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The Effectiveness of Comprehensive Sexual Education for Teens: an Exploration of the Advantages and Disadvantages

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THE EFFECTIVENESS OF COMPREHENSIVE SEXUAL EDUCATION FOR TEENS: AN EXPLORATION OF THE ADVANTAGES AND DISADVANTAGES

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Crystal Iddings and Danielle Wadsworth

Abstract

Background/Purpose: The teen pregnancy rate in the United States was18.8 per 1000 in 2017. Although this is an all-time low for teen pregnancy in the United States, it is still the highest rate among developed countries. This literature review aimed to reveal the advantages and disadvantages of comprehensive sexual health education.

Theoretical Framework: In 1947, Kurt Lewin identified three stages to the Change Theory which people go through while making change: unfreezing, change, freeze (or refreeze). These three major concepts are the force that pushes forward for change to occur.

Methods: Twenty research articles were critically reviewed with the purpose of determining what the advantages and disadvantages are to comprehensive sexual education.

Results/Findings: This literature review provides solid support for comprehensive sexual education as the advantages far outweigh the potential for no benefits. The following benefits were identified: increased knowledge, safer sex practices, improved self-efficacy, decreased teen pregnancy/birth rates. All of these benefits have been suggestive of significantly impacting the ability to make appropriate reproductive health decisions.

Implications for Practice: The commitment nurse-midwives place on patient education and their approach to individualized patient care, presence in family planning clinics and community health, and participation in the care of pregnancy make them well positioned to address the lack of education provided to the adolescent population.

Keywords*: teen pregnancy, comprehensive sexual health education, sexual education*

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Chapter One: Introduction

According to the Centers for Disease Control and Prevention (CDC, 2019), there were 194, 377 infants born to women aged fifteen to nineteen years of age in 2017. This is a birth rate of 18.8 per 1,000 women. Although this is an all-time low for teenagers in the United States, it is still the highest rate among developed countries (CDC, 2019). In 2018, within this age group, the rate was less than half of what it had been in 2008, when the rate was 41.5 births per 1,000. The decline of teen births is thought to be related to an increase in the use of highly effective contraception methods such as Intrauterine Devices (IUDs) and implants such as Nexplanon (Livingston & Thomas, 2019). Messages directly aimed at teenagers in the prevention of pregnancy may also be a factor in the decline. Disparities persist among all major racial and ethnic groups despite the rapid declines in teen birth rates (Livingston & Thomas, 2019). The elimination of these disparities would aid in achieving health equity, enrich the life opportunities and health outcomes, as well as decrease the economic burden and expense of teen childbearing (CDC, 2019).

Incidence and prevalence estimates show that half of all new sexually transmitted infections (STIs), are diagnosed among young people between the ages of 15 to 24 (CDC, 2017). This means that one in four sexually active adolescent females has had at least one STI (CDC, 2017). In 2018, there were an estimated 36,400 new cases of human immunodeficiency virus (HIV) infections in the United States (HIV.gov, 2020). However, it should be noted that the number of new infections in 2018 among people aged 13 to 24 years of age did decrease when compared to the new infection rates in 2014 (HIV.gov, 2020). None the less, HIV infection has serious consequences for young adults, and it is essential that we strive to decrease infection rates within this age group.

Regrettably, the cause of the persistent teen pregnancy rates, STI rates, and HIV rates may be related to a lack of proper education surrounding sexual health which can help prevent teenagers from making poor decisions regarding sexual activity (Livingston & Thomas, 2019). Education provided should be medically accurate, evidence based, and age-appropriate information, and should include the benefits of delaying sexual activity, normal reproductive development, and the use of contraception (American College of Obstetrics & Gynecology, 2016). Through this paper, information will be provided as to what types of sexual education are available in the United States and how effective each type of education is. Due to the risks imposed on teenagers when there is a lack of proper education, we pose the question, What are the advantages and disadvantages of comprehensive sexual education for teen health outcomes?

Statement of Purpose

Comprehensive sexuality education is a curriculum-based process of teaching and learning about the cognitive, emotional, physical, and social aspects of sexuality (ACOG, 2016). It aims to equip children and young people with knowledge, skills, attitudes, and values that will empower them to realize their health, well-being, and dignity; to develop respectful social and sexual relationships; to consider how their choices affect their own well-being and that of others; and to understand and ensure the protection of their rights throughout their lives (ACOG, 2016). The purpose of this paper is to examine the advantages and disadvantages of comprehensive sexual education.

Evidence Demonstrating Need

Over the past 50 years, the sexuality of adolescents has transformed. Adolescents are now reaching physical maturity earlier yet marrying later in life (Tulloch, T. & Kauffman, M., 2013). When a child reaches puberty, obvious physical development becomes apparent. These changes

occur in the early to middle years of adolescence. This time is seen as the potential interest in more intimate relationships and experimentation. Concerns that are shared by parents and society regarding early sexual activity include potential emotional and physical consequences of sexual behavior, contraction of STIs, unplanned pregnancy, and sexual abuse (Tulloch, T. & Kauffman, M., 2013).

These apprehensions underline the importance of providing adolescents with preventive health services and comprehensive sexual health education (Tulloch, T. & Kauffman, M., 2013). One report that features the most up to date data from the National Survey of Family Growth (NSFG), conducted by National Center for Health Statistics (NCHS), compares new data to previous NSFG data that revealed an estimated 42% of female and 38% of male teenagers have engaged in sexual intercourse by age 18 (CDC, 2020b). The NSFG data represents teens across the United States that were derived from interviews with 4,134 female and male teens from 2011 to 2015 (CDC, 2020b). According to the 2019 Youth Risk Behavior Survey, 38% of all students had engaged in sexual intercourse with at least one person. Students reporting four or more sexual partners declined to 9% (CDC, 2020a). Only 54% of students reported using condoms while having sex, and this percentage has continued to decline since 2009. The lack of proper protection presents serious health risk for contracting STIs, including HIV (CDC, 2020a).

Significance to Nurse-Midwifery

A certified nurse-midwife (CNM) is a masters or doctorate prepared healthcare professional certified by the American Midwifery Certification Board who specializes in the reproductive health and childbirth of women. While CNMs are experts in providing care to pregnant and birthing individuals, they also perform annual exams, provide counseling, and write prescriptions (Nurse Practitioner Schools, 2020). Based on the United States Bureau of Labor

Statistics, there are 6, 250 active nurse midwives working in a vast array of practice types (BLS, 2019). The mission of CNMs is to achieve optimal health for all women throughout their lifespan (American College of Nurse Midwives [ACNM], 2020). Because of this, nurse-midwives have an obligation to provide a non-judgmental atmosphere of shared decision making. This should be centered around mutual respect, freedom from bias and discrimination, and inclusion of sufficient factual information for the women and families they provide care to (ACNM, 2016). Based on the midwifery model of care to provide education and family-centered care for women of all ages, nurse-midwives are ideal care providers for adolescents and young women (ACNM, 2016). As emphasized in the ACNM (2012) Hallmarks of Midwifery, midwives seek to empower women as partners in health care, promote public health care perspectives, advocate for informed choice and shared decision-making, and value skillful communication and counseling.

One statement from the position of ACNM asserts that everyone has the right to access factual, evidence-based, unbiased information about available sexual and reproductive health care services in order to make informed decisions (ACNM, 2016). The American College of Obstetricians and Gynecologists (ACOG) recommends that comprehensive sexual education should provide medically accurate, age-appropriate, and evidence-based information (2016). Benefits of delaying sexual activity, information about reproductive development, contraception, as well as safe sex practices to prevent unintended pregnancy and STIs should all be included (ACOG, 2016). Furthermore, the World Health Organization (WHO) supports preparing young people for a safe, fulfilling, and productive life, which includes providing comprehensive sexuality education (Unesco, 2018). Our world is plagued by STIs, HIV/AIDS, unintended pregnancies, gender-based violence, and gender inequality, all of which pose serious risks to the well-being of our youth (Unesco, 2018).

The American Academy of Pediatrics (AAP) states that annual visits should provide a platform for offering education about sexuality that can complement home teachings and/or school provided education (AAP, 2016). The midwifery model of care emphasizes education and family centered care throughout the lifespan, which makes midwives ideal providers for adolescent women (ACNM, 2016). Additionally, nurse-midwives have an opportunity to begin counseling prior to pregnancy, throughout pregnancy, and into the postpartum period and beyond. These opportunities provide adequate time for trust building, with the ability to debunk commonly held misconceptions surrounding sexual health. The midwifery emphasis on health promotion makes comprehensive sexual education an extremely important aspect to the knowledge provided for adolescents and young women, as this information will give them the opportunity to be more intentional with their sexual health and reproductive life plans.

Studies have indicated that communication between parents and pre-adolescents is key to promoting positive health behaviors (ACNM, 2016). Midwives offer an important service to parental figures of adolescents, and therefore by providing culturally sensitive and developmentally appropriate care they have the opportunity to educate the family unit. As midwives we can also promote healthy behaviors, facilitating the development of positive lifestyle choices which can be carried throughout life (ACNM, 2016).

Theoretical Framework

Change theory focuses on factors that influence people and organizations to make changes in their lives and businesses. In 1947, Kurt Lewin identified three stages to his theory which people go through while making change. These steps are unfreezing, change, freeze (or refreeze). Lewin's theory is built off of three major concepts that are a driving force which pushes forward for change to occur. In order to facilitate change, the patient is directed toward

change, causing a shift in the equilibrium. Restraining forces push back, hindering the change, causing the patient to move towards the opposite direction (Petiprin, 2016). Although scrutinized over the years, Lewin's theory remains relevant. In fact, several more recent change models have been found to be based on his three-stage theory. (Connelly, 2016).

To understand Lewin's theory, we need to dissect each stage. As mentioned above, the first stage is the unfreezing stage. As explained by Connelly (2016), the unfreezing stage is one of the most important stages to understand in the world in which we live in today. In this stage, the most important piece to understand includes the process that someone goes through in order to get to the point where they are ready to make a change. It is also about getting to the point where the person understands that change is in fact necessary and starts to move away from their comfort zone. In addition, it is about preparing ourselves, or others, for the change to occur by creating a situation where change is desired. This is done by a process which involves changing a person's thoughts, feelings, and behaviors. In some instances, all three of these may occur simultaneously (Petiprin, 2016). Connelly (2016) explains the more we feel that change is necessary, the more urgent it becomes to us and the more motivated we are to make the change.

The second stage of Lewin's theory is change or transition. Transition is the journey we make in reaction to a change. This second stage occurs as the person starts to make the changes that are needed, finding ways to let go of old behaviors and to overcome resistance from peers. During this stage, Lewin suggested three methods that could lead to the achievement of the unfreezing stage. They included increasing the driving force that directs the behavior away from bad or existing situations, decreasing the restraining forces that negatively affect the movement and finding a combination of the first two methods (Petiprin, 2016). This stage is thought to be the mosat difficult stage because it is a process that must occur within each person. During this

phase, support is really important. Role models, coaches, midwives or other healthcare providers can help with this process by allowing the patient to develop their own solutions, and by keeping communication open and clear (Connelly, 2016).

The third stage refers to the refreezing stage which establishes stability once the change has been made. During this phase, the change is accepted, and a new habit is established, becoming a normal behavior (Petiprin, 2016).

The change theory serves as the conceptual framework for the topic of sexual health education as it is a comparison of two risk reduction interventions that focus primarily on changing adolescent behavior. Behavior change interventions have been considered an essential part of comprehensive sexual prevention education. In fact, evidence on behavioral interventions led to the release of guidelines by the WHO, recommending that behavior interventions and communication programs promoting sexual health, prevention of HIV, STIs and unintended pregnancies be promoted in primary health clinics (De Vasconcelos et al., 2018).
Norton et al. (2012) explains that thousands of young adults experience unplanned pregnancies, contract STIs, or become infected with HIV as a result of engaging in unprotected sex. In the attempt to change these statistics and decrease risky behaviors, researchers have identified characteristics of sexual risk reduction interventions that are based on theories that have foundations which are focused on changing health behaviors.

Furthermore, literature suggests that a specific focus of messages presented in behavior change interventions may actually have a differential impact on the efficacy of the intervention and overall influence the degree that an individual changes their preventative behavior. (Norton et al.,2012). The change theory is the basis of many sexual education platforms such as comprehensive sexual education programs. The ability to achieve positive sexual health depends

on access that adolescents have to comprehensive information about sexuality, as well as an individual's knowledge about the risks and consequences of sexual activity. Therefore, it is incredibly important for adolescents to have access to high quality sexual health education which includes behavioral interventions, as that has been shown to achieve longer term behavioral changes and reduce risky behaviors.

Summary

Human sexuality, sexual relationships, and sexual behaviors are a necessary and important part of human development. As expressed by ACNM, ACOG, WHO, and the recommendations provided by AAP, healthcare providers have a responsibility to use evidence-based practices to increase sexual health knowledge. In return, it is expected that the number of teen pregnancies and new STI cases will drop, offering a decrease in health disparities. This will aid in increased health equity, enriched life opportunities, and improved health outcomes, and lead to a decrease in the economic costs of teen childbearing. Therefore, comprehensive sexual education should be provided to every student whether it be through medical, community, school, or home platforms. This information will give teens the opportunity to be more intentional with their sexual health activities and reproductive life plans.

Chapter II: Methods

The purpose of this chapter is to review the processes used to identify and critically appraise literature addressing the advantages and disadvantages of comprehensive sexual education. It includes the search strategies, inclusion and exclusion criteria, the number and types of research selected for this review and criteria for evaluating said research studies. The studies were then analyzed based on their purpose, setting, study sample, results, conclusions, and recommendations. Additionally, the references within the research studies were examined to gain additional information for review.

Search Strategies

The goal of this literature appraisal is to identify and examine the advantages and disadvantages of comprehensive education for adolescent health outcomes. It identifies barriers to providing sexual health education as well as the importance of its use in decreasing unwanted pregnancies, sexually transmitted diseases, and other health issues. An initial search was conducted using the Cumulative Index to Nursing and Allied Health Literature (CINAHL), using the search terms “sexual education”, and “teen”; this search yielded 288 articles from CINAHL. To further reduce the number of articles, we restricted our search to only randomized control trials that were published between 2010 and 2020. Due to the limited amount of RCTs, we widened our search to RCTs that were published between 2005 and 2020.This search yielded 26 articles from CINAHL. After removing any duplicates, systematic review or meta-analysis, 20 research studies relevant to sexual education among teens were evaluated.

Criteria for Inclusion and Exclusion of Research Studies

Inclusion criteria for the literature review matrix required research studies that addressed sexual education among teens or adolescents that were published between the years 2005

through 2020, as the original search between 2010 and 2020 did not produce a sufficient sample of studies. To obtain the highest quality of research, studies were restricted to randomized control trials, non-experimental correlational, and quasi-experimental designs. We excluded studies that did not fall into the adolescent age group of eleven to nineteen years of age. Studies that reported duplicate data were also excluded. Additionally, studies were also excluded if they were in any other language other than English. Most of the studies were done in the United States so this was not an issue. The only study performed outside of the United States was completed in Mashhad, Iran. We chose to include this study because it was used for a master thesis paper at the School of Nursing and Midwifery (Rousta et al., 2019). This particular study revealed how comprehensive sexual education provided to Iranian parents impacts the knowledge of their children.

Summary of Selected Studies

The abstracts of 288 articles were reviewed to determine degree of relevance to the chosen topic. After careful review, 20 research studies published between 2005 and 2020 were selected for inclusion in this review. The articles considered in this review include fourteen randomized controlled trials, four quasi-experimental design studies, and two non-experimental correlational design studies. All of these research studies were conducted in the United States, except for one that was conducted in Mashhad, Iran.

Evaluation Criteria

The strength and quality of articles included in this review were evaluated utilizing The Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2018). Of the 26 articles, 20 were selected and were graded on a scale of I-III. Randomized controlled trials (RCTs) are considered level I evidence (Dearholt & Dang, 2018). Well-designed quasi-experimental studies

are considered level II evidence, whereas a nonexperimental study provides Level III evidence (Dearholt & Dang, 2018). As a result of the exclusion criteria, the majority of research articles selected were considered level I evidence. Once the level of evidence was determined, articles were critically examined to determine overall quality. Classifications of quality as described by Dearholt and Dang (2018) include low, good, or high. Determination of quality is based on the following factors: ability to generalize results to the greater population, consistency of results when compared to other studies, sufficiency of sample size, adequacy of control group, degree of definitive conclusion, and consistency of recommendations based on scientific evidence (Dearholt & Dang, 2018). Of the 20 research articles analyzed, fourteen are classified as level I evidence with two classified as high quality, nine that are of good quality, and three that are identified as low quality. Of the four level II evidence articles, one was classified as high quality, two were good quality and the remaining article was low quality. Finally, the remaining two articles that were identified as level III evidence both had good quality research.

Summary

The literature search was done by utilizing the Bethel University library database in order to identify articles relevant to comprehensive sexual education. Inclusion and exclusion criteria were used to narrow down the search to the 20 remaining articles. Literature review matrices containing an analysis of each article were completed (see Appendix 1) including the determination of the level and quality of the research as defined by the Johns Hopkins Research evidence Appraisal Tool (Dearholt & Dang, 2018). Chapter three will discuss in detail the literature results as it pertains to the advantages and disadvantages of comprehensive sexual education.

Chapter III: Literature Review and Analysis

In this review of Comprehensive Sexual Education there were four unique study characteristics that presented as themes across the literature. Of the twenty articles evaluated, ten showed an increase in knowledge, nine revealed increases in safe sex practices, seven discovered improved self-efficacy and two identified declines in teen pregnancy and birth rates. There were also three articles that showed no benefit from sexual education, which will be discussed as well. Each theme identified confirms the advantages to comprehensive sexual education.

Knowledge

The goal of sexual education is to increase one's knowledge of how to practice healthy sexual behavior. Risky or unhealthy sexual activity may lead to health and social problems, such as an unintended pregnancy, HIV, AIDS or other STIs and therefore, should be discussed routinely through open and honest communication (Breuner & Mattson, 2016). Factual information about sexuality should be tailored based on a child's age and developmental level and should include instruction about how to make healthy sexual decisions, prevent STI/HIV transmission, should stress the importance of delaying the initiation and frequency of intercourse, while also encouraging condom and other contraception use once sexual activity is initiated. Ten of the reviewed studies addressed increasing one's knowledge and will be discussed more thoroughly throughout the following paragraphs. (Brown et al., 2014; Green et al., 2016; Markham et al., 2011; Oman, et al., 2016; Palen et al., 2011; Raghypathy, et al., 2013; Rohrbach et al., 2015; Rousta et al., 2018; Serowoky, et al., 2015; Shegog et al., 2017).

Parental Involvement

Sexual health education can help improve communication between an adolescent and their parents or other trusted adults. By improving communication between the dyad, we can

therefore have a larger impact on delaying adolescent sexual initiation, reducing the amount of unprotected sex one is having, while also decreasing the number of sexual partners that they encounter. This can also lead to an increase in the use of different contraceptive methods (Rousta et al. 2018). Literature has shown that parents play an effective role in educating their children about sexual health and therefore may be one way an adolescent's beliefs and sexual behaviors can be influenced. Rousta et al. (2018) also had positive results indicating that maternal sexual health knowledge can affect adolescent behavior. Their randomized control trial investigated the effects of group training on 90 mothers. Its findings revealed that appropriate training can significantly improve maternal knowledge and attitudes towards sexual health education. The changes in maternal knowledge scores in both the intervention and control groups were considered statistically significant with ($P = <0.001$). The mean score of knowledge was shown to increase from 16.19±3.53 at the beginning of the study to 19.70±0.47 at the end of the study. Furthermore, mothers who obtained behavioral and communicative skills were able to reduce their adolescents' experiences with tensions of puberty and subsequent sexual deviation.

Another randomized control trial completed by Palen, et al. (2011) identified media messaging to be an effective way to improve parent- child communication about waiting to initiate sexual activity. The 2011 study included 404 (13 to 15 year old) adolescents, in order to evaluate the effects of media messages that target parents on the sexual beliefs of adolescents. They found that using parent focused social marketing promoted the parent- child communication. Parents exposed to the messaging significantly improved adolescents' beliefs (Odds Ratio [OR] = 1.63, 95% Confidence Interval [CI] = 1.02, 2.63) about the psychological and physical consequences of sexual activity. It is thought that social media messaging may have a larger impact than other types of messaging, as it is accessible to all parents including those

with lower socioeconomic status whose adolescents are most at risk for unintended pregnancy. It should be noted that an adolescent's friends' sexual activity was a significant predictor of the adolescent's beliefs about physical effects of sexual activity. Although multimedia messaging was shown to be a significantly effective way to improve parent-child communication, while also increasing adolescent beliefs about the psychological or physical consequences of sexual activity, it should be noted that there was no significant effects on adolescent beliefs about the benefits of waiting to have sex (Palen, et al., 2011).

High-Risk Behaviors

Adolescents with mental illness are also more likely to engage in behaviors that increase their risk of HIV and other sexually related infections (Brown, et al., 2014). When compared with their peers, youth with psychiatric disorders are 55% less likely to use condoms and 44% more likely to use substances in conjunction with sexual intercourse. Prior research has found that 40 -50% of the youth with mental health disorders report having sexual intercourse before they are 13 years of age. Therefore, given the increased risk, HIV prevention programs for this specific population is incredibly important. Brown, et al. (2014) did a randomized control trial involving 721 adolescents (ages 13-18 years). The findings yielded positive results indicating that youth who received a HIV prevention program (STYLE) reported more HIV knowledge ($p < .01$) as well as significantly more sexual communication between the adolescents and their parents. Parents in this family-based HIV prevention intervention also had a significantly greater increase in HIV knowledge and therefore were shown to have a short-term impact on safer sexual knowledge and behavior.

High-Risk Cultures

Teenage sexual activity and teenage pregnancy are recognized as a contributing factor for increased health risks, especially among minority youth (Sherr, et al. (2013). Teenagers acquire over half of all new sexually transmitted diseases (STDs) each year. The statistics are even more troubling when you look at individual ethnic groups. For instance, African American women aged 15–19 are three times more likely than Caucasian women to become pregnant each year and three times more likely to have their pregnancies end in abortions or miscarriages; Hispanic women are two times more likely. A randomized effectiveness trial of Sexual education programs for minority youth by Sherr, et al. (2013) studied the effectiveness of sex education on these high-risk minority youth. Their results showed that a comprehensive sex education program, which taught youth to recognize the benefits and behaviors of a healthy relationship, along with providing accurate information about STIs and contraception, was not effective. The 9-week program was delivered to a total of 973 students, treatment group (*n* -549) and a control group of (*n* - 424) Of note, the relationship between alcohol use and sexual activity was an unexpected but important finding of the study, as the results suggested that these teens are engaging in more than one high-risk behavior and that they are more than likely related. Thus, programs that focus exclusively on one area of destructive behavior, (i.e. sexual activity vs. alcohol or drug use) may not lead to substantial changes in adolescent behavior because they fail to take into account how these high risk behaviors are connected. Therefore it is suggested that future programs target multiple high-risk behaviors at the same time in order to make the largest impact (Sherr et al., 2013).

Serowoky,et al. (2015) also tried to identify risk reduction methods when conducting their quasi-experimental study, addressing these disparities in Latino youth. They used a

culturally sensitive, evidence based, approach to educate the youth about how to reduce their sexual risk. Results demonstrated a significant increase in STI and HIV knowledge ($p < .01$), along with self-efficacy ($p< .01$) and intention to use condoms ($p < .01$). Although knowledge was improved overall, further booster sessions were recommended for a continuation of knowledge and long-term impact.

American Indian/Alaska Native (AI/AN) youth are another high-risk minority group who experience sexual health disparities with a teen birth rate of 27.3 per 1000 in 2014. This birth rate exceeded the national rate in the United States of 24.2 per 1000 (Shegog et al., 2017). In 2011, AI/AN female's ages 15-24 years experienced the highest rates of Chlamydia among all United States women (Shegog et al., 2017). By using a culturally acceptable online program aimed at providing HIV, STI, pregnancy prevention curriculum to tribal middle school youth "Native IYG". Shegog et al. (2017) conducted a randomized control trial, and found that the curriculum significantly affected protective factors for sexual health by increasing youths' knowledge related to condoms ($p < .001$) and HIV/STI ($p < .001$), improving self efficacy for condom use and availability ($p < .001$) and increased the reasons that youth had for not having sex overall ($p <. 01$). Therefore this study is supportive of a technology based sexual health education program as an acceptable platform for reaching high-risk youth.

Three very high-risk minority groups were identified within the 20 articles analyzed (African American, Latina, and American Indian/Alaska Native). All three groups did show some improvements with the use of culturally sensitive comprehensive education that was easily accessible. It is however recommended that future programs target multiple high-risk behaviors at the same time in order to make the largest impact. It is also recommended that booster sessions be implemented to help reinforce ones' knowledge and improve the overall long-term benefit.

Comprehensive Knowledge

Positive effects have been shown with the use of a rights based sexual education curriculum. Rhorbach, et al. (2015) performed a randomized control trial which surveyed 1,447 ninth grade students from 10 urban high schools in the Los Angeles area. Their study showed both positive results for psychosocial and behavioral outcomes including sexual health knowledge, attitudes about relationship rights, partner communication, protection self-efficacy, awareness and access to health information and health services one year after students participated in the rights based curriculum. The largest effects were identified when assessing adolescent attitudes in regards to relationship rights (.22), sexual health knowledge (.24), and protection of self-efficacy (.20) (Rhorbach et al., 2015). Even with these positive findings, it is still recommended that adolescents have continued exposure or booster sessions to help reinforce messaging about reducing risks and promoting healthy decision-making.

Oman, et al. (2016) also showed positive results with their randomized control trial involving 1,037 youth from 44 residential group homes located in California, Maryland, and Oklahoma, when using a comprehensive pregnancy prevention program that used age appropriate, medically accurate interventions to improve high risk youths' knowledge, awareness, attitude, and self- efficacy regarding sexuality and sexual behavior. Their results demonstrated short term program effectiveness ($p < .05$) and are in agreement with other studies which have found that the impact of sexuality programs that focus on teen pregnancy prevention or HIV/AIDs risk reduction are much longer then expected and can be sustained over a 12 month period and even up to at least 24 months (Oman, et al., 2015).

In addition, Green, et al. (2016) also found positive long term knowledge and psychosocial effects regarding contraception methods with their randomized control trial of

1,036 ethnically diverse high risk youth, living in out of home care at 12 months in regards to anatomy and fertility ($p < .0001$), HIV/STIs ($p < .0001$), and methods of protection ($p < .001$).

Multimedia based approaches have also been recommended to help with youth engagement. This is important as they provide a platform that can also be tailored to an individuals' sexual experience. Markham, et al. (2011) suggest that using a type of multimedia platform is important, particularly when working with middle school aged adolescents where sexual experiences may differ drastically. In their three armed, randomized control trial comprising of 15 urban middle schools (N =1,258 predominantly African American and Hispanic students) they had findings that supported past studies: middle school programs emphasizing abstinence and condom skills training can effectively delay sexual initiation, increase knowledge about HIV and STIs, and positively impact students who are virgins as well as those students who are female and of Hispanic heritage. However, it also identified mixed effects on males, and youth who were already sexually experienced. Given the potentially harmful consequences of early sexual activity, Markham, et al. (2011) suggest that based on the majority of their findings being encouraging, that there should be widespread implementation of a middle school sexual education program that is evidence based. Findings also reiterate the importance of implementing programs that are grounded in the behavior change theory and tailored to their intended population.

Raghupathy, et al. (2013) also conducted a randomized control trial using 335, 14-19 year olds. Students who experienced the Abstinence and Contraception Education Storehouse (ACES) curriculum also demonstrated greater intent to abstain from the sex during the follow-up periods after the supplementation of existing sex education curricula with highly interactive materials such as video clips, multimedia polls and quizzes, and audiovisual demonstrations.

They had significant increases in HIV/STI knowledge among females (p = .01), and HIV/STI knowledge among ACES students 16 years of age or older (p = .03).

Sexual risk reduction programs, which incorporate interactive learning strategies, have demonstrated effectiveness in changing teen behavior. It is believed that strategies that require active participation help develop and internalize the message, thereby increasing knowledge retention.

Safe Sex Practices

Once sexual education provides the necessary knowledge and understanding of sexual health, safer sex practices are increased. Safe sex practices include topics like delayed sexual initiation, importance of decreasing the number of sexual partners, increased condom use, and increased contraceptive use. Safe sex practice is defined as sexual activity using methods or devices to reduce the risk of transmitting or acquiring STIs, especially HIV, as well as decreasing the risk of unintended pregnancies (Johns Hopkins Medicine, 2021). Ten of the reviewed studies addressed these benefits obtained from sexual education and will be discussed in the following paragraphs. (Markham et al, 2011; Lindberg, L.D. & Maddow-Zimet, 2012; Raghupathy, et al., 2013; Brown et al., 2014; Serowoky, et al., 2015; Oman et al., 2016; Green, et al. 2017; Rohrbach et al., 2015; Shegog, et al., 2017; Rastogi & Moreno, 2010).

Delayed Sexual Initiation

Of the ten articles that addressed safe sex practices, two showed a significant increase in the number of students with delayed sexual initiation. Markham et al. (2011) examined the effects of two-multimedia theory based, sexual education programs in fifteen urban middle schools in a randomized control trial. The two groups are abstinence only/abstinence until marriage (RA) or abstinence-plus (RR). Participants had an average age of 12.6 years with

11.7% of participants reporting already having some type of sexual experience at baseline. Overall, the RA program did not produce any significant results in delaying sexual initiation. However, a subgroup analysis revealed 60% of Hispanic students were less likely to initiate any type of sexual activity (p <. 05). Initiation of oral sex was decreased among female participants by 44% (p <. 05). In the RR group, the participants were less likely to have any type of intercourse by about 35% (p <. 01). African American (AA) subgroup analysis of the RR group showed 62% of students were less likely to initiate any form of sex (p< .05) and 68% of AA students were less likely to engage in vaginal sex (p< .01). Notably, the female participants in the RR group were 55% less likely to engage in any type of sex including oral and vaginal (*all* p <. 01) (Markham et al., 2011).

Lindberg and Maddow-Zimet (2012) used the National Survey of Family Growth to research the effects of abstinence only education (Ab), and abstinence plus birth control education (Ab + BC) received among sexually experienced males and females ages 15-24 (n=4691). Female participants who reported Ab education had significantly higher rates of initiating intercourse earlier (p< .05) than females who had Ab + BC education (p< .01). Male participants revealed early intercourse initiation rates that were equally significant regardless of the education received (*both* p< .01). Worth noting is that participants who did not receive any form of sexual education initiated sex earlier than both groups who had received some form of education (Lindberg, L.D. & Maddow-Zimet, I., 2012).

Decreased Number of Sexual Partners and Acts

Comprehensive sexual education had shown positive effects on decreasing the number of sexual partners and amount of sexual acts that are being performed. In a randomized control trial Raghupathy, et al. (2013), researched the Abstinence and Contraception Education Storehouse

(ACES) program. ACES is a digital classroom based program that is a supplement to traditional sexual education programs. Results were obtained at the initiation of ACES and three months after completion of the program. The ACES program was offered to the intervention group and the "usual" sexual education curriculum was offered to the control group. There were 335 participants, ages 14-19 and the program ran over a two-week period. At the three-month follow-up, students who received the ACES supplemental education were significantly more likely to not be sexually active in the next year ($p <. 01$). The participants also reported a reduction in the number of sexually acts over the past month ($p <. 02$). No significant changes were noted among the control group (Raghupathy, et al., 2013).

A randomized control trial by Brown et al. (2014) examined the efficacy of interventions that were offered to 721 youth, ages 13-18 in mental health treatment. Participants in this trial were randomly assigned to one of three groups: family-based HIV prevention, HIV prevention for the adolescent only, and health promotion directed at the adolescent. Participants in the HIV prevention either through a family-based approach or an adolescent only approach reported a significant avoidance of sexual encounters over the last three months ($p <. 05$) (Brown et al., 2014).

The Non-experimental correlational design by Lindberg and Maddow-Zimet (2011), found that Ab + BC education was positively associated with a decrease in the number of sexual partners in both genders (female $p<. 01$, male $p<. 01$). Ab education however, was associated with an increase in sexual partners for male participants ($p< .01$) (Lindberg, L.D. & Maddow-Zimet, I., 2012). Furthermore, Markham et al. (2011) revealed an increase in the number of sexual partners among students in the RA program.

A randomized controlled trial completed by Rastogi & Moreno (2010) used 662 AA sixth and seventh grade students. These students were separated into multiple intervention groups. These groups consisted of abstinence only education, safer sex education, two types of comprehensive sexual education, and education on health only. Abstinence only and both comprehensive sexual education programs produced positive results. The comprehensive sexual education interventions showed a decrease in the number of sexual partners students reported (*both* CI 95%) (Rastogi & Moreno, 2010).

Increased Protection and/or Contraceptive Use

Of the nine articles discussing increased safer sex practices, seven found significant increases in the use of protection and/or contraceptive use. In a quasi-experimental repeated measures design study by Serowoky, et al. (2015), three cohorts (n=24) were offered the *Cuidate!* a six-module curriculum created for teens aged 13-18. The program was completed over 5-8 weeks in eight sessions. Results showed that participants trended upward in their intention to use condoms if engaging in any sexual acts ($p < .03$). There was also an increase from 56% to 67% in the number of students reporting contraceptive and condom use overall (Serowoky, et al., 2015).

A cluster randomized controlled trial was performed with youth recruited from 44 residential group homes (n=1.037), mean age 16.2 years, that looked at the effect of the Power Through Choices (PTC) sexual education program. PTC is a ten session, medically accurate, and age appropriate program. After the intervention was completed, the PTC intervention group showed significant improvements from pre to post intervention assessment. Students had an increase in planning for protected sex as well as avoiding unprotected sex ($p < .0001$) (Oman et al., 2016).

In another group home cluster randomized controlled trial, 1,036 youth from a variety of ethnicities were offered the same PTC program to review the long-term results. This review complimented the aforementioned short-term intervention and produced similar results. After twelve months, participants were still reporting an increase in planning for protected sex and avoiding any sex without protection (p= .0076) (Green, et al., 2017).

Another randomized control trial used an accepted online program among the AI/AN culture that provides HIV, STI, and pregnancy prevention curriculum to tribal middle school youth (n=574). Shegog et al. (2017) found that the Native IYG program increased condom use significantly (p <. 001) as well as condom availability (p < .001).

Lastly, a cluster randomized controlled trial that was completed among ten urban high schools, found promising results as well. Rohrbach et al. (2015) researched the benefits of a rights based program versus a controlled sexual education program. Students who received the rights based curriculum were significantly more likely to be carrying a condom on their person (p< .001) after the received education (Rohrbach et al., 2015). Therefore, positive effects continued from the rights based program and were still evident one year after the teaching was completed.

Based on the nine articles mentioned through this theme, comprehensive sexual education shows promising results in regard to safe sex practices. There were significant results found in relation to delayed sexual initiation, decreased number of sexual partners and/or sexual acts, as well as increases in condom and birth control use.

Self-Efficacy

Self-efficacy as defined by the American Psychological Association is an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance

attainments (Carey & Forsyth, 2009). It reflects the ability to exert control over one's own motivation, behavior, and social environment. This cognitive self-evaluation is influenced by all manners of human experience, including goals for which people strive for, the amount of energy that they expended toward achieving a goal, and the likelihood that they will achieve a particular behavior. Seven of the reviewed studies addressed increasing one's self-efficacy along with one's knowledge through sexual health education. (Brown et al., 2014; Green et al., 2016; Markham et al., 2011; Oman et al., 2016; Rohrbach, et al., 2015; Serowoky, et al., 2015; Shegog, et al., 2017).

Oman, et al. (2016) showed significant improvements ($p < .05$) from pre-intervention to post-intervention during their randomized control trial involving 1,037 youth from 44 residential group homes in California, Maryland, and Oklahoma. Significant improvements were found in all three self efficacy areas including; Ability to communicate with your partner, plan for protected sex and avoid unprotected sex, and finding a place in the community to obtain a method of protection. Self-efficacy in regards to planning to use protection improved by 30% and self efficacy regarding where to get birth control also increased by 15% over the course of the program (Oman, et al. 2016).

Rhorbach, et al. (2015) identified a positive effect on protection of self efficacy (.20) amoung 1,447 ninth grade students from 10 urban high schools in the Loss Angeles area who participated in a rights based sexual education randomized control trial. The positive effects continued to be sustained at 1 year post intervention for use of sexual health services and condom carrying which might be indicators of intentions regarding future sexual behaviors (Rhorbach, et al., 2015).

Green, et al. (2016) conducted a randomized control trial including1,036 ethnically diverse high risk youth, living in out-of-home care. The intervention group had significant improvements in self efficacy regarding communication with a partner ($p < .0002$), plan for protected sex and avoidance of unprotected sex ($p < .0015$) as well as knowledge of where to get methods of birth control ($p < .0002$). It was evident that sexual health interventions can have a positive long term effect regarding contraception methods on youth in out-of-home care.

Serowoky et al. (2015) had similar results within their quasi-experimental study of 24 Latino females, 13-18 years of age. Participants demonstrated significant improvements in their sense of self-efficacy ($p < .01$) that resulted in significant change in their intention to use condoms if they engaged in future sexual activity. Condom and contraceptive use was found to increase from 56% to 67% over the 8-week period.

Brown, et al. (2014) also had positive results within their randomized control trial of 721 adolescents ages 13-18, from mental health settings and their caregivers. They reported fewer unsafe sex acts ($p < .01$), greater condom use ($p < .01$), and greater likelihood of avoiding sex ($p < .05$). Furthermore, the intervention groups reported significantly more HIV prevention self-efficacy with a p value of ($p < .04$) three months later. Findings indicated that youth who receive the HIV prevention program had significantly fewer unsafe sex acts as they were decreased by nearly half. They also showed a greater proportion of consistent condom use. To note, the interventions provided did not result in an increase in sexual activity or substance use. In fact, they found that the adolescents had a greater likelihood of avoiding sexual intercourse (Brown, et al., 2014).

Markham, et al. (2011) also found with their randomized control trial, that out of the 1,258 urban middle school students there was a significantly greater amount of positive beliefs

about waiting to have sex, and planning abstinence until marriage, plus reporting more reasons for not having sex, and fewer stating intentions to have sex in the next year. In addition there were reports of significantly greater self-efficacy in condom use ($p <. 01$), and sex refusal ($p < .01$).

The results from the randomized control trial conducted by Shegog et al. (2017) among 574 Native American youth ages (12-14) found greater self efficacy to acquire condoms ($p < .001$), to use of condoms ($p < .001$), and ability to report more reasons not to have sex ($p < .01$) indicating positive short term effects of an internet based curriculum that focused on HIV, STI, and pregnancy prevention for high risk youth.

All seven studies identified positive effects on either short or long term self-efficacy with the use of different platforms to reach and educate at risk youth.

Decreased Teen Pregnancy & Birth Rates

Increased knowledge, safe sex practices and self-efficacy were all evident after receiving sexual education. However, do the benefits of sexual education actually affect teen pregnancy and birth rates? Of all the articles, only two studied the outcomes of pregnancy and birth rates in the teen population. Stranger-Hall & Hall, (2011) and Barnett et al., (2009) both showed decreases.

In a quantitative study, used to examine current approaches to sexual education around the United States, Stranger-Hall & Hall (2011) were able to find which programs worked well for reducing pregnancy and birth rates. The types of educational programs offered were broken down into four levels 0-3. Level 0 was given to states without specific instructions on sexual education. Level 1 utilizes comprehensive sexual education and/or HIV education while also covering abstinence. Level 2 includes states that preach abstinence in schools that teach sex

education or HIV/ STI education. However, discussion on contraception is prohibited. Level 3 is the typical abstinence only until marriage curriculum. Based on their findings, Stranger-Hall & Hall identified that in states that had a strong emphasis on abstinence only there were higher rates of teen pregnancy and birth. In contrast, states that educated students using comprehensive sexual education that covered HIV/STIs as well as contraception and condom use produced the lowest teen pregnancy and birth rates. Therefore, in level 0 versus level 3 states ($p < .036$) and level 1 versus level 3 states ($p < .005$) there was a significantly lower level of teen pregnancies. This significance was also seen with teen birth rates where level 0 versus level 3 education was provided ($p < .006$) and level 1 versus level 3 education ($p < .001$) (Stranger- Hall & Hall, 2011).

Another study with 235 adolescent mothers produced similar findings. Barnet et al. (2009) conducted a randomized controlled trial to find out if computer-assisted motivational intervention (CAMI) would be effective in reducing rapid subsequent births. The 235 adolescent mothers were split between three subgroups, those with the usual provided healthcare, CAMI, and CAMI plus. CAMI plus provided monthly home visits for two years after the birth. The participants in the CAMI group had quarterly sessions for the first two years postpartum. When compared with the usual care groups, the CAMI plus group showed lower rates of rapid subsequent births ($p < .08$) whereas the CAMI only group did not ($p < .32$). However, when unbiased estimates were assessed, participants attending 2 or more sessions had a significantly lower risk of subsequent births from both groups CAMI and CAMI plus ($p < .05$). This study also found that mothers who had a continuous form of health insurance, intentions of condom use, or a history of having a previous abortion were less likely to have a repeat birth (Barnet et al., 2009).

Both of the aforementioned studies show that the use of comprehensive sexual education may be effective in decreasing teen pregnancy and teen birth rates. If an adolescent is unmotivated or not interested in learning about sexual education but are sexually active, they are likely to have a primary or repeat pregnancy (Barnet et al., 2009).

No Found Benefits

Of the 20 articles reviewed, there were three articles that found no benefit to the use of sexual education (Gelfond, et al., 2016; Jenner et al., 2016; Carr & Packham, 2015).

In a Quasi-Experimental Study by Gelfond, et al. (2016), a secondary analysis was conducted on 1437 students from South Texas. All of these students, male and female, had not experienced a pregnancy at any point in their life. The intervention used was a program called Need to Know (N2K). N2K is a program that is used for promoting adolescent health. This is done by presenting information on an age appropriate platform with medically accurate information. The students were followed for three years. During this time almost one hundred students became pregnant (8.7% of the treatment group & 10.2% of the comparison group). Therefore, results did not support any significant findings related to a decrease in teen pregnancy among male or female groups (*female* p= .11 *male* p= .449) (Gelfound, et al., 2016).

Carr & Packham (2016), found similar results when researching the effects of state level sexual education policies. The research was done using the 2000-2011 teen pregnancy, birth, and abortion rates. Five states stressed abstinence only in their education, these became the treatment group. There were twenty-one states that utilized comprehensive sexual education; these were used as the control group. Births across all of these states for female teenagers averaged 39 per 1000 and STI rates were 21 per 1000 on average. Over the twelve-year period used, there were no significant effects found with any type of education offered. This suggests that providing

education without increasing prevention programs, contraception access, and/or media interventions, state policies are ineffective (Carr & Packham, 2016).

In a randomized controlled trial performed by Jenner et al. (2016), the same results were obtained. Eight hundred and fifty students were randomly assigned to two groups. One group focused on sociocognitive and skills in the sexual education course, the other offered general health information. This trial went over three summers and revealed no significant benefits to either group. However, this program was found to have worked in a previous study. Therefore, further research is needed to understand why this type of education is effective in some populations but not others (Jenner et al., 2016).

Critique of Strengths and Weaknesses

The first strength of this review of the research articles is that it looks at many different types of sexual education interventions and the results of each. Even though all of the studies included are not randomized controlled trials, this literature provides in-depth review of the advantages and disadvantages of comprehensive sexual education. Most of the studies were of high and good quality. While the number of participants in some of the studies were rather small, the nature of the study allowed saturation of the results and common themes were identified. Most of the studies' samples were teenage women or their parents with several studies having multiple age subgroups including adolescents and young men. All of the studies were limited to the last fifteen years, providing current information about which programs provide the best benefits. Besides identifying barriers to learning, many studies provided the key strategies to improve knowledge, safe sex practices, self-efficacy, and teen pregnancy/birth rates. Several studies identified consistent results, which makes these findings reliable. Due to the nature of the studies we were able to analyze and measure relationships between variables including poverty

and access to care. Small sample size is a weakness of some studies. However, even with these weaknesses it is not difficult to generalize results to the population at large. This review looked at many results obtained with comprehensive sexual education. However a major finding like decreased pregnancy and birth rates consisted of only two studies.

Summary

Several benefits were identified and addressed by multiple studies. These included an increase in knowledge, safer sex practices, increase in self-efficacy, and a decrease in teen pregnancy/birth rates. There were no disadvantages to comprehensive sexual education found. However, three studies did not find an advantage either. This could have been a result of many sexual education programs censoring or omitting information regarding contraception and safer sex practices, while placing their efforts in preaching that abstinence is the only foolproof method (Carr & Packham, 2016). The evidence suggests that when comprehensive sexual education is provided, healthier sexual behaviors and outcomes are yielded (Lindberg & Maddow-Zimet, 2011). Sexual education should aim not to limit information, but to provide comprehensive review of heterosexual relationships, lesbian, gay, bisexual, transgendered (LGBT) relationships, contraception, self-efficacy, partner selection, emotional involvement, and reproductive health outcomes (Lindberg & Maddow-Zimet, 2011).

Chapter IV: Discussion, Implications and Conclusions

Literature Synthesis

The research question which served as the foundation and guide for this critical review asked, "what are the advantages and disadvantages of comprehensive sexual education for teen health outcomes?" Comprehensive sexual education offers many benefits and school-based education plays a large role in the well-being and sexual health of young people (Goldfarb & Lieberman, 2020). Introducing comprehensive sexual education into the school curriculum will provide the knowledge and confidence students need to make potentially life-altering decisions. This review of the literature provides solid support for comprehensive sexual education. The advantages far outweigh the potential for no benefits received from comprehensive sexual education. ACNM, ACOG, WHO, and AAP endorse providing safe, factual, and age appropriate information for young people empowering them to have a safe, fulfilling and productive life. Increasing their knowledge about safer sex practices, how to improved self-efficacy, and decreased teen pregnancy/birth rates will help achieve this goal.

Trends and Gaps in the Literature

The advantages of comprehensive sexual education have been discussed in depth by many articles that were reviewed. Despite our literature review only reaching back fifteen years, the sexual health amongst young people has been researched for decades. In a systematic review from Goldfarb & Lieberman (2020), thirty years of research was reviewed. The results of their findings provided positive evidence that over the last three decades, research has indicated that the earlier we implement comprehensive sexual education including LGBT, sexual diversity, dating, intimate partner violence, contraception, and how to develop healthy relationships, young people will learn how to express their sexuality in healthy ways (Goldfarb & Lieberman, 2020).

As a way to reach youth at an earlier developmental stage, it recommended that sexual education be incorporated into the core curriculum in such a way that it could be split into a coordinated social studies component (ethics, behavior and decision making, planning for the future) and science components (human reproductive biology, STI's, pregnancy and STI prevention), each being taught by a teacher who is trained within their specialty (Stanger-Hall & Hall, 2011). Gaps in the literature include a lack of reviews, which measure the outcome of teen pregnancy and those with no benefits obtained from sexual education.

Implication for Midwifery Practice

Despite recent decreases in the rate of unintended pregnancies among adolescents in the United States, it continues to be above other developed nation rates (CDC, 2019). Unintended pregnancies are associated with many disparities in the lives of young people (Livingston & Thomas, 2019). Although comprehensive sexual education has shown to be safe and effective for adolescents and young people, the high teen pregnancy rates persist. Nurse-midwives are in a great position to provide quality age appropriate education and access to resources. Promotion of comprehensive sexual education is consistent with the ACNM's Hallmarks of Midwifery (2020) including promotion of family- and women-centered care, promotion of the public health care perspective, incorporation of scientific evidence into the clinical practice, advocacy for informed choice, shared decision making, and the right to self-determination, and skillful communication guidance, and counseling. Midwives are trusted healthcare providers who are known for providing education and teaching regarding sexual health. Furthermore, providing presentations on the school level is within a midwives scope of practice. Due to the holistic nature of midwives, they have the ability to hone in on different ways to reach the teenage population where they may be able to create the necessary connections to achieve the greatest benefits.

Recommendations for Future Research

It is unclear if short-term effects of these programs will be maintained long term or be associated with significant changes in sexual behavior. Therefore, additional research is needed to determine what interventions will have long-term effects on psychosocial variables that potentially are associated with high-risk behaviors, which in turn may influence sexual behaviors and contraception use. Further research should be done with more diversity in population and settings, including low resource settings. This would also help increase the understanding of the effectiveness of different approaches to sexual health education. Also future research is needed to examine how additional outside factors may affect the outcomes of interventions, in an attempt to reduce the incidence of teen risk behaviors, and sexual activity.

Integration of the Modeling and Role Modeling Theory

Helen Erickson, Evelyn Tomlins, & Mary Anne Swain developed the Modeling and Role Modeling Theory in 1983 (Petiprin, 2020). This theory empowers healthcare providers to provide a nurturing relationship with respect for and awareness of each individual's uniqueness thus providing a clinical practice that is focused on the patients needs. Modeling is the process where providers intentionally seek to understand a patient's personal model and use it as a positive lead to see the world from their eyes. Role modeling is the process of obtaining, preserving, and encouraging health. It is an unconditional acceptance of each individual person using their uniqueness to find unique interventions. Three main focus areas for the midwife should be facilitation of necessary information and resources, nurturing the person by providing a safe and comfortable care environment, and accepting every person as they are. Five goals are identified within the theory: building trust, promoting patient control, emphasizing patient strengths, promoting sense of self, and establishing shared health goals. Therefore, the

providers should work to build a relationship with necessary adaptations needed to accommodate an adolescent's stage of development (Petiprin, 2020). These adaptations will help the provider identify topics that need counseling and resources needed in that moment for that particular patient. Providers must recognize and appreciate the patient's right to self-determination and autonomy; acknowledgement of this gives adolescents a sense of control, a feeling that is necessary for decision-making at this stage in development.

Conclusion

The pertinent information found in this critical review included the identification of the following benefits: increased knowledge, safer sex practices, improved self efficacy, and decreased teen pregnancy/birth rates. All of these benefits have been suggestive of significantly impacting the ability to make appropriate reproductive health decisions. Twenty scholarly articles were reviewed using The Johns Hopkins Research Evidence Appraisal Tool with statistically significant results for each benefit. Increased knowledge impacts the degree to which a person will be able to make appropriate decisions regarding their sexual health. With that knowledge an increase in safer sex practices and self-efficacy are seen, again providing the ability to use critical thinking to drive their choice. When all three of these are combined together in a comprehensive curriculum, the rate of unintended STI infections and teen pregnancies/births will continue to decrease. Nurse-midwives are in an excellent position to maximize access to age appropriate and factual sexual health education. The commitment of Nurse-midwives' to provide education along with their unique approach of individualizing patient care, their presence in family planning clinics, and participation in care of women through the lifespan from menarche to menopause, make them well positioned to address the unintended STI and pregnancy rates.

References

Abma, J., & Martinez, G. (2017). Sexual activity and contraceptive use among teenagers in the United States, 2011–2015. *National Health Statistics Reports.* Number 104. Retrieved from https://www.cdc.gov/nchs/data/nhsr/nhsr104.pdf on December 28,2020.

Aboksari, Z. B., Ganji, J., Mousavinasab, N., Rezaei, M., & Khani, S. (2020). A review study on educational interventions promoting sexual health of children under 12 years. *Journal of Pediatrics Review*, 8(2), 107-120. doi:10.32598/jpr.8.2.107

American Association of Pediatrics (2016). AAP clinical report: Pediatricians should provide sexuality education. Retrievedfrom https://www.healthychildren.org/English/news/Pages/AAP-Clinical- Report-Peadiatricians-Should-Provide-Sexuality-Education.aspx on Dec 31, 2020.

American College of Nurse Midwives [ACNM]. (2012). Core competencies for basic midwifery practice. Midwife.org. Retrieved on December 20, 2020 from https://www.midwife.org/acnm/files/acnmlibrarydata/uploadfilename/000000000050/core%comptencies%20dec%202012.pdf

American College of Nurse-Midwifery [ACNM]. (2016). Access to comprehensive sexual and reproductive health care services. Retrieved on December 31, 2020 from https://www.midwife.org/acnm-issues-statement-supporting-comprehensive-sexual-and-reproductive-health-care-services

American College of Nurse Midwives. [ACNM] (2020). Core competencies for basic midwifery practice. *Midwife.org.* Retrieved from https://www.midwife.org/acnm/files/acnmlibrary data/uploadfilename/000000000050/ACNMCoreCompetenciesMar2020_final.pdf.

American College of Nurse-Midwifery [ACNM]. (2020). Vision, mission, and values. *Midwife.org* Retrieved from https://www.midwife.org/our-mission-vision-core-values#:~:text=The%20mission%20of%20the%20American,all%20women%20throughout%20their%20lifespan December 31, 2020.

American College of Obstetricians and Gynecologists. (2016). Comprehensive sexual education, Committee Opinion, 678. Retrieved from https://www.acog.org//media/project/acog/acogorg/clinical/files/committee-opinion/articles/2016/11/comprehensive-sexuality-education.pdf

American Psychological Association. (2005). Resolution in favor of empirically supported sex education and HIV prevention programs for adolescents. Retrieved from https://www.apa.org/about/policy/sex-education.pdf on December 3, 2019.

Barnet, B., Liu, J., DeVoe, M., Duggan, A., Gold, M., & Pecukonis, E. (2009). Motivational intervention to reduce rapid subsequent births to adolescent mothers: A community based randomized trial. *Annals of Family Medicine. 7* (5) 436-445. Doi: 10.1370/afm.1014.

Bennett, S. & Assefi, N. (2005). School based teenage pregnancy prevention programs: A systematic review of randomized control trials. *Journal of Adolescent Health. 36*, 72-81. Doi: 10.1016/j.jadohealth.2003.11.097.

Breuner, C.C., & Mattson, G. (2016). Sexual education for children and adolescents. *Journal of the American Academy of Pediatrics.138* (2), Article e20161348; DOI:10.1542/peds.2016-1348.

Brown, L., Hadley, W., Donenberg, G., DiClemente, R., Lescano, C., Lang, D., Crosby, R., Barker, D., & Oster, D. (2014). Project style: A multisite rct for hiv prevention among youths in mental health treatment. *Psychiatric Services*. *65* (3), 338-344.Doi: 10.117/appi.ps.201300095.

Carey, M. P., Forsyth, A. D. (2009). Teaching tip sheet: Self-efficacy. *American Psychological Association.* Retrieved on February 2, 2021 from: https://www.apa.org/pi/aids/resources/education/self-efficacy

Carr, J. & Packham, A. (2017). The effects of state-mandated abstinence-based sex education on teen health outcomes. *Health Economics. 26,* 403-420. Doi: 10.1002/hec.3315.

Centers for Disease Control and Prevention. (2017). STDs in Adolescents and Young Adults. *CDC.* Retrieved on December 31, 2020 from https://www.cdc.gov/std/stats17/adolescents.htm#:~:text=Incidence%20and%20prevalence%20estimates%20suggest,or%20hu on December 31, 2020.

Centers for Disease Control and Prevention. (2019). Social determinants and eliminating disparities in teen pregnancy. Retrieved on December 31, 2020 from https://www.cdc.gov/teenpregnancy/about/social-determinants-disparities-teen-pregnancy.htm

Centers for Disease Control and Prevention. (2020a). CDC releases 2019 youth risk behavior survey results. *CDC.* Retrieved on December 31, 2020 from https://www.cdc.gov/healthyyouth/data/yrbs/feature/index.htm

Centers for Disease Control and Prevention. (2020b). Sexual activity and contraceptive use among teenagers aged 15–19 in the United States. Brief number 366. Retrieved on December 31, 2020 from https://www.cdc.gov/nchs/products/databriefs/db366.htm

Connelly, M. (2016). The Kurt Lewin change management model. Retrieved from https://www.change-management-coach.com/kurt_lewin.html

Dang, D., & Dearhold, S.L. (2018). *Johns Hopkins nursing evidence-based practice: Model and guidelines, (3rd).* Sigma Theta Tau International. Indianapolis, IN.

De Vasconcelos, S., Toskin, I., Cooper, B., Chollier, M., Stephenson, R., Blondeel, K., & Kiarie, J. (2018). Behaviour change techniques in brief interventions to prevent HIV, STI and unintended pregnancies: A systematic review. *PloS one*, *13*(9), 1-27. Https://doi.org/10.1371/journal.pone.0204088.

Gelfond, J., Dierschke, N., Lowe, D., & Plastino, K. (2016). Preventing pregnancy in high school students: Observations from a 3-year longitudinal, quasi-experimental study. *American Journal of Public Health. 106* (S1), S97-S102. Doi: 10.2105/AJPH.2016.303379.

Goldfarb, E. S., Lieberman, L. D. (2020). Three decades of research: the case for comprehensive sex education. *Journal of Adolescent Health 68* (2021), 13-27. https://doi.org/10.1016/j.jadohealth.2020.07.036

Green, J., Oman, R., Lu, M., & Clements-Nolle, K. (2017). Long-term improvements in knowledge and psychosocial factors of a teen pregnancy prevention intervention implemented in group homes. *Journal of Adolescent Health. 6*, 698-705. Doi: http://dx.doi.org/10.1016/j.jadohealth.2017.01.004.

HIV.gov (2020). US statistics. *HIV.gov.* Retrieved from https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics#:~:text on December 21, 2020.

Jenner, E., Jenner, J., Walsh, S., Demby, H., Gregory, & Davis, E. (2016). Impact of an intervention designed to reduce sexual health risk behaviors of african american adolescents: Results of a randomized control trial. *American Journal of Public Health.106* (S1), S78-S84. Doi: 10.2105/AJPH.2016.303291.

Lindberg, L. D. & Maddow-Zimet, I. (2011). Consequences of sex education on teen and young adult sexual behaviors and outcomes. *Journal of Adolescent Health.* Vol 51. Pp 332-338. DOI: 10.1016/j.jadohealth.2011.12.028.

Livingston, G., & Thomas, D. (2019). Why is the teen birth rate falling? *Pew Research Center.* Retrieved from https://www.pewresearch.org/fact-tank/2019/08/02/why-is-the-teen-birth-rate-falling/ on Decemeber 31,2020.

Mabray, D., & Labauve, B. (2002). A multidimensional approach to sexual education. *Sex Education* [serial online]. *2* (1), 31-42. Doi: 10.10801146810220133604.

Markham, C., Tortolero, S., Fleschler-Peskin, M., Shegog, R., Thiel, M., Baumler, E., Addy, R., Escobar-Chavez, S.L., Reininger, B., & Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized control trial. *Journal of Adolescent Health. 50* (2012). 279-288. Doi:10.1016/j.jadohealth.2011.07.010.

Norton, W.E., Fisher, J.D., Amico, R., Dovidio, J.F., Johnson, B.T. (2012). Relative efficacy of a pregnancy, sexually transmitted infection, or human immunodeficiency virus prevention focused intervention on changing sexual risk behavior among young adults. *Journal of American College Health*, *60* (8), 574-582. Doi:10.1080/07448481.2012.721428

Nurse Practitioner Schools (2020). What is a certified nurse midwife? *Nurse practitioner School.com.* Retrieved from https://www.nursepractitionerschools.com/faq/what-is-a-nurse-midwife/ on December 31,2020.

Oman, R., Vesly, S., Green, J., Fluhr, J., & Williams, J. (2016). Short-term impact of a teen pregnancy prevention intervention implemented in group homes. *Journal of Adolescent Health. 59*, 584-591. Doi: http://dx.doi.org/10.1016/j.jadohealth.2016/07.002.

Palen, L., Ashley, O.S., Gard, J., Kan, M., Davis, K., & Evans, W.D. (2011). Effects of media campaign messages targeting parents on adolescent sexual beliefs: A randomized control trial with a national sample. *Family Community Health. 34* (1), 28-38. Doi: 10.1097/ FCH.0b013e3181fdecc3.

Park, M. H. & Kinra, S. (2010). Abstinence-only education modestly delays initiation of sexual activity. Journal of Pediatrics. Vol 157 (1) p 172-173**.**

Petiprin, A. (2016). Lewin's change theory. *Nursing Theory*. Retrieved from http://www.nursing-theory.org/theories-and-models/Lewin-Change-Theory.php.

Petiprin, A. (2020). Modeling and role modeling theory. *Nursing Theory.* Retrieved from https://www.nursing-theory.org/theories-and-models/erickson-modeling-and-role-modeling-theory.php.

Raghupathy, S., Klein, C., & Card, J. (2013). Online activities for enhancing sex education curricula: Preliminary evidence on the effectiveness of the abstinence and contraception education storehouse. *National Institutes of Health.12* (2), 160-171. Doi: 10.1080/1 5381501.2013.790749.

Rastogi, S., & Moreno, M. (2010). Abstinence-only modestly delays initiation of sexual activity. *The Journal of Pediatrics. 157* (1), 172-173. Doi: https://doi.org/10.1016/j.jpeds. 2010.05.011.

Rohrbach, L., Berglas, N., Jerman, P., Angulo-Olaiz, F., Chou, C.P., & Constantine. (2015). A rights-based sexuality education curriculum for adolescents: 1-year outcomes from a cluster randomized trial. *Journal of Adolescent Health.* Vol 57 pp 399-406. Doi: http://dx.doi.org/10.1016/j.jadohealth.2015.07.004.

Rousta, R., Najmabadi, K.M., Asgharipour, N., & Saki, A. (2018). Effects of group training on maternal knowledge and attitude toward sexual health education to 12-14 years old boys. *Journal of Midwifery & Reproductive Health. 7* (4), 1936-1945. Doi:10.22038/ jmrh.2019.29106.1313.

Serowoky, M., George, N., & Yarandi, H. (2015). Using the program logic model to evaluate Cuidate: A sexual health program for Latino adolescents in a school-based health center. *Worldview on Evidence-Based Nursing. 12* (5), 297-305. Doi: doi: 10.1111/wvn.12110.

Shegog, R., Rushing, S.C., Jessen, C., Lane, F. & Gorman, G. (2017). Native IYG: Improving psychosocial protective factors for hiv/sti and teen pregnancy prevention among youth in American Indian/Alaska Native communities. *Journal of Applied Research on Children. 8* (1) Article 3. Retrieved from http://digitalcommons.library.tmc.edu/childrenatrisk/ vol8/iss1/3.

Sherr, M., Pooler, D., Stamey,J., Jones, J., & Dyer, P. (2013). A randomized effectiveness trial of a sex education program for minority youth in Miami, Florida. *Journal of Evidence-Based Social Work.* Vol 10. Pp. 53–62. DOI: 10.1080/15433714.2011.581533.

Stanger-Hall, K., & Hall, D. (2011). Abstinence-only education and teen pregnancy rates: Why we need comprehensive sex education in the U.S.. *PLoS one.* Vol 6 (10): e24658. Doi: 10.1371/journal.pone.0024658.

Tulloch, T., & Kauffman, M. (2013). Adolescent Sexuality. *Pediatrics in Review.* 34 (1), 29-38; DOI: https://doi.org/10.1542/pir.34-1-29.

UNESCO. (2018). International technical guidance on sexuality education: An evidence-informed approach. Retrieved on May 16, 2020 from https://www.who.int/eproductivehealth/publications

U.S. Bureau of Labor Statistics [BLS] (2019). Occupational employment statistics. *U.S. Bureau of Labor Statistics.* Retrieved from https://www.bls.gov/oes/2018/may/oes291161.htm on December 31, 2020.

Appendix 1 – Literature Review Matrix

Source: Aboksari, Z. B., Ganji, J., Mousavinasab, N., Rezaei, M., & Khani, S. (2020). A review study on educational interventions promoting sexual health of children under 12 years. *Journal of Pediatrics Review*, 8(2), 107-120. doi:10.32598/jpr.8.2.107			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: This study reviewed different types of educational interventions related to the sexual health of children under 12 years. **Sample/Setting:** Articles that were included were based on the subject of the study (sexual health of children under 12), study design (experimental, quasi-experimental, before-after studies), and consequences of the intervention (children's sexual health). They then categorized into 4 groups: 1. Children-focused interventions 2. Parent-focused interventions 3. Children- and parent-focused interventions. 4. The impact of culture and religion.	Experimental and quasi-experimental Different methods and instrumentation were used depending on the study and age of the participants. Some of the Child focused interventions were peer led using activity paper, proverb card, vulgar belief card, worrying box, video, sonogram, children's storybook, embryo album, activity paper, task, sentence card, and textbooks over a 10-week period. Whereas others were conducted in a shorter hour-long interactive workshop with the use of age-appropriate activity book on body.	**Results:** The findings of this study help provide counseling and education by pediatricians, psychiatrists, psychologists, and counselors. The results can also be used to design and implement educational programs for families, teachers, and health care providers.	**Strengths/Limitations:** The strength of this study was the exploration of different types of educational interventions related to the sexual health of children under 12 years, while previous studies did not consider it. On the other hand, the limitation of this study was the lack of searching the humanities and psychiatric databases. **Conclusion:** Intervention in the domain of children's sexual health leads to improvement in knowledge, attitude, and behavior of both children and parents. Since children can learn the related concepts and skills and parents, as the first instructors, play an essential role in this regard, enabling both groups is of great importance in providing and promoting children's sexual health. Sexual health in childhood can guarantee the sexual health of the coming years of life; therefore, it is

Among the 16 articles, chosen for the review, 5 were conducted in Iran, 4 in the USA, 4 in Korea, 2 in the Bahamas, and one in England. The studies on 8- to 12-year-old children were all carried out from 2004-2018. **Level of evidence:** **Level: V** **Quality: Good**			worthwhile to pay attention to this issue and set plans and policies in familial and social aspects based on the interventions mentioned in this study.
Author Recommendations: Sexual health in childhood can guarantee the sexual health of the coming years of life; therefore, it is worthwhile to pay attention to this issue and set plans and policies in familial and social aspects based on the interventions mentioned in this study.			
Summary for current clinical practice question: Most children do not receive sexual education. This lack of education may adversely affect different dimensions of one's sexual health. However, talking to children about this issue constantly but briefly can have a positive impact on their relationships and sexual health. Sexual health in childhood can guarantee the sexual health of the coming years of life.			

Source: Barnet, B., Liu, J., DeVoe, M., Duggan, A.K., Gold, M. A., Pecukonis, E. (2009). Motivational intervention to reduce rapid subsequent births to adolescent mothers: A community based randomized trial. *Annals of Family Medicine. 7* (5), 436-445. Doi:10/1370/afm.1014.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: determine the effectiveness of a computer-assisted motivational intervention (CAMI) in preventing rapid subsequent birth to adolescent mothers. **Sample/Setting:** 235 pregnant teenagers aged 18 years and older who were at least 24 weeks' gestation, were recruited from urban prenatal clinics serving low-income, predominantly African American communities. **Level of evidence:** **Level:** I **Quality:** Good	**Design:** A randomized control trial was done. Pregnant teenagers (N = 235), aged 18 years and older who were at least 24 weeks' gestations, were recruited from urban prenatal clinics serving low-income, predominantly African American communities. After completing baseline assessments, they were randomly assigned to 3 groups: (1) group received CAMI plus a enhanced home visit and a multicomponent home-based intervention (2) received CAMI-only. Which was a single component home-based intervention; (3) and then the final group received usual care and was the control. Teens in both intervention groups received CAMI sessions at quarterly intervals until 2 years' postpartum.	**Results:** analysis indicated that the CAMI+ group compared with the usual-care control group exhibited a trend toward lower birth rates (13.8% vs. 25.0%: P = .08), whereas the CAMI-only group did not. **Conclusion:** Receipt of 2 or more CAMI sessions, either alone or within a multicomponent home-based intervention, reduced the risk of rapid subsequent birth to adolescent mothers. Their findings support prior research that personalized and tailored interventions, geared to an adolescent's readiness to change, are more effective at reducing high-risk sexual behavior than approaches that offer standardized	**Strength:** the use of vital statistics enabled collection of complete repeat birth data for the sample, eliminating bias effects of differential group follow-up. Samples were not limited to first time adolescent mothers. Because one quarter of all births to teens are second or more so the inclusion of multiparous adolescents increases the generalizability of their findings. **Limitations:** One of the counselor tried to maintain engagement through telephone contact with her case load of pregnant adolescents, However it was challenging because telephones were frequently disconnected, and the adolescents became difficult to locate. Counselors demonstrated use of motivational interviewing skills under ideal training conditions, but translating these skills into unpredictable community settings amidst

		messages and advice. It is possible that CAMI can be adapted and used in primary care to address general pregnancy prevention and other high-risk adolescent behaviors.	crowded households, lack of electricity, homelessness, and abusive partners was challenging.
Author Recommendations: Ongoing intervention differences, such as monthly contact instead of quarterly may have enhanced the relationship between the teens and their councilor, resulting in even more favorable outcomes. Interventions that attend to adolescent contextual factors, such as partner influences on motivation, may have a greater impact on behavior change.			
Summary for current clinical practice question: Almost one-quarter of adolescent mothers give birth to another child within 24 months of having a baby. Motivational interviewing aims to highlight discrepancies between current behaviors and personal goals, promoting an intention and optimism for change. It has been successful when used with adolescents with substance abuse and dieting behaviors. Some school-based programs also incorporate motivational components and have had increases in safer sex practices, yet no program has used this method to on adolescent contraceptive behaviors.			

Source: Bennett, S. & Assefi, N. (2005). School based teenage pregnancy prevention programs: A systematic review of randomized control trials. *Journal of Adolescent Health. 36,* 72-81. Doi:10.1016/j.jadohealth.2003.11.097.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To compare the effects of abstinence-only and abstinence-plus programs on teenage sexual behavior, contraceptive knowledge, contraceptive use, and pregnancy rates. **Sample/Setting:** Out of 16 studies, three were found to examine abstinence-only programs, 12 evaluated abstinence plus programs, and one study compared an abstinence-only with an abstinence-plus program. This last study compared three groups: an unrelated health class control group, an abstinence-only intervention, and an abstinence-plus intervention emphasizing the importance of condom use for sexually active teens. There was a wide range in sample size; the smallest study	Randomized Control Trial: Programs with a focus on human immunodeficiency virus (HIV) prevention because these programs aim to reduce risky sexual behavior and secondarily decrease the pregnancy rate. We used references of retrieved articles to find additional studies. They systematically reviewed all randomized controlled trials of school-based interventions targeted to prevent teen pregnancy that assessed the following specific outcomes: sexual behavior, including delay in initiation of first sexual intercourse, frequency of sex, and number of partners; contraceptive behavior including contraceptive knowledge, reported use, condom use; and pregnancy rates. They classified studies as "abstinence-only" or "abstinence-plus" based on the description of the intervention. Programs that did not mention providing contraceptive information in their curriculum qualified as "abstinence-only." Because of the school-based programs focus, they did not include	**Results:** One of these studies did find a statistically significant delay in sexual initiation. The study comparing the abstinence-only to the abstinence-plus program found that the abstinence-only group was less likely to report sexual activity at 3 months than the control group (12.5% vs. 21.5%, p.05), but this difference was not significant at 6 or 12 months. Eight studies of abstinence-plus programs asked teens about their frequency of sexual activity. Four studies found that teens in the abstinence-plus program had decreased frequency of sexual intercourse. Abstinence-plus programs were not associated with earlier onset of intercourse or increased frequency of intercourse in any other study. Four of the five abstinence-plus programs that evaluated students' knowledge of contraceptives found an	**Strength:** The strengths of this review include its systematic evaluation of all published randomized controlled trials of school based teenage pregnancy programs in the United States with relevant outcome measures. **Limitations:** Diversity in the subject populations, Even by limiting studies to those conducted in the United States, the variation in teenage culture seen in these studies, affected by such factors as age, degree of urbanization, minority representation, and class, makes it difficult to meaningfully compare the appropriateness of one intervention over another. Variability in the particular pregnancy prevention program is another challenge, as each had its own intervention curriculum. Most schools have

included 36 teens and the largest included 10,600, but 50% of the studies used more than 1000 subjects. **Level of evidence:** **Level:** 1 **Quality:** High	teen pregnancy prevention programs in the general community or clinics. Due to the increasing focus on abstinence-only programs in the United States, we examined only American programs. For each qualifying study, demographics of the teen participants, description of the program, follow-up times, and funding source were extracted. Results indicate that the majority of abstinence-plus programs increase rates of contraceptive use in teens, and one study showed the effects to last for at least 30 months.	improvement in the intervention group compared with the control group. Contrary to concerns that abstinence-plus programs may increase sexual activity, all except one of the 11 programs including contraceptive information failed to show an increase in sexual activity or a decline in the age at first intercourse for participating teens. **Conclusion:** The results of this systematic review show that some abstinence-only and abstinence-plus programs can change teens' sexual behaviors, although the effects are relatively modest and may last only short term.	preexisting sex education programs, so that the majority of students included in these studies had already been exposed to some information before the interventions in these studies.
Author Recommendations: The comparison of abstinence-only and abstinence-plus curricula would have benefited from standardized outcomes used between studies, such as Prevention Minimum Evaluation Data Set.			
Summary for current clinical practice question: Although contraception prevents an estimated 1.65 million teen pregnancies per year in the United States, only 75% of American teenagers use some form of contraception during their first sexual encounter, and less than 30% of sexually active teens 15-19 years of age use birth control consistently. Proper education can potentially help with consistent usage.			

Source: Brown, L., Hadley, W., Donenberg, G., DiClemente, R., Lescano, C., Lang, D., Crosby, R., Barker, D., & Oster, D. (2014). Project style: A multisite rct for hiv prevention among youths in mental health treatment. *Psychiatric Services*. 65 (3), 338-344. Doi:10.117/appi.ps.201300095.

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: The study examined the efficacy of family-based and adolescent-only HIV prevention programs in decreasing HIV risk and improving parental monitoring and sexual communication among youths in mental health treatment. **Sample/Setting:** 721 adolescents (ages 13–18 years) from mental health settings, and their caregivers in three U.S. cities. **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** Good	**Design:** Randomized control trial with 721adolescents (ages 13–18 years) and their caregivers from mental health settings in three U.S. cities were randomly assigned to one of three theory-based, structured group interventions: family-based HIV prevention, adolescent-only HIV prevention, and adolescent-only health promotion. Interventions were delivered during an all-day workshop. Assessments were completed at baseline and three months postintervention.	**Results:** adolescents in the HIV prevention interventions reported fewer unsafe sex acts (adjusted rate ratio=.49, p=.01), greater condom use (adjusted relative change=59%, p=.01), and greater likelihood of avoiding sex (adjusted odds ratio=1.44, p=.05). They also showed improved HIV knowledge (p<.01) and self-efficacy (p<.05). The family-based intervention, compared with the other interventions, produced significant improvements in parent-teen sexual communication (p<.01), parental monitoring (p<.01), and parental permissiveness (p=.05). **Conclusion:** This RCT found that the HIV prevention interventions reduced sexual risk behavior over three months in a large, diverse sample of youths in mental health	**Strengths:** Large diverse sample **Limitations:** The outcome assessments were by self-report, so social desirability bias is possible.

		treatment and that the family-based intervention improved parental monitoring and communication with teens about sex. These interventions show promise.	
Author Recommendations: found that theory-based HIV prevention interventions tailored for youths in mental health treatment reduced sexual risk behavior.			
Summary for current clinical practice question: Including the parents when providing sexual education can help increase knowledge for the youth.			

Source: Carr, J. & Packham, A. (2017). The effects of state-mandated abstinence-based sex education on teen health outcomes. *Health Economics.26*, 403-420. Doi: 10.1002/hec.3315			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: Examine the causal effect of state-mandated abstinence education on teen pregnancy and STD Rates. **Sample/Setting:** All 50 state level policy data on mandated sexual education curriculum. **Johns Hopkins Evidence Appraisal:** **Strength:** Level II **Quality:** High	**Design:** quasi experimental design to estimate the impact of abstinence-based sex education on teen birth rates, STD rates, and abortion rates using state-level data representing broad populations of interest.	**Results:** Policy change of stress abstinence only had no effect on teen birth rates, STIs, and teen abortion rates. **Conclusion:** Abstinence only education has no effect on Teen pregnancy rates. But STD rates are higher among abstinence only education. Comprehensive show a decrease of 6%-25% in teen pregnancy rates and well as a decrease in STDs.	**Strengths:** Unbiased research completed based on State mandated sex-education teaching with results surrounding teen pregnancy, STD, and Abortion rates provided by the CDC. **Limitations:** Inability to control changes in state laws through the study.
Author Recommendations: Policies such as oral contraceptive access, welfare reform, and family planning services similarly result in little to no reduction in teen pregnancy			
Summary for current clinical practice question: Teen pregnancy is unresponsive to mandated changes to sex education curriculum.			

Source: Gelfond, J., Dierschke, N., Lowe, D., & Plastino, K. (2016). Preventing pregnancy in high school students: Observations from a 3-year longitudinal, quasi-experimental study. *American Journal of Public Health.106* (S1), S97-S102. Doi: 10.2105/AJPH.2016.303379

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To assess whether a sexual health education intervention reduces pregnancy in high school students. **Sample/Setting:** **Sample:** 1437 students without a history of pregnancy at baseline were surveyed each fall and spring. **Setting:** South Texas high school from 2011-2015 **Johns Hopkins Evidence Appraisal:** **Strength:** Level 2 **Quality:** Good	**Design:** Longitudinal Quasi-Experimental Study.A secondary analysis of a 3-year quasi-experimental study performed in South Texas from 2011-2015 in which 1437 students without a history of pregnancy at baseline were surveyed each fall and spring. Potentially confounding risk factors considered included sexual behaviors, intentions, and demographics. The outcome measure was self-reported pregnancy status for male and female students. The comparison group were 9th grade students admitted Fall of 2011 and the treatment group were 9th grade students admitted Fall of 2012. The N2K program was provided to students in the treatment group over 3 years. The comparison students did not receive any intervention.	**Results:** During the study 91 (9.4& of 964) students became pregnant (8.7% treatment group and 10.2% comparison group). No significant impacts were found on pregnancy rate in either female students (hazard OR= 1.62; 95% CI= 0.9, 2.91; P= .11) or male students (hazard OR= 0.78; 95% CI= 0.41, 1.48; P= .449). There was also a time-to-event analysis that examined the interaction between gender and treatment which found no significant interaction (P= 0.08).	**Strengths:** There was an appropriate and adequate sample size. Students were followed for a three-year period. **Limitations:** The use of social media where the preference is rapidly changing. Self-administration of the survey that contained questions of a sensitive nature; therefore, behaviors related to sexual activity may have been underreported. The sample may have excluded students at very high or very low risk for pregnancy which limits the generalizability of results. The survey was administered only once per semester which limited the time-to-pregnancy estimates. There was also a potential for contamination of comparison students. Both groups were in the same school so comparison students could have been influenced by friends in the treatment group. **Conclusion:** The 3-year intervention showed no effect on the pregnancy rate.

Author Recommendations: Future studies should focus on assessing factors such as knowledge, values, intentions, and beliefs in relation to a causal model for the pregnancy outcome. Investigating causal pathways in an analysis of longitudinal data may help elucidate the complexity of interactions between different factors over time. A better understanding of direct and indirect effects on pregnancy outcome will inform development of new interventions or adaptation of existing curricula.
Summary for current clinical practice question: Social media tools in pregnancy prevention programs should be adaptive to new technologies and rapidly changing adolescent preference for these services.

Source: Green, J., Oman, R., Lu, M., & Clements-Nolle, K. (2017). Long-term improvements in knowledge and psychosocial factors of a teen pregnancy prevention intervention implemented in-group homes. *Journal of Adolescent Health. 6*, 698-705. Doi:http://dx.doi.org/10.1016/j.j adohealth.2017.01.004.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose/Sample: This study was aimed to determine if the Power Through Choices (PTC), teen pregnancy prevention program developed for youth in out of home care, improves knowledge or psychosocial outcomes regarding HIV and sexually transmitted infections, sexual activity and contraception methods. **Sample:** 1,036 ethnically diverse youth, ages 13-18 years of age, who were recruited from 44 residential group homes in three states. **Johns Hopkins Evidence Appraisal:**	A cluster randomized controlled trial conducted with 1,036 ethnically diverse youths (aged 13-18 years) recruited from 44 residential group homes in three states. Intervention participants received the 10-session PTC intervention; control participants received usual care. Participants were administered self-report surveys at baseline, after intervention, 6 and 12 months after the intervention. Survey items assessed knowledge, attitudes, self-efficacy, and behavioral intentions regarding HIV and STIs, sexual activity and contraception methods. Random intercept logistic regression analyses were used to assess differences between the intervention and control groups.	**Results:** The PTC intervention group demonstrated significant improvements in knowledge compared to the control group about anatomy and fertility. HIV and STIs and methods of protection as well as self-efficacy to communicate with a partner, plan for protected sex and avoid unprotected sex, and where to get methods of birth control. The greatest percentage difference in increased knowledge between the treatment and control groups was in the area of support for methods of protection at 6-month (11.8%) and 12-month (11.3%) follow-up.	**Strength:** There were no significant demographic differences between youth either group. **Limitations:** this study had a small number of female participants making it hard to detect possible significant gender differences. **Conclusion:** This study found that a TPP intervention developed for high risk youth living in out of home care settings can have a positive, long term effect on the knowledge and psychosocial outcomes of teens. These results indicated significant long term program effects in regard to increases in youths' knowledge about anatomy, fertility, methods of protection, and about HIV and STIs, positive attitudes regarding support of methods of protection, and the self efficacy to communicate with a partner to plan for protected sex and avoid unprotected sex, and to get methods of birth control. There were no significant improvements regarding intentions to not have sexual intercourse or

Strength: I **Quality:** good			oral sex in the next year. The program effects on intention to use birth control were limited to the 6-month follow-up indicating that booster sessions may be necessary to sustain the intervention's longer-term effects on psychosocial outcomes and ultimately on behavior change.
Author Recommendations: It may be necessary to deliver interventions at an earlier age before youth become sexually active to have an impact on sexual intentions and behaviors. In addition, there were no significant improvements regarding behavioral intentions to use condoms. Attitudes and intentions toward condom use may be difficult to change and therefore improvements in contraception behavior may be driven by increases in hormonal contraception use rather than condom use. Additional research is needed to determine if these effects are associated with improvements in contraception use and a reduction in pregnancy.			
Summary for current clinical practice question: Follow up programs may be necessary to help sustain more long-term effects on psychosocial outcomes and ultimately on behavior change. It may be necessary to start to discuss these of birth control, condom use at an earlier age before youth become sexually active to have an impact on sexual intentions and behaviors.			

Source: Jenner, E. et al (2016). Impact of an intervention designed to reduce sexual health risk behaviors of african american adolescents: Results of a randomized control trial. *American Journal of Public Health*. 1*06* (S1), S78-S84. Doi: 10.2105/AJPH.2016.303291.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To replicate an evidence-based HIV risk reduction program and assess its impact on 2 behavioral outcomes: inconsistency of condom use and frequency of sex 6 months after the program. **Sample/Setting:** 850 youths over 3 years **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** Good	**Design:** Randomized Control Trial in which we randomly assigned 850 youths (aged 14–18 years) to 1 of 2 conditions. The treatment (Becoming a Responsible Teen) is a group-level sociocognitive and skills training sexual education course: the control is a general health intervention that includes the same initial informational component as the treatment. Participants were recruited over 3 summers (2012–2014) from a summer employment program in New Orleans, Louisiana, that serves primarily African American adolescents.	**Results:** Six months after program exposure, we found no statistically significant difference between treatment and control group members' self-reported inconsistency of condom use or frequency of sex (P > .05). **Conclusion:** Although previous evidence has indicated that this particular program can be effective, this study's findings indicate that it was not effective in this setting with this specific population. Results should provide an incentive to learn why the intervention works in some cases and what conditions are necessary for causal impacts.	**Strengths:** Large sample size followed over a three-summer period. **Limitations:** Although it appears to have been implemented with reasonable fidelity, the program itself may not sufficiently motivate participants to reduce high-risk sexual behaviors.

Author Recommendations: These results should provide more opportunity or incentive to learn why the intervention works in some cases and not in others and what conditions are necessary for the desired impacts.
Summary for current clinical practice question: We need to reinvigorate existing prevention programs with fresh content and added interactivity without substantially modifying existing curriculum.

Source: Lindberg, L. D. & Maddow-Zimet, I. (2011). Consequences of sex education on teen and young adult sexual behaviors and outcomes. *Journal of Adolescent Health. 51*, 332-338. DOI: 10.1016/j.
jadohealth.2011.12.028

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: This study was used to examine whether formal sex education is associated with sexual health behaviors and outcomes using recent nationally representative survey data. **Sample/Setting:** **Sample:** Data from 4,691 male and females from age 15-24 from the years 2006-2008 Nation Survey of Family Growth. **Johns Hopkins Evidence Appraisal:** Qualitative **Strength:** Level 3 **Quality:** Good	**Design:** Non-Experimental Correlational Design. Data used were from 4,691 male and female individuals aged 15-24 years from the 2006-2008 National Survey of Family Growth. Weighted bivariate and multivariate analyses were conducted by gender, estimating the associations of sex education by type (abstinence only, abstinence and birth control, or neither) before first sexual intercourse, and sexual behaviors and outcomes.	**Results:** Receipt of sex education, regardless of type, was associated with delays in first sex for both genders, as compared with receiving no sex education. Respondents receiving instruction about abstinence and birth control were significantly more likely at first sex to use any contraception (odds ratio [OR] = 1.73, females; OR = 1.91, males) or a condom (OR = 1.69, females; OR = 1.90, males), and less likely to have an age-discrepant partner (OR = .67, females; OR = .48, males). Receipt of only abstinence education was not statistically distinguishable in most models from	**Strengths:** The article looked at all of the findings of the National Survey of Family Growth. They acknowledged any variables up front and used non-parametric correlations to assess relationships between variables and the use of multivariate models. **Limitations:** Measure of receipt of instruction are limited such as no information on if the education was quantity, quality, or specific content. The findings are self-reported and rely on the recall of adolescents. This is an observational study. **Conclusion:** Sex education about abstinence and birth control was associated with healthier sexual behaviors and outcomes as compared with no instruction. The protective influence of sex education is not limited to if or when to have sex, but extends to issues of contraception, partner selection, and reproductive health outcomes.

		receipt of either both or neither topics. Among female subjects, condom use at first sex was significantly more likely among those receiving instruction in both topics as compared with only abstinence education. The associations between sex education and all longer-term outcomes were mediated by older age at first sex.	
Author Recommendations: Formal sex education that includes instruction about both waiting to have sex and methods of birth control can improve the health and well-being of adolescents and young adults.			
Summary for current clinical practice question: Comprehensive education related to partner selection, contraceptive use and reproductive health outcomes is very important and should be a primary goal for improving the well-being of teens and young adults.			

Source: Markham, C., Tortolero, S., Fleschler-Peskin, M., Shegog, R., Thiel, M., Baumler, E., Addy, R., Escobar-Chavez, S., Reininger,B., & Robin, L. (2012). Sexual risk avoidance and sexual risk reduction interventions for middle school youth: A randomized controlled trial. *Journal of Adolescent Health. 50* (2012), 279-288. doi: 10.1016/j.jadohealth.2011.07.010.

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To evaluate the efficacy of two, theory-based, multimedia, middle school sexual education programs in delaying sexual initiation. **Sample:** 1,258 predominantly African American and Hispanic seventh grade students followed into ninth grade. Setting: randomized controlled trial comprising 15 urban middle schools in the US. **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** High	Three-armed, RCT comprising 15 urban middle schools; 1,258 seventh grade students followed into 9th grade. Both programs included group and individualized, computer-based activities addressing psychosocial variables. The risk avoidance (RA) program met federal abstinence education guidelines; the risk reduction (RR) program emphasized abstinence and included computer-based condom skills-training. The primary outcome assessed program impact on delayed sexual initiation; secondary outcomes assessed other sexual behaviors and psychosocial outcomes. An audio-computer-assisted self-interview was used to help collect and sort data at baseline, immediately after the eight-grade intervention and in ninth grade.	**Results:** Relative to controls, the RR program delayed any type of sexual initiation (adjusted odds ratio [AOR]: .65, 95% CI: .54 –.77), among females (AOR: .43, 95% CI: .31–.60), and among African Americans (AOR: .38, 95% CI: .18 – .79). RR reduced unprotected sex at last intercourse (AOR: .67, 95% CI: .47–.96), frequency of anal sex in the past 3 months (AOR: .53, 95% CI: .33–.84), and unprotected vaginal sex (AOR: .59, 95% CI: .36 –.95). RA program delayed	**Strengths:** RCT with Multilevel modeling and inclusion of a school-level sexual prevalence covariate. The study was conducted in one school district at multiple schools. **Limitations:** Self-reported data was used which may be subject to under or over reporting; Parental consent was required; thus, youth most at risk of early sexual initiation may have been excluded and generalizability is restricted to youth who would opt into a sexual education program. There may have been imbalances in demographics and prevalence of sexual behavior between study conditions which may have biased outcomes away from the null hypothesis. **Conclusion:** The RR program positively affected sexually inexperienced and experienced youth, whereas the RA program delayed initiation among Hispanics and had mixed effects

	Of the 15 schools, 5 schools were randomly assigned to each the RR, the RA, or control groups	any sexual initiation among Hispanics (AOR: .40, 95% CI: .19 – .86), reduced unprotected sex at last intercourse (AOR: .70, 95% CI: .52–.93), but increased the number of recent vaginal sex partners (AOR: 1.69, 95% CI: 1.01–2.82). Both programs positively affected psychosocial outcomes.	among sexually experienced youth.
Author Recommendations: Widespread implementation of evidence-based, middle school sexual education programs should be encouraged.			
Summary for current clinical practice question: The RR program effectively delayed any sexual initiation. The RR program delayed initiation of oral and vaginal sex among females and initiation of vaginal sex among African Americans and other sexual behaviors including unprotected sex at last vaginal intercourse, either by using a condom or abstaining from sex, and frequency of recent vaginal sex, unprotected vaginal sex, and anal sex.			

Source: Oman, R., Vesly, S., Green, J., Fluhr, J., & Williams, J. (2016). Short-term impact of a teen pregnancy prevention intervention implemented in group homes. *Journal of Adolescent Health*. *59*, 584-591. Doi:https://dx.doi.org/10.1016/j.jadohealth.2016/07.002.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: to assess the effectiveness of a teen pregnancy-prevention program for youth living in group home foster care settings and other out-of-home placements. **Sample/Setting:** from 44 residential group homes located in California, Maryland, and Oklahoma **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** Good	**Design:** Cluster randomized control trial involving youth recruited from 44 residential group homes located in California, Maryland, and Oklahoma. Within each state, youth in half the group homes were randomly assigned to the intervention group and the other half were randomly assigned to a control group that offered "Usual care". The intervention was a 10-session, age-appropriate, and medically accurate sexual health education program.	**Results:** Compared to the control group, youth in the PTC intervention showed significantly greater improvements ($p < .05$) from preintervention to postintervention in all three knowledge areas, one of two attitude areas, all three self-efficacy areas, and two of three behavioral intention areas. **Conclusions:** This is the first published randomized controlled trial of a teen pregnancy-prevention program designed for youth living in foster care settings and other out-of-home placements. The numerous significant improvements in	**Strengths:** Large number of students randomized, no group homes withdrew from the study, findings were consistent with other RCTs of sexuality education programs that focused on teen pregnancy prevention or HIV/AIDs risk reduction and that found significant improvements in knowledge, attitudes, self-efficacy, and intentions that were sustained over 12 months and as long as 24 months. **Limitations:** the short-term nature of the evaluation.

		short-term outcomes are encouraging and provide preliminary evidence that the PTC program is an effective pregnancy-prevention program.	
Author Recommendations: PTC program is an effective intervention to implement with the youth			
Summary for current clinical practice question: The PTC program provided factual information on reproductive health, HIV, STIs, and methods of protection as well as increased the youths' awareness of available health resources. Other goals of the intervention were to teach the youth to make informed decisions about their sexual risk behaviors and to recognize the potential consequences of these decisions for their future goals. In regard to immediate impact, the results indicate that the PTC intervention is effective in regard to improving pregnancy prevention relevant knowledge, attitudes, and self-efficacy of a racially/ethnically diverse majority male population that was generally sexually experienced.			

Source: Palen,L., Ashley, O.S., Gard, J., Kan, M., Davis, K., & Evens, W.D. (2011). Effects of media campaign messages targeting parents on adolescent sexual beliefs: A randomized control trial with a national sample. *Family Community Health. 34* (1), 28-38. Doi: 10.1097/FCH.0b013e3181fdecc3.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: examine differential impact of PSUNC messages depending on parent and adolescent gender, adolescent age, adolescent race/ethnicity, and adolescents' friends' sexual activity. **Sample/Setting:** 531 adolescents **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** Low	**Design:** Randomized control trial. This study evaluated the effects of media messages targeting parents on the sexual beliefs of 404 adolescents. The study hypothesized that influencing parents' knowledge, attitudes, beliefs, and behaviors surrounding parent-child communication about waiting to have sex via PSUNC messages would result in stronger adolescent proabstinence beliefs.	**Results:** significantly more likely to agree that sexual activity is psychologically harmful to teens (Odds Ratio [OR] = 1.63, 95% Confidence Interval [CI] = 1.02, 2.63), as compared with children of control group parents.	**Strengths:** study was complete over a year **Limitations:** campaign messages were in a controlled online environment, whereas the campaign itself was designed to be implemented in a natural setting. Predominantly Caucasian subjects. Parents in this study were more educated than the general population; because of the study set up, the age of 15 was the cut off for subjects. **Conclusion:** This study served to establish the efficacy of 1 set of media messages in influencing adolescents' beliefs about sexual activity and with intervention more teens agreed that sexual activity is psychologically harmful to teens.

Author Recommendations: Health promotion professionals and those working with the adolescent population should consider social marketing as a viable strategy to prevent early sexual activity.
Summary for current clinical practice question: Creating effective health messages and adapting them to broad and diverse audiences is essential to achieving the Healthy People 2010 goals of reducing health disparity within the US population and increasing the proportion of adolescents who abstain from sexual intercourse or use condoms if currently sexually active.

Source: Park, M.H. & Kinra, S. (2010). Abstinence-only education modestly delays initiation of sexual activity. Journal of Pediatrics. Vol 157 (1) p 172-173**.**

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: **Sample/Setting:** African American students in grades 6 and 7 from four urban public middle schools in the northeastern US. N= 662. **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** Good	**Design:** Randomized control trial	**Results:** Abstinence-only intervention reduced sexual initiation (risk ratio [RR], 0.67; 95% confidence interval [CI], 0.48- 0.96). The model-estimated probability of ever having intercourse by the 24-month follow-up was 33.5% in the abstinence-only intervention and 48.5% in the control group. Fewer abstinence-only intervention participants (20.6%) than control participants (29.0%) reported having coitus in the previous 3 months during the follow-up period (RR,0.94; 95% CI, 0.90-0.99, Number Needed to Treat = 12).	**Strengths:** well-designed study targeting high-risk middle school youth with excellent long-term follow-up with multiple intervention groups **Limitations:** that statistically significant results in this study were remarkably close to not being significant, sometimes within a tenth of a point. This may have been secondary to the intervention not being effective or the sample size not being large enough to show significance**.** **Conclusions:** Theory-based abstinence-only interventions may have an important role in preventing adolescent sexual involvement.

		Abstinence-only intervention did not affect condom use. The 8-hour (RR, 0.96; 95% CI, 0.92-1.00) and 12-hour comprehensive (RR, 0.95; 95% CI, 0.91-0.99) interventions reduced reports of having multiple partners compared with the control group.	
Author Recommendations: Theory-based abstinence-only interventions may have an important role in preventing adolescent sexