmen do have some exposure to STI education but not until the end of the semester. The exposure occurred in the life-skills course, which was once the physical education class; now it is a course required for freshmen and it involves learning about healthy eating, lifestyles, and physical fitness. The project manager discussed education with the Life-skill's professor who, from prior experience, agreed that freshmen have very little sexual-health knowledge. Although the students do get some exposure to STIs in the life-skill's course, they could use more. A decision was made that the intervention was needed.

The core professor was contacted to ascertain whether freshmen could earn a fifth hour of core credit for the EBP intervention, and approval was granted. Core is a two-semester course required for all freshmen; it lays the foundation for the students' general education. It is a course on the "Human Experience"; it fosters skills, attitudes, and work habits essential for success at the university. The professor relayed the sentiment that this EBP project was a worthy educational opportunity for freshmen. The Information Technology (IT) department was contacted for assistance setting up an online survey. IT helped to formulate the survey for online use, and all freshmen were emailed a request to follow a link to a general survey via Zoomerang.com.

The project manager wrote a proposal for an educational program on sexual health including an online survey of freshmen students (see Appendix F). IRB approval was requested to collect and disseminate data .The project manager wanted to get information regarding what students already knew about STIs therefore, an online letter to freshmen along with survey questions was developed. A PowerPoint presentation was also researched and developed to teach about STIs and safe sex. The PowerPoint presentation met the standards of the Future of Sex Education Initiative (2012) and employed STI information and pictures from the CDC. STIs discussed in the PowerPoint presentation included HIV, HPV, herpes, hepatitis B&C, chlamydia, gonorrhea, syphilis, and trichomoniasis. Safe sex practices were also discussed.

Pretest and posttest survey questions were developed. The survey, pretest, posttest, and PowerPoint reflected the constructs of Bandura's SCT, observational learning, self-efficacy, and self-regulation. The online survey provided baseline data for construction of the PowerPoint, pretest, and posttest surveys.

The project manager's experience with outreach shows program timing is always important. The program needed to be on a night when major campus events were not scheduled; otherwise, turnout would be poor. Later evening hours usually work best; in the early evening, students are eating and studying. Programs were planned for both 7pm and 9pm and were offered on different days. This timing offered variety to increase attendance. Flyers and display boards were posted one week prior to the event. At that time, too, the Core professor announced the event.

Recruitment. Freshmen students age 18 and over were invited to participate in an educational EBP project on sexual health. Freshmen participation was voluntary. The program was advertised via flyers along with a display board at the Union, freshmen residence halls, and Health Center. The Core professor also advertised the fifth hour credit distribution. Fifth hour credit is an incentive to attend; students can turn-in proof of participation for class credit. The

University Health Center displayed posters with information regarding dates and times. The program was offered on ten different days and times, to maximize participation. Initially six programs were scheduled, but four more were added in an attempt to achieve a larger participant pool. The program was held during the first six to nine weeks of classes. For student convenience, the program was held at both the freshmen residence halls and the Health Center.

Data

Measures and their Reliability and Validity

No reliability or validity tests were ran on the online survey questions. These questions were designed to determine how much knowledge students already had before coming onto campus.

In order to yield confidence in the results of the study, the questionnaires need to be both valid and reliable. Face validity of the pretest and posttest instruments was based on expert opinion by a Family Nurse Practitioner and a Certified Nurse Midwife for content measuring knowledge and self-efficacy for safe sex practices (see Appendix G and H). The experts answered the following questions about the survey questionnaires: (a) Is the instrument reliable and valid in measuring knowledge and self-efficacy of safe sex? ; (b) Does the instrument represent the content? ; (c) Is the instrument appropriate for the population?; and (d) Is the instrument comphrehensive enough to collect all the information needed to address the purpose and goals of the study? Each item was assessed for relevance to the constructs of knowledge of STIs and self-efficacy. In this assessment, the experts chose (a) not relevant, (b) somewhat relevant, (c) quite relevant, and (d) very relevant. Interrater aggreement was hand calculated by totaling the items agreed upon, divided by the total number of items rated (Wood, 2007). The interrater agreement for pretest was .75 and .62 for posttest. The instruments were deemed acceptable for use after three questions were reworded in the posttest which increased

interrater agreement to .75. Those three questions assumed the participants were sexually active.

Collection. No data were identifiable to participants. Zoomerang.com provided aggregate data of the online survey. The project manager collected the pretest and posttest data. Although there was no personal identification on the tests, all data were kept in a locked desk drawer.

Management and analysis. All data were logged into a notebook as collected for easy input into the computer. At completion of data collection, analysis phase was implemented. Using Predictive Analytics Software (PASW) the data were analyzed using descriptive statistics and independent *t* - tests.

Protection of Human Subjects

Participation in this EBP project was voluntary and confidential. There was no incentive for participation other than core credit if they chose to accept it. No names or identifiable information was collected. All information reported in presentations or publications is reported in aggregate and no identifiable information is used. The University's Institutional Review Board (IRB) approved this EBP project.

CHAPTER 4

FINDINGS

The purpose of this EBP project was to assess current knowledge regarding STIs among college freshmen and provide an educational intervention to increase their knowledge. This EBP project answered the compelling clinical question, In college freshmen would an evidence-based safe sex program, as compared to current knowledge, increase awareness of sexually transmitted infections? This project utilized an online survey to gain a broad perspective on students' current knowledge of STIs. To answer the clinical question, this project used baseline data from a pretest and compared it to post intervention data. Data from the online survey were analyzed via descriptive statistics and frequencies. The pretests and posttests were analyzed using descriptive statistics as well as an independent *t*-test. An independent *t*-test was chosen to compare means of scores between pretest and posttest.

Sample Characteristics and Online Survey Outcomes

First, the online survey was sent to all 700 freshmen; 196 responded providing a 28% response rate. The online survey consisted of 20 questions, 16 of which were true/false or yes/no, and four were open-ended. The audience age range was 18 to 30 with a mean of 18.3 (*sd* = 1.2). Five participants did not answer gender question, leaving 76 males and 115 females, of whom 42.1% were sexually active. The question about number of partners was answered by 91 participants; the range was zero to eight partners with a mean of 1.87(*sd*= 1.81) (see Table 4.1 for sample characteristics and online survey results).

Of the participants, 61.8% answered *yes,* they do consistently use condoms; 89.5%% felt comfortable discussing the use of condoms with their partners Condoms could protect them from all STIs was answered yes by 14.6% of the online participants.

Of those surveyed, 92% had had some form of sex education in high school, with 93.1%% consisting of programs that included STI prevention. Eighty-eight percent felt they had

adequate knowledge regarding STIs. When asked to whom they would go first for questions regarding STIs, 42.9% of total participants reported they would go to the Internet first, 25.2% to a doctor, and 17.6% to a parent. One percent of those who responded to the question reported they were not at risk for STIs because they were lesbian (this was an open-ended write- in question). Of those surveyed, 51.4% believed they knew everything they needed to know regarding STIs and 93.2% believed they knew how to protect themselves from STIs.

Of the participants, 166 were able to name three STIs. The most frequently named STIs were HIV which was named 128 times, herpes named 99 times, and gonorrhea named 88 times (this was a write-in question) number of responses were totaled for each . Ninety-nine percent knew that they could not tell by looking at someone if they have HIV; 3.5% did not think someone could have repeated episodes of herpes. Only 1.2% believed that all STIs are curable, and 78.4% were aware that there are vaccines to protect against HPV and Hepatitis B. Only 1.2% of respondents reported ever having an STI. Lastly, 34.1% responded that they would attend a presentation on STIs.

Table 4.1

Sample Characteristics and Online Survey Results *N* = 196

AGE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18.00	154	78.6	79.8	79.8
	19.00	34	17.3	17.6	97.4
	20.00	1	.5	.5	97.9
	22.00	1	.5	.5	98.4
	23.00	1	.5	.5	99.0
	27.00	1	.5	.5	99.5
	30.00	1	.5	.5	100.0
	Total	193	98.5	100.0	
Missing	System	3	1.5		
Total		196	100.0		

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	76	38.8	39.8	39.8
	female	115	58.7	60.2	100.0
	Total	191	97.4	100.0	
Missing	System	5	2.6		
Total		196	100.0		

Sexually Active					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	80	40.8	42.1	42.1
	no	110	56.1	57.9	100.0
	Total	190	96.9	100.0	
Missing	System	6	3.1		
Total		196	100.0		

Number Partners

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	10	5.1	11.0	11.0
	1.00	48	24.5	52.7	63.7
	2.00	13	6.6	14.3	78.0
	3.00	3	1.5	3.3	81.3
	4.00	8	4.1	8.8	90.1
	5.00	4	2.0	4.4	94.5
	6.00	1	.5	1.1	95.6
	7.00	2	1.0	2.2	97.8
	8.00	2	1.0	2.2	100.0
	Total	91	46.4	100.0	
Missing	System	105	53.6		
Total		196	100.0		

Condom Use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	55	28.1	61.8	61.8
	no	34	17.3	38.2	100.0
	Total	89	45.4	100.0	
Missing	System	107	54.6		
Total		196	100.0		

Discussing Condoms

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	119	60.4	89.5	89.5
	no	14	7.1	10.5	100.0
	Total	133	67.5	100.0	
Missing	System	64	32.5		
Total		197	100.0		

Condoms Protect All

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	25	12.8	14.6	14.6
	no	146	74.5	85.4	100.0
	Total	171	87.2	100.0	
Missing	System	25	12.8		
Total		196	100.0		

High School Sex Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	173	88.3	92.0	92.0
	no	15	7.7	8.0	100.0
	Total	188	95.9	100.0	
Missing	System	8	4.1		
Total		196	100.0		

STI Prevention In High School

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	176	89.8	93.1	93.1
	no	13	6.6	6.9	100.0
	Total	189	96.4	100.0	
Missing	System	7	3.6		
Total		196	100.0		

STI Knowledge Adequate

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	169	86.2	88.0	88.0
	no	23	11.7	12.0	100.0
	Total	192	98.0	100.0	
Missing	System	4	2.0		
Total		196	100.0		

Go to For Questions?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	parent	21	10.7	17.6	17.6
	doctor	30	15.3	25.2	42.9
	friend	13	6.6	10.9	53.8
	internet	51	26.0	42.9	96.6
	sibling	3	1.5	2.5	99.2
	not at risk lesbian	1	.5	.8	100.0
	Total	119	60.7	100.0	
Missing	System	77	39.3		
Total		196	100.0		

I Know Everything

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	89	45.4	51.4	51.4
	no	84	42.9	48.6	100.0
	Total	173	88.3	100.0	
Missing	System	23	11.7		
Total		196	100.0		

Protect Myself

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	165	84.2	93.2	93.2
	no	12	6.1	6.8	100.0
	Total	177	90.3	100.0	
Missing	System	19	9.7		
Total		196	100.0		

Name Three STIs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Herpes	99	50.5	19.4	19.4
	Chlamydia	71	40.8	18.8	38.2
	Gonorrhea	88	44.9	18.8	56.9
	HPV	14	8.0	4.4	61.3
	Syphilis	52	26.6	11.9	73.1
	HIV	128	65.3	18.1	91.3
	Scabies	1	.5	.6	91.9
	Pubic Lice	13	6.6	1.3	93.1
	Hepatitis	7	3.5	1.7	95.0
	Genital Warts	17	8.7	4.3	99.3
	Trich	2	.7	.7	100.0

Looking HIV

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	1	.5	.6	.6
	no	171	87.2	99.4	100.0
	Total	172	87.8	100.0	
Missing	System	24	12.2		
Total		196	100.0		

Repeat Herpes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	167	85.2	96.5	96.5
	no	6	3.1	3.5	100.0
	Total	173	88.3	100.0	
Missing	System	23	11.7		
Total		196	100.0		

Curable

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	2	1.0	1.2	1.2
	no	170	86.7	98.8	100.0
	Total	172	87.8	100.0	
Missing	System	24	12.2		
Total		196	100.0		

Vaccine

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	134	68.4	78.4	78.4
	no	37	18.9	21.6	100.0
	Total	171	87.2	100.0	
Missing	System	25	12.8		
Total		196	100.0		

History STI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	2	1.0	1.2	1.2
	no	167	85.2	98.8	100.0
	Total	169	86.2	100.0	
Missing	System	27	13.8		
Total		196	100.0		

Attend

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	59	30.1	34.1	34.1
	no	114	58.2	65.9	100.0
	Total	173	88.3	100.0	
Missing	System	23	11.7		
Total		196	100.0		

Pretest Sample Characteristics and Pretest/ Posttest Outcomes

For the students who attended the presentations, pretest and posttest data were analyzed for frequencies and differences as well as using an independent *t*-test. In the pretest there were 20 participants ages ranged from 18 to 21 and only 19 participants returned the posttest. There is not an obvious answer as to why one participant chose to not do the posttest, as no one left the program early. Of the participants, 25% were male and 75% female. Eighty percent of these participants were sexually active with 50% reporting consistent use of condoms. At posttest, only 78.9% reported they would start using condoms. Seventy-five percent had a class in high school that discussed STIs.

When students' responses to a question differed on the pretest and posttest, those differences reflected effects of the presentation. Responses to each of the next 21 questions were compared, from pretest to posttest, in the descriptive statistics of Table 4.2. All yes responses received 1 point and all no responses received 2 points. Six of the questions were written inversely to prevent response bias; for those questions, scores were recoded for composite analysis. Overall, measured by correct responses, students showed an increase in knowledge and self-efficacy on all but one question. The exception was the question about chlamydia being the most common STI in their age group; correct responses actually decreased by 11.7%: on pretest 75% agreed but on posttest only 63.3% agreed.

Each item of the pretest and posttest was compared via independent *t*-tests. Although means changed in the expected direction, differences between pretest and posttest met statistical significance ($p < .05$) on 6 out of 21 questions. Five questions showed that students increased knowledge and one showed an increase in self-efficacy $p < 0.5$. Students on pretest believed that women always have symptoms if they have an STI ($M = 1.21$ ($SD = .45$), but on the posttest, they no longer believed that women always have symptoms ($M = 1.00$, SD = .00, $p < .02$). Knowledge that untreated STIs can cause future fertility problems on pretest was 1.21

(*SD* = .41) and decreased as expected on posttest (*M* = 1.00, *SD* = .00, p < .04) Knowledge of symptoms of chlamydia on pretest was 1.63 (*SD* = .49) and decreased as expected on posttest to 1.10 *(SD* = .31, *p* < .00). On pretest, more students believed STIs always have symptoms (*M* = 1.55, (*SD* = .51); on posttest, more students answered correctly *M* = 1.94 (*SD* = .23, *p* < ,.01). On pretest, the number of students disagreeing there is a vaccine for herpes was 1.57 (*SD* = .50) and on posttest disagreement rose significantly to *M* = 1.94 (*SD* = .22, *p* < .01). Finally, evidence of self-efficacy was exhibited by the change in students who on pretest felt confident they could say no to someone who refused to use a condom 1.21 (*SD* = 41) compared to everyone agreeing they could say no to someone on posttest 1.00 (*SD* = .00, *p* < . 04).

Total scale scores ranged from 1 – 26, with 26 representing the highest level of knowledge and self-confidence. Total scale scores were computed to percentage scores for analysis. Composite pretest scores ranged from 41.5% to 95.5% with a mean of 72.5% (*SD* = 17.4) and posttest scores ranged from 90% to 100% with a mean of 94.3% (*SD* = 3.2). Independent *t*-test of raw scores suggested the educational intervention had a positive effect on increasing knowledge (t (18) = – 5.08, *p* =.00). The split half reliability coefficient for the pretest was .71, and .53 for the posttest. The SPSS program removed three questions from the posttest because they had .00 variance.

Table 4.2

Pretest and Posttest Differences *N*=20

Question	Mean	STD.	*t*	df	Sig.
Chlamydia most common	Pre 1.26 Post 1.36	.45 .49	-.56	18	.57
Women not symptomatic	1.26 1.00	.45 .00	2.53	18	.02*
Untreated STI pregnant	1.21 1.00	.41 .00	2.19	18	.04*
I know symptoms	1.63 1.10	.49 .31	3.75	18	.00*
STI always has symptoms +	1.55 1.94	.51 .23	-2.71	17	.01*
Vaccine Herpes +	1.57 1.94	.50 .22	-2.68	18	.01*
Feel confident to say no	1.21 1.00	.41 .00	2.19	18	.04*
Tell by looking HIV +	1.76 1.94	.41 .22	-1.37	18	.18
Herpes repeat outbreak +	1.57 1.89	.50 .31	.00	18	.05
Hepatitis C	1.21 1.15	.41 .37	.43	18	.66
Condoms protect all +	1.36 1.63	.49 .49	-1.75	18	.09
Life threatening	1.31 1.21	.47 .41	.69	18	.49
Curable	1.10 1.00	.31 .00	1.45	18	.16
Men HPV	1.22 1.05	.42 .23	1.37	17	.18

Question	**Mean**	**STD.**	***t***	**df**	**Sig.**
Oral sex +	1.50 1.83	.51 .38	-2.06	17	.05
Not spread by sex	1.27 1.11	.46 .32	1.14	17	.26
ABC's	1.06 1.00	.25 .00	1.00	14	.33
Acquire condoms	1.10 1.00	.31 .00	1.45	18	.16
Talk to partner	1.22 1.11	.42 .32	.08	17	.43
Previous encounters	1.33 1.16	.48 .38	1.00	17	.33
Risky behaviors	1.33 1.05	.48 .23	2.05	17	.05

Note: * Item met statistical significance. "+" = inversely worded question.

CHAPTER 5

DISCUSSION

Several of the findings from this EBP project were significant and answered the clinical question whether such an educational program would increase awareness of STIs in college freshmen. In addition, the project enabled reflection on how applicable the framework and theory were to the project. This chapter also addresses strengths and limitations of this project and the implications of its results for the future of STI prevention in this population.

Explanation and Interpretation of the Findings

Results from the online survey demonstrated 88.4% (*n* = 173) of responding students stated they had had a sex education class that incorporated STIs; and 86.2 % (*n* = 169) viewed themselves as having adequate knowledge of STIs. However, scores on the EBP pretest, admittedly from a very small representation of this population (20 participants of 700 students), suggested that students were not as knowledgeable as they perceived. Pretest scores ranged from 41.5% to 95.5% and a mean of 72. 5 (*SD* = 16.7). This pretest finding was consistent with the studies by Rouner and Lindsey (2006) and Rutledge and colleagues (2011), whom found their students viewed themselves as being knowledgeable about sexual-health education and STIs—a knowledge that was not reflected in posttest results. For the 20 attenders of the intervention, on posttest, knowledge scores ranged from 90% to 100% with a mean of 94.3 (*SD* = 3.2)

In the same online survey, condom use was reported by 28% (*n* = 55) of the 40.8% (*n* = 75) who responded they were sexually active. However, on the pretest 80% (*n* = 16) reported they were sexually active students, with 62.5% (*n* = 10) of them reporting they consistently used condoms (*N* = 20). The difference in the percentage of condom users and sexually active participants was because of the large sample of the online survey. On posttest, 78.9% (*n* = 19) reported they would consistently use condoms in the future. In their integrated

review, Kirby and colleagues (2007) also reported that 12 studies showed parallel increases in knowledge and self-efficacy to use condoms. Moore and Smith (2012) alluded to a 16.9% increase in knowledge and self-efficacy for condom use. However, Jones and Haynes (2006), Lou and Chen (2009), Mogobe and colleagues (2007), and Weinstein and colleagues (2008) found no association between knowledge and condom use ($p < .05$). However, Weinstein et al. (2008) found that there was an association between self-confidence and condom use ($p < .05$). Mogobe et al. (2007) hypothesized that these findings could be because young adults believe they are invincible and are unlikely to suffer ill effects of poor lifestyle choices.

There were some ambiguities of the results of both the online survey and pre- and posttest questions. For example, the question regarding sexual activity did not specify all forms of sexual activity; it cannot be assumed that the participants considered all forms when answering this question. The question regarding condom use did not include all forms of protection such as dental dams for alternative sexual acts. Prevention of STIs should include all forms of sexual acts. Of those who answered the question about condom use, 1% expressed that they did not need protection, as their partner was another woman. Neither the online survey nor the pretest considered the lesbian, gay, bi-sexual, queer, and transsexual (LGBQT) communities. The PowerPoint presentation contained no information regarding the LGBQT community. This was a weakness of the intervention. Sexual orientation was not included in the demographics. This factor could have influenced the answers about condom usage. In the future, there should be some inclusion of the LGBQT community in formulating future sexual health education programs.

When the online survey asked where a respondent would go first if they had questions regarding STIs, 42.9% of students ($n = 51$) responded they would go to the Internet first. Moore and Smith (2012) and Moore et al. (2012) found that, in gaining new knowledge, the Internet was considered less helpful than lecture interventions. Their results could suggest that students

did not visit reputable or scientifically based sites (Moore et al., 2012). According to Moore et al., the Internet does not afford the student the ability to ask questions about material they do not understand. Students most likely prefer the Internet because it ensures anonymity for very sensitive issues. They may feel embarrassed or ashamed to ask questions regarding STIs. Students may also be afraid to ask their health care provider about sexual health for fear of being judged. In addition, the Internet lets them access information at any time or place. In this EBP project participants stated they would go to the internet first, then a doctor or parent if they had a question regarding sexual health. This EBP project did not ask participants why they would go to the internet first. It is speculated that students would go to the internet first because this generation uses technology for most of their communication and educational needs.

The PICOT question was answered affirmatively. Those who attended the safe sexual-health education program had pretest scores of 41.5% to 95.5 % (M = 72.5%). Students who attended the program did learn additional information as evidenced by posttest scores of 90% to 100% (M = 94.3%). There were twenty participants: 4 males and 16 females. The mean pretest scores for males were (70.3%), and females were (73%); this finding was consistent with the findings of Swora (2003), Synovitz and colleagues (2002) and Weinstein and colleagues (2008) in which females scored higher than male students did on pretest knowledge. The researchers presumed this was because of the STI education women receive during their gynecology exams. For this EBP project, females did score higher than males, but there were many more female participants.

On independent t-test, 6 of 21 questions met statistical significance ($p < .05$). Of those that met statistical significance, five were knowledge-based and one measured increase in self-efficacy. Although not statistically significant, all but one question showed an increase in knowledge or increase in self-efficacy when percentages were considered. Kanekar and colleagues (2010) utilized SCT and found no statistical difference in self-efficacy after STI

education but did find an increase in knowledge. Weinstein and colleagues (2008) found that increase in knowledge did not increase condom use. This EBP project had five questions regarding self-efficacy but only one met statistical significance. The self-efficacy question regarding the ability to say no to sex if the partner refuses to use a condom increased post intervention. The intervention allowed for discussion of how to approach a discussion with a potential partner (p = .04).

Surprisingly, on the question regarding whether chlamydia is the most common STI in college students, the posttest showed a decrease in correct responses (pretest n = 15 and posttest n = 12). It was unclear as to why this decrease occurred, as this statistic was discussed in the PowerPoint presentation. This EBP project did not evaluate students' knowledge in relation to stigma and shame such a the study done by Foster and Byers (2008).

Evaluation and Applicability of the Theoretical Framework

The theoretical framework for the EBP intervention was Bandura's SCT (1986). This theory was chosen because it is used in many primary prevention programs such as HIV, smoking cessation, and nutrition education programs (Kanekar et al., 2010). Increasing knowledge of STIs is primary prevention. This EBP project aimed to equip students with the skills and sense of self-efficacy to protect themselves in the future. Major concepts of SCT are observational learning, self-efficacy, and self-regulation. These concepts were used to guide the EBP intervention. This theory was a good fit because the goal of this EBP project was to increase knowledge as well as increase self-efficacy. The EBP project also provided a means for self-regulatory skill development toward behavioral change related to translating knowledge into preventive action.

Observational learning took place during the sexual-health education program that incorporated scientific information and discussion to facilitate acquisition of new knowledge. Learning did occur as evidenced by the pretest and posttest scores. A discussion of how to

acquire and correctly use condoms took place that fostered a sense of self-efficacy. Statistical significance for self-efficacy was achieved by the students' increased assertion that they would say no to someone who refused to use a condom ($p < .05$). By gaining new knowledge, students may gain a greater sense of self-efficacy and self-regulatory skills for prevention of STIs. Weinstein et al. (2008) found that sexual-health knowledge was a positive indicator for sexual communication and confidence as well as self-efficacy.

The 196 students took the time to participate in the online survey, showing an interest in the subject; thus they exhibited a sense of self-regulation. The online survey was private so students most likely felt comfortable participating. Those who attended the program were exhibiting a sense self-regulation by taking the time to gain new knowledge about, and for prevention of, STIs. Poor attendance for the sexual-health education program could be because students felt uncomfortable voluntarily attending a sexual-health educational program, or because they were not sexually active and felt they did not need this information at this time, or because they lacked motivation to attend. Students may have felt that if they attended, their peers might think differently about them, or they may have thought that this program violated their belief system. Poor attendance was in correlation with the online survey where only 34% ($n = 59$) answered they would attend a presentation. This EBP project allowed students to evaluate their perceived risk of STIs. By evaluating their belief system and confidence level on communicating to current or potential partners, students can determine their own life's path. Knowledge of potential health problems gives students the skills in which to make educated decisions.

Theory strengths. Strengths of SCT were that it accounted for changes in behavior with abrupt changes in controlling stimuli. This strength fits well with college students because they experience an abrupt change in their controlling stimuli when they go away for college. SCT provided the groundwork for a rounded educational program incorporating new knowledge, self-

efficacy, and behavior change tools. Depending on what is being measured, SCT can be broad or focused. The Future of Sex Education Initiative (2012) utilized the constructs of SCT in their recommendations for effective sexual-health education. This EBP project assessed self-efficacy through five questions on the pretest and posttest, and only one met statistical significance. Although SCT is primarily by watching others and role modeling, Denler et al. (2006) posit that live demonstations of a behavior or skill by an educator or peer, verbal or written materials, video or audio recordings, and other less direct forms of performance are all considered forms of modeling. This EBP project incorporated lecture with visual aids and discussion of how to communicate with potetial partners regarding safe-sex.

Weakness of theory. SCT does not account for unconscious influences of emotions, internal conflicts, physical or mental disabilities that may inhibit observational learning, self-efficacy, and self-regulation. Students may not yet know how they feel about sexual relationships or come from homes where the topic was taboo. For this EBP project, SCT did not account for financial aspects of why students do not practice safe sex, Also, this EBP project's goal was to measure an increase of knowledge of STIs and did not focus primarily on self-efficacy. Although, it was hypothesized that an increase in knowledge would increase self-efficacy this was only evaluated by a question. True evaluation of increased knowledge and self-efficacy would have to occur overtime to measure actual condom use and safe sex practices. Other studies had the same hypothesis and evidence suggested that there was no correlation in knowledge and safe-sex practices (Jones & Haynes, 2006; Klein & Knauper, 2003; Lou & Chen, 2009; Weinstein et al., 2008).

Logic Model

A logic model constructed by the project manager was used to evaluate the progression of events for the project. The logic model was developed to illustrate and evaluate the

relationship of the theory to the intervention, in addition to mapping the sequence of events to reach the desired outcomes.

The logic model had four columns (a) theoretical assumptions or inputs column, (b) activities column, (c) immediate outcomes column, (d) intermediate outcomes column, and (e) long-term outcomes column (Helitzer et al., 2010). The model provided a map of what success would look like by providing a visual timeline.

Strengths of logic model. The model was useful so steps were not omitted. Strengths of a logic model was that it can serve to increase the practitioner's voice in the domains of planning, design, analysis, and knowledge generation (Kellogg, 2001). For visual thinkers and learners a logic model is a helpful tool to keep all steps clearly defined. In order to stay focused, a researcher should have a clear picture of what success looks like. The logic model was a visual aid in discussing the EBP change with stakeholders. The process and the steps needed to conduct the project was easy to conceptualize. The logic model was updated and revised as changes occurred. The conditions column allowed stakeholders to understand why the EBP change was needed. The activities column mapped out what was needed to get the EBP change started. The outcomes column was a visual for stakeholders to see what success of the project would look like. The Impact column allowed stakeholders to think about the future implications of the practice change.

Weakness of logic model. There was no identified weakness of the logic model for this EBP except it was easily made difficult to understand if too many visual components were displayed.

Evaluation of EBP Project Framework for Change

The framework for this EBP project was Roger's diffusion of innovation or DOI (Rogers, 2003). This framework has been used for change in individuals and organizations. DOI was chosen because this EBP project included an innovation that would need to be communicated

through certain channels over time. This framework was a good fit for this EBP project because it provided a sequence for initiating the practice change. DOI includes five stages for change: (a) knowledge, (b) persuasion, (c) decision, (d) implementation, and (e) confirmation. All five stages were utilized during the course of this EBP project

Knowledge phase. The University Health Center staff noticed there was a lack of knowledge of STIs and condom usage among students who were sexually active. The project manager searched the literature for evidence of best practices to educate students about STIs. After a comprehensive literature search, a conversation began with the University Health Center Director and Student Affairs. In retrospect, not all possible sexually active persons were considered in this phase. The search did not include or exclude particular lifestyles, but the query for information only produced literature that did not specify all possible lifestyles.

Persuasion phase. The persuasion stage had to be revisited several times because the topic of the innovation was sensitive and the institution was faith-based. The Health Center Director and staff were given the evidence and statistics for practice change in a unit meeting. Student Affairs, a Core professor, and the KIN 100 course professor were also included in the dissemination of information regarding best practice for educating students about STIs. If the EBP project was to be repeated, the project manager would evaluate how other faith-based institutions educate students on sexual-health matters. If other faith-based universities were teaching comprehensive sex education without censoring the material, this evidence would be utilized in persuading stakeholders to further embrace the project. Departments such as Residence Life and the Communications department had their reservations due to the topic. Multiple people had to approve the proposal before the EBP project could proceed as planned.

In retrospect, the project manager would have spent more time trying to persuade the RLCs to be more involved in assisting the project manager by encouraging students to attend. Students seem to relate to the residence life coordinators RLCs and room attendants as peers, and their support could have made a difference getting students to participate. In addition, a drawing or giveaway might have enticed more participation.

Decision Phase. A decision was made to implement a sexual-health education program for freshmen. A plan for implementation began. A survey of freshmen regarding their educational needs was decided upon to determine what to include in the program. It was decided that a PowerPoint presentation would be the intervention, as the literature suggested a lecture format is most effective, with a pretest and posttest to measure increase in knowledge (Ergene et al., 2005; Future of Sexuality Education Initiative, 2012; Kirby, 2007; Moore et al., 2012; SIECUS, 2004). A proposal was generated and IRB approval requested and received.

Implementation Phase. The project manager had a timeline for the implementation of the innovation, and this timeline had to be revised several times. The project manager assumed all stakeholders were contacted, and did not anticipate having to persuade other departments to grant permission to proceed.

According to the literature, sexual-health education should occur during the first few weeks of students' arrival to campus before they are exposed to risky behaviors (Ege, Akin, Can, & Artioz, 2011; Okwuokenye et al., 2010). The EBP project was not implemented early upon students' transition to college life. The measurement of knowledge increase was most likely not affected by the timing, but this would have been an important factor if this EBP project were comparing knowledge and STI rates after the intervention. Since the project was measuring an increase in knowledge following the intervention, timing was not an issue to answer the PICOT question.

Although timing of the intervention was not an issue, getting support and assistance for timely advertising and posting of flyers was problematic. After Residence Life allowed us to advertise the program, it was difficult to get RLCs to assist with advertising. The project manager could not enter the residence halls and place flyers; it had to be done by the RLCs. Students were questioned as to how they heard about the sexual-health education program, and nearly all stated they found out about it through the Core professor. It cannot be assumed that the flyers were posted in a timely manner in the residence halls or in plain view for students to see.

During the EBP project, additional program dates and times were added to obtain a sufficient number of participants. It is unclear if the lack of participation was due to lack of interest, inconvenient dates and times, or lack of advertising. It would have been beneficial to have more than one Core professor assisting with the advertising and provision of core credit. In the future, a different mode of information transmission could be evaluated such as an online presentation, a game show format where students can participate, or a guest speaker. In addition, in the future, all possible stakeholders should be determined ahead of time so timing delays do not occur, impeding the intervention.

Confirmation Phase. Although the evidence suggested a need for early sexual-health education for freshmen, the sexual health intervention will not be added to orientation or outreach at this time. The EBP project was successful in answering the PICOT question. Future sexual-health education activities will be attempted, but different formats will be evaluated. The University Health Center staff will use the knowledge gained from the EBP project to format educational activities more suited to students' preferences, most likely utilizing technology in some fashion. The results will be discussed with the KIN 100 instructor, who may use them to reformat course material.

Strengths and Weaknesses of DOI

A strength of DOI is its applicability to individuals as well as organizations, and its capacity as a tool to enhance communication with stakeholders. However, it is important to clearly identify all stakeholders from the beginning so setbacks do not occur due to lack of communication, permission, and support. A weakness of DOI was having to persuade participants and stakeholders to adopt the intervention; but resistance can be found in any model. In retrospect, the project manager may have done better in information dissemination if all stakeholders were at the table at the same time.

Strengths of the EBP Project

This EBP project included sensitive material and asked some very personal questions such as are you sexually active, do you use condoms, and how many sex partners have you had; but the program maintained strict confidentiality. No names or identifiers were obtained. It offered not only a chance for students to gain new knowledge but also allowed them to get class credit, if they chose to turn in the proof of participation. Nearly a third of the freshmen class participated in the online survey, giving some robust information about a portion of the freshmen class. Pretest and posttest data gave information that helped to measure change in knowledge. In addition, new topics arose for potential educational opportunities and research.

Weakness of the EBP Project

The project manager did not anticipate the need to obtain the additional approvals. This delayed the implementation of the intervention. In addition, the project manager did not anticipate being unable to advertise and having to rely on someone else. In addition, the project lacked support by key players such as RLCs, who would have been instrumental in getting students to participate. The intervention was presented to a small sample because participation was poor, perhaps due to poor advertising or students' lack of interest. Dates and times may not have been convenient for many, as there were other activities going on. In the future, all

campus calendars will be checked so conflicts will be minimized. At posttest, one participant was lost to attrition for no clear reason; he/she simply did not complete the posttest.

In addition, the program manager did not assess sexual orientation or relate questions to include the LGBQT community. This omission may have affected answers to some questions. It is not clear in retrospect, what participants considered as *having sex*; this ambiguity could have affected the results for the sexual activity question. In addition, the condom question should have included protection for all forms of sexual activity and should have had a *not applicable* choice for those who were not yet sexually active. The EBP project measured self-efficacy with five questions but only one reached significance.

Due to the few participants who attended the sexual-health education program, the project manager could not help but notice how homogenous this sample was. All participants who attended the program were Caucasian. This sample did not adequately represent the student population of the university, as the school is quite diverse. It is unknown what the ethnic or racial mix was on the online survey, as this question was not asked.

Implications for the Future

Practice. It is clear that freshmen lack adequate knowledge regarding STIs and safe sex. The findings of this EBP project indicated that nurse-directed, theory-based education and behavioral interventions could increase knowledge of STIs in this population. Some form of comprehensive sexual-health education needs to be offered, if not encouraged, during their transition to college life. In this offering, the University Health Center should be included, in conjunction with the KIN 100 life skills professor. An ongoing partnership should be established between the two departments to formulate a comprehensive program that includes alternative sexual activity and health risks. In addition, investigation of other faith-based institutions on how they address sexual-health education should be performed to guide future sexual-health education programs.

When formulating a program, issues regarding the LGBQT community need to be addressed. This EBP project did not address these issues, and 1% voiced that they were not at risk for STIs since their partner was another woman. Clearly, there is a need for education as all sexually active persons are at risk for STIs. The studies evaluated for this EBP project did not discuss inclusion of alternative lifestyles. In the office setting, sexual orientation should be addressed so disease prevention measures could be discussed and tailored to the patient's needs. All persons teaching a sexual-health program need to be knowledgeable about STIs and the health risks associated with all groups.

Theory. Bandura's SCT was a good fit for this EBP project. Observational learning, self-efficacy, and self-regulation are relevant to college students and primary prevention. The intervention suggested an impact on posttest scores, increasing knowledge and a small increase in self-efficacy was noted. Bandura's SCT would be a good fit for an educational curriculum that follows students overtime so self-efficacy could be measured overtime. Roger's DOI was an appropriate choice for guiding change within the organization. All five phases were utilized, with the persuasion phase being the most visited. Roger's DOI can be used alone for both changes in the individual and within the organization. However, for this EBP project, Roger's DOI would not have been sufficient on its own. It would be difficult to incorporate measurement of self-efficacy of the students using only DOI. In the future Rogers DOI could be used to change curriculum at the faculty level for larger educational projects.

Research. Although, the EBP project contributes to the body of knowledge regarding STI knowledge in college students, additional research is needed to further examine specific dynamics of college students. Future studies are needed to address the educational needs of the LGBQT community. Different forms of information dissemination modalities need to be studied to determine if participation would increase. In addition, an extension of the EBP project should include correlating previous years' STI rates against post-intervention STI rates. The

University should perform a longitudinal study measuring long-term knowledge retention that resulted in behavioral change and decreased STI rates, increased condom use, and increased self-efficacy in the prevention of STIs. The logic model used for this EBP project speculated on the possibility of a longitudinal study under the impact column. This would only be feasible if a program modality was offered that sparked interest in students to participate in a sexual-health education program.

Education. The literature shows that students need a comprehensive sexual- health education program. According to the online survey results, this EBP project suggests that freshmen are coming to campus with a belief that they know all they need to know regarding STIs, but the results of pretests suggest otherwise. Educational needs of the LGBQT community need to be addressed in a nonjudgmental environment. It is anticipated the organization will embrace the need for sexual-health education and foster a strong comprehensive program that is supported by all stakeholders. In addition, all healthcare providers should educate themselves on all forms of STI prevention for all groups.

Conclusion

By reviewing the literature, the best-practice recommendation was formed. This best practice recommendation was to provide an educational intervention that increased knowledge of freshmen regarding STIs and increased their self-efficacy. This EBP project affirmatively answered the PICOT question. An educational-based sexual-health program does increase knowledge of STIs in college freshmen. The evidence suggests lecture format but this may not be the best format for students at this Midwest university; for example, participation was ten times greater for the online survey than for the live presentation. In addition, a foundation for future educational interventions arose, as these results suggest new modalities are needed for information dissemination—modalities that meet the needs of students. Finally, consideration is needed for the educational and health needs of the LGBTQ communities.

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BIOGRAPHICAL MATERIAL

Jennie M. McClain

Ms. McClain graduated from Brenau University in Gainesville, Georgia with a bachelor's degree in the science of nursing in 1989. She worked in various intensive care settings before returning to Valparaiso University for her master's and post-master's as a family nurse practitioner in 2008. Since 2008, she has been practicing as a family nurse practitioner and is certified through the ANCC. Ms. McClain has practiced in women's health, urgent care, and currently college health. Ms. McClain has also been a clinical nursing instructor for Ivy Tech, Gary campus. Ms. McClain's interests are women's health and college health issues. Ms. McClain is a member of AANP and CAPNI.

ACRONYM LIST

AIDS: Acquired Immunodeficiency Syndrome

ANA: American Nurses Association

APA: American Psychological Association

CDC: Centers for Disease Control

DOI: Diffusion of Innovation

EBP: Evidence Based Practice

IRB: Institutional Review Board

HIV: Human Immunodeficiency Virus

HPV: Human Papilloma Virus

IMB: Information Motivation Behavior

IT: Information Technology

JBI: Joanna Briggs Institute

LGBQT: Lesbian, Gay, Bi-sexual, Queer, and Transsexual

NSES: National Sexuality Education Standards

PICO: Population, Intervention, Comparison, Outcome

RLC: Residence Life Coordinators

SCT: Social Cognitive Theory

SIECUS: Sexuality Information and Education Council of the United States

STI: Sexually Transmitted Infection

US: United States

APPENDIX A

Pretest Questions

1) Age _____
2) Male or Female
3) Sexually active Yes/No
4) We always use condoms. Yes/No
5) I feel confident I could talk with my partner about using condoms. Yes/No
6) I feel I could initiate a conversation with my partner regarding previous sexual encounters. Yes/No
7) I feel confident in my ability to question my partner about risky behaviors such as drug use. Yes/No
8) I know how to acquire and correctly use condoms. Yes/No
9) I feel confident in my ability to say no to someone who refuses to use a condom. Yes/No
10) In high school I had a class that discussed sexually transmitted diseases. Yes/No
11) I can tell by looking at someone that they have HIV. Yes/No
12) Women do not always have symptoms when they have chlamydia. Yes/ No
13) Untreated sexually transmitted infections can cause a woman to have problems getting pregnant in the future. Yes/No
14) People who had herpes will never have another outbreak. Yes/ No
15) Hepatitis C is a sexually transmitted disease. Yes/No
16) Condoms can protect me from all sexually transmitted infections. Yes/No
17) Chlamydia is the most common sexually transmitted infection in college students. Yes/No
18) I know the symptoms of chlamydia. Yes/No
19) There are 4 sexually transmitted infections that can be life threatening. Yes/No
20) Sexually transmitted infections always have symptoms. Yes/No
21) Some sexually transmitted infections are not curable. Yes/No
22) There is a vaccine for herpes. Yes/No
23) Men can get HPV. Yes/No
24) If I only participate in oral sex I cannot get a sexually transmitted disease. Yes/No
25) There are some infections that seem like sexually transmitted infections but in fact are not spread by sex. Yes/No
26) The ABC's of safe sex are abstinence, be faithful and condoms. Agree/Disagree

APPENDIX B

Posttest Questions

Post-test

1) I can tell by looking at someone that they have HIV. Yes/No
2) Women do not always have symptoms when they have chlamydia. Yes/No
3) Untreated sexually transmitted infections can cause a woman to have problems getting pregnant in the future. Yes/No
4) People who had herpes will never have another outbreak. Yes/ No
5) Hepatitis C is a sexually transmitted disease. Yes /No
6) Condoms can protect me from all sexually transmitted infections. Yes / No
7) Chlamydia is the most common sexually transmitted infection in college students. Yes / No
8) I know the symptoms of chlamydia. Yes /No
9) There are 4 sexually transmitted infections that can be life threatening. Yes/ No
10) Sexually transmitted infections always have symptoms. Yes / No
11) Some sexually transmitted infections are not curable. Yes/ No
12) There is a vaccine for herpes. Yes/ No
13) Men can get HPV. Yes/No
14) If I only participate in oral sex I cannot get a sexually transmitted disease. Yes/No
15) There are some infections that seem like sexually transmitted infections but in fact are not spread by sex. Yes/No
16) Herpes, gonorrhea, and chlamydia can have serious consequences but are curable. Yes/No
17)HPV can cause cancer. Yes/No
18) The 2 sexually transmitted infections that have a vaccine available are HPV and Hepatitis B. Yes/No
19) Condoms are highly effective against most sexually transmitted infections. Yes/No
20) I have learned something new regarding sexually transmitted infections by attending this presentation. Yes/No
21)This presentation should be offered to all freshmen. Yes/No
22) Do you prefer a presentation such as this one or an online version?

23) I feel confident I could talk with my partner about using condoms. Yes/No

24) I feel I could initiate a conversation with my partner regarding previous sexual encounters. Yes/No

25) I feel confident in my ability to question my partner about risky behaviors such as drug use. Yes/No

26) I know how to acquire and correctly use condoms. Yes/No

27) I feel confident in my ability to say no to someone who refuses to use a condom. Yes/No

28) The ABC's of safe sex are abstinence, be faithful and condoms. Agree/Disagree

29) I intend to start using condoms with every sexual encounter. Yes/No

APPENDIX C

Online Survey Letter

Hello,
My name is Jennie McClain and I am one of the Nurse Practitioners at the University Health Center. I am inviting all freshmen 18 and over to participate in an online survey via Zoomerang.com. This survey serves two purposes. First, it will give the Health Center valuable information to use when formatting outreach programs for freshmen. Second, it will give valuable information for my doctoral work at the University. The survey is short, and only takes a few minutes to complete. The survey will help answer the question of current knowledge level of freshmen regarding sexual health. I hope all freshmen 18 and over will respond to this survey whether they are sexually active or not. All answers are confidential and nothing can be identified to any individual. Participation is voluntary. There is no incentive for participating other than helping us formulate a better outreach program for freshmen at the University.
If you choose to participate, please follow the link below to the Zoomerang.com website.

Again all answers are confidential and the information is only reported in numerical values. By following the link to the survey, you are giving your consent for participation.

Thank-you in advance for your participation,

Jennie McClain FNP

APPENDIX D

Online Survey Questions

All answers are confidential and no names or identifying information will be used in the study results.

Thank-you for participating in this evidenced based practice project.

Online Survey Questions

1) Age_____
2) Male or Female
3) I am sexually active. Yes or No
4) If sexually active how many partners have you had? _____
5) If sexually active, do you **always** use or have your partner use a condom. Yes or No
6) Do you feel comfortable discussing the use of a condom with your partner? Yes or No
7) Did you receive any type of sex education in high school? Yes or No
8) Did your high school sex education class discuss sexually transmitted diseases and prevention? Yes or No
9) Do you feel you have adequate knowledge regarding sexually transmitted diseases, and how to protect yourself from them? Yes or No
10) If you had a question regarding safe sex or sexually transmitted diseases where or whom would you go to first for information? _____
11) I know everything I need to know about sexually transmitted diseases. Yes or No
12) I know how to protect myself from sexually transmitted diseases. Yes or No
13) Can you name 3 sexually transmitted diseases? _____
14) All sexually transmitted diseases are curable. Yes or No
15) There is a shot to protect me from two sexually transmitted infections. Yes or No
16) Condoms can protect me from all sexually transmitted diseases. Yes or No
17) You can tell by looking at someone that they have HIV. Yes or No
18) Once you have herpes you can have repeated episodes. Yes or No
19) I have had a sexually transmitted disease. Yes/ No
20) I would attend a short presentation on safe sex and sexually transmitted diseases if it were offered to me. Yes/ No

Appendix E

PowerPoint Outline

Protect Myself: What Am I Protecting Myself From?
Jennie McClain FNP
Valparaiso University Doctoral Student

Disclaimer
This presentation has graphic pictures of human sexual organs. If you feel at anytime you need to leave the room that is fine. There will be an assistant at the back of room to assist you if needed.
Participation in this project is voluntary and you may leave at anytime.

Explanation of study
The rate of sexually transmitted infections in young adults is increasing. You are being asked to participate in an evidence based project for my Doctorate in Nursing here at the University. There is no benefit to you for participating other than the approved fifth hour credit awarded. There also is no penalty for choosing not to participate. Participation is strictly voluntary and you may leave at any time. There is a short pretest and a short posttest after the power-point presentation. I would like to thank-you in advance for your participation. If you should have any questions or concerns please contact me, Jennie McClain, the project manager.

Objectives
To provide information on the most prevalent sexually transmitted infections affecting young adults.
To discuss possible long term effects of sexually transmitted infections.
To discuss prevention and protection from sexually transmitted diseases.
Facilitate discussion on how to talk about safe sex with a potential partner.

Sexually Transmitted Infections
Some sexually transmitted infections (STIs) can be cured with antibiotics.
Others are life-long
Some can be life-threatening
Prevention and testing is important to be healthy.

What Are The Statistics?
According to the Centers for Disease Control teens and young adults 13- 24 years of age have the highest rates of sexually transmitted infections.
Approximately 18 percent of all new HIV diagnoses are among 13-24 year olds.
(CDC, 2009)

Genital warts (Human papilloma virus - HPV)
Human Papilloma Virus (HPV), the virus family that causes genital warts. Some strains of the virus cause warts and are usually harmless, but other strains may lead to cervical or anal cancer. Vaccines can protect against some of the most dangerous types of HPV.
Signs: Pink or flesh-colored warts that are raised, flat or shaped like cauliflower. Often there are no symptoms.
Prevention: Abstinence, Condoms and Vaccine. Both women and men can get vaccinated.

Hepatitis B and C
Hepatitis B is a virus that can cause severe liver damage. It spreads through contact with blood and other body fluids. People can be infected through sex, needle sharing and at birth, as well as by sharing razors and toothbrushes. Most people recover without the need for treatment. Those who develop chronic hepatitis can be treated with drugs. There's also an effective vaccine to prevent hepatitis B.

Hepatitis C can also be spread by needle sharing, bodily fluids and sexual intercourse.
Symptoms: People may develop nausea, stomach pain, weight loss, fatigue, and a yellowing of the skin or eyes with acute infection. Many people have no symptoms at all. Chronic infection can lead to liver cirrhosis and liver cancer.
Prevention: Vaccination recommended for Hepatitis B even if not sexually active. Abstinence and condoms.
www.mshc.org

HIV
Anyone can get HIV. People with HIV do not look sick often they may not know they have HIV. It is life-long and life-threatening.
The most important thing to know is how you can get the virus.

You can get HIV:
By having unprotected sex- sex without a condom- with someone who has HIV. The virus can be in an infected person’s blood, semen, or vaginal secretions and can enter your body through tiny cuts or sores in your skin, or in the lining of your vagina, penis, rectum, or mouth.By sharing a needle and syringe to inject drugs or sharing drug equipment used to prepare drugs for injection with someone who has HIV.(CDC fact sheet)

HIV
CDC recommends that everyone know their HIV status. How often you should an HIV test depends on your circumstances. If you have never been tested for HIV, you should be tested. CDC recommends being tested at least once a year if you do things that can transmit HIV infection, such as:
injecting drugs or steroids with used injection equipment
having sex for money or drugs

having sex with an HIV infected person
having more than one sex partner since your HIV test
having a sex partner who has had other sex partners since your last HIV test.
(CDC,2007)

AIDS

AIDS - the acquired immunodeficiency syndrome - is a disease you get when HIV destroys your body's immune system. Normally, your immune system helps you fight off illness. When your immune system fails you can become very sick and can die.
Kaposi's sarcoma on the trunk of a person affected with AIDS

Gonorrhea

Gonorrhea (the clap)
Gonorrhea spreads easily and can lead to infertility in both men and women, if untreated. Antibiotics treat the infection.
In Men: Discharge from the penis, swollen testicles.
In Women: Vaginal discharge, pelvic pain, spotting. Symptoms may be mild and are easily confused with a urinary tract or vaginal infection.

Syphilis

Most people don't notice the early symptoms of syphilis. Without treatment, it can lead to paralysis, blindness and death. Syphilis can be cured with antibiotics.Signs and symptoms: The first sign is usually a firm, round, painless sore on the genitals or anus. The disease spreads through direct contact with this sore. Later there may be a rash on the soles, palms, or other parts of the body (seen here), as well as swollen glands, fever, hair loss or fatigue. In the late stage, symptoms come from damage to organs such as the heart, brain, liver, nerves and eyes.

Chlamydia

Chlamydia is a common STI that can lead to infertility if left untreated. It clears up quickly with antibiotics, but it often goes unnoticed because symptoms are vague or absent. Chlamydia can also infect the rectum and throat.
Symptoms in men: Burning at the tip of the penis, discharge, painful urination.
Symptoms in women: Vaginal discharge that may have an odor, pain during sex, painful urination.

Herpes Simplex Type 1 and 2

Herpes simplex virus (HSV) type 1
That painful cold sore you get on your lip every now and then?
It's probably caused by a type of herpes virus HSV-1. It spreads easily among household members or through kissing, but it can also be sexually-transmitted to the genitals through oral or genital contact with an infected person. Although there is no cure, medication can help shorten or prevent outbreaks.

Signs and symptoms: Occasional cold sores on the lips. Blisters or sores on the genitals are also possible.

Herpes simplex virus (HSV) type 2

Most cases of genital herpes are caused by a virus called HSV-2. It's highly contagious and can spread through intercourse or direct contact with a herpes sore. As with HSV-1, there is no cure, but antiviral drugs can make outbreaks less frequent and help clear up symptoms more quickly.

Symptoms: Fluid-filled blisters that form painful, crusted sores on the genitals, anus, thighs or buttocks. Can spread to the lips through oral contact.

Trichomoniasis

Caused by a parasite from an infected person to an uninfected person during sex.

Some people do not exhibit any symptoms while others may exhibit symptoms 5-28 days after being infected. Symptoms may come and go.Men may feel itchy or irritated inside the penis, may have burning after urination. Discharge may also be present.Women may have itching, redness, or soreness of the genitals, discomfort with urination, or discharge with an unusual smell.

The Best Way To Protect Yourself

Abstinence offers the best protection from contracting an STI.

If you choose to be sexually active be proactive for your health.

Know your partner. **Ask** about past relationships, drug use, or other risky behaviors.

Be faithful when in a relationship. The more partners the higher the risk.

Alcohol and sex often leads to not using adequate protection. You often let your guard down.

Respect yourself enough to insist on using a **condom** each and every time.

Use a Condom Correctly

Condoms used with a lubricant are less likely to break. However, condoms with the spermicide nonoxynol-9 are not recommended for STD/HIV prevention. Condoms must be used correctly and consistently to be effective and protective. Incorrect use can lead to condom slippage or breakage, thus diminishing the protective effect. Inconsistent use, e.g., failure to use condoms with every act of intercourse, can result in STD transmission because transmission can occur with a single act of intercourse.

Condoms have an expiration date!

Ask Yourself These Questions

If sexually active: Do I know how to protect myself from sexually transmitted infections?

If sexually active: Am I at risk?

If sexually active: Do I know my partner's sexual past? Can I be assertive enough to ask?
If sexually active: Do I always use a condom?
If sexually active or not: When the time arrives am I strong enough to ask questions of my partner and insist on condoms each and every time?
Sexually active or not: Am I vaccinated against HPV and Hepatitis B?

Purpose Of This Presentation

The purpose of this presentation was not to present sexuality as a scary activity but to inform you of the possible consequences of risky behaviors. It is the hope of this project manager that you leave with more information than when you came. It is hoped that with knowledge of sexually transmitted infections you will be empowered to make healthy protective choices now and in the future.

Thank-you for participating.
Be Healthy!

Reference List

http://www.herpes-coldsores.com and http://www.cdc.gov

APPENDIX F

Proposal

Proposal for implementation and evaluation of an educational- based sex health program for college freshman.

Current evidence suggests there is a positive impact on sexual health behaviors when sexual health curriculum is introduced to young adults. In the college setting, there is a potential for increased risk of sexually transmitted infections (STI's); as young adults are on their own for the first time with many peer influences, and sometimes the influence of alcohol. Evidence supports there is a need for education to help combat the increase in STI's in young adults 20 to 24 years old. This age group is most affected by the most prevalent STI's, gonorrhea, and chlamydia. Many students have had some sexual health education, but to what extent; as many high schools offer abstinence only education. It is hard to tell how much information and the accuracy of information this age group has received by school, home, peer, or media.

It has been recognized that there is a large number of college students who have their first sexual encounter while at college. There are a large number of students who utilize the health center for questions regarding STI's. Some students have had limited education on such topics. By providing accurate information regarding STI's and safe sex practices at the beginning of their freshman year it is hypothesized that students will be gaining new knowledge to protect themselves in the future; therefore decreasing the number of diagnosed STI's and increasing safe sex practices. This evidenced based project will answer the following question: In college freshmen: would an evidence-based sex health program increase students' knowledge as compared to current knowledge/awareness of STI's?

Objectives:

1) To evaluate current knowledge of sexually transmitted infections and safe sex practices of college freshmen.
2) To provide new knowledge through an evidenced based sexually transmitted disease and safe sex program to increase knowledge of college freshmen.
3) To measure learning outcomes from the sexually transmitted disease and safe sex program.
4) In the long term, if this project is successful it would be incorporated into freshmen outreach programming by the health center.

Participants:

All incoming freshmen for 2012-2013 school year in the fall semester will be asked by email (if age 18 or over) to participate in an online survey via Zoomerang.com. This survey will have consent for participation prior to survey. The email will discuss the purpose and use of the survey. All responses will be confidential. By participating in the survey they are consenting to participate in the project. The survey will be used to gage how knowledgeable incoming freshmen are regarding STIs. The questions

asked will be similar to those on the pre-test/ post-test. The survey will give added information to the project as not all students attend presentations but may choose to participate via online source.

College freshmen at Valparaiso University who are at least 18 years of age are the intended participants for this evidenced based project. Both male and female students will be invited to attend as long as they are at least 18 years of age or older, and freshman status.

Recruitment:

Core credit has been approved so participants have some personal gain by participating, but participation is strictly voluntary. The core professor assigns a small assignment as proof of attendance for core credit. By having core approval there is no coercion for participation as the students have other choices in which to fulfill their required participation points. Once in the program the participants are free to leave at any time they choose. If participants choose not to participate in the testing portion, they will be invited to stay if they choose. Flyers and a display to advertise the program time and location will be used. Information will also be displayed in the health center regarding the program. Refreshments will also be served but this is not considered coercion as students have access to refreshments at other school functions. There will be no recording of participants' names or demographic information for research purposes.

Procedures:

1) Core approval will be sought.
2) Advertising via Core class, flyers and displays in the union and health center on campus.
3) When participants arrive they will be asked to read and sign consent for participation. The only place participant's name will be written down is when they sign the participation consent.
4) Participants will be made aware that there will be a pre and post-test to evaluate the effectiveness of the program. Participants will also be aware at the beginning of the program that the length of the program is approximately1 hour total.
5) Participants will be instructed to leave at any time they feel the program is not for them.
6) A pre-test to evaluate current knowledge of the subject will be given and collected. (see attached pre-test)
7) A power point program on all STI's and safe sex practices will be presented and the facilitator will allow time for questions and answers.
8) Participants will then be asked to take the post-test to evaluate the program's effectiveness (see attached post-test).
9) Should a participant experience any emotional stress due to the content of the presentation, questions asked, or comments made by other participants the facilitator will stop the discussion and ask if anyone would like to leave the program? If a participant does experience any emotional distress there will be an assistant at the back of the room to assist them. Counseling referral may be needed.

10) The information gained by the pre and post-tests will be measured and disclosed to the Valparaiso University health center for review. The information will also be used for the facilitator's research paper to disseminate the information in a presentation to further knowledge of nursing professionals.

Potential Risk or Harm:

There are no foreseeable physical or financial risks to participants. The subject matter may cause emotional stress to someone but the participant is free to leave at any time and assistance will be provided to get whatever help they may need. Counseling center information will be on hand.

Anticipated Benefits:

Participants will gain new knowledge regarding STI's and safe sex practices. The new knowledge will decrease future STI diagnoses and unplanned pregnancies. By providing the students with accurate information they will have the knowledge to keep themselves and the campus community healthy.

Consent and Confidentiality:

By attending the presentation voluntarily the participant is initially providing consent. There will be a formal consent which will be read to the participants. The participant will have the opportunity to leave at any time during the presentation and does not have to fill out questionnaires if they choose not to. (See attached consent/ explanation of study).

APPENDIX G

Pretest Interrater

Pre-test Questions Interrater Copy

1) Age _____
2) Male or Female
3)Sexually active Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

4)We always use condoms. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

5) I feel confident I can talk with my partner about using condoms. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

6) I feel I can initiate a conversation with my partner regarding previous sexual encounters. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

7) I feel confident in my ability to question my partner about risky behaviors such as drug use. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

8) I know how to acquire and correctly use condoms. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

9) I feel confident in my ability to say no to someone who refuses to use a condom. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

10) In high school I had a class that discussed sexually transmitted diseases. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

11) I can tell by looking at someone that they have HIV. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

12) Women do not always have symptoms when they have chlamydia. . Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

13) Untreated sexually transmitted infections can cause a woman to have problems getting pregnant in the future. Yes/No
   a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

14) People who had herpes will never have another outbreak. . Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

15) Hepatitis C is a sexually transmitted disease? . Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

16) Condoms can protect me from all sexually transmitted infections. Yes / No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

17) Chlamydia is the most common sexually transmitted infection in college students. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

18) I know the symptoms of chlamydia. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

19) There are 4 sexually transmitted infections that can be life threatening. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

20) Sexually transmitted infections always have symptoms. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

21) Some sexually transmitted infections are not curable. . Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

22) There is a vaccine for herpes. . Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

23) Men can get HPV. Yes / No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

24) If I only participate in oral sex I cannot get a sexually transmitted disease. Yes/ No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

25) There are some infections that seem like sexually transmitted infections, but in fact are not spread by sex. Yes/ No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

26) The ABC's of safe sex are abstinence, be faithful and condoms. Agree/Disagree

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

APPENDIX H

Post Interrater

Interrater Post-test

1) I can tell by looking at someone that they have HIV. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

2) Women do not always have symptoms when they have chlamydia. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

3) Untreated sexually transmitted infections can cause a woman to have problems getting pregnant in the future. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

4)People who had herpes will never have another outbreak. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

5)Hepatitis C is a sexually transmitted disease. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

6)Condoms can protect me from all sexually transmitted infections. Yes/No
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7)Chlamydia is the most common sexually transmitted infection in college students. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

8)I know the symptoms of chlamydia. Yes/No
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9)There are 4 sexually transmitted infections that can be life threatening. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

10)Sexually transmitted infections always have symptoms. Yes/No
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11)Some sexually transmitted infections are not curable. Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

12)There is a vaccine for herpes. Yes/ No
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13)Men can get HPV. . Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

14)If I only participate in oral sex I cannot get a sexually transmitted disease. . Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

15) There are some infections that seem like sexually transmitted infections but in fact are not spread by sex. . Yes/ No

16)Herpes, gonorrhea, and chlamydia can have serious consequences but are curable. . Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

17) HPV can cause cancer. . Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

18)The 2 sexually transmitted infections that have a vaccine available are HPV and Hepatitis B. Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

19)Condoms are highly effective against most sexually transmitted infections. . Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

20)I have learned something new regarding sexually transmitted infections by attending this presentation. . Yes/ No

21)This presentation should be offered to all freshmen. . Yes/ No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

22)Do you prefer a presentation such as this one or an online version?
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

23) I feel confident I can talk with my partner about using condoms. Yes/No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

24) I feel I can initiate a conversation with my partner regarding previous sexual encounters. Yes/No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

25) I feel confident in my ability to question my partner about risky behaviors such as drug use. Yes/No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

26) I know how to acquire and correctly use condoms. Yes/No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

27) I feel confident in my ability to say no to someone who refuses to use a condom. Yes/No

a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

28) The ABC's of safe sex are abstinence, be faithful and condoms. Agree/Disagree
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant

29) I intend to start using condoms with every sexual encounter. Yes/No
a) Not relevant b) somewhat relevant c) quite relevant d) very relevant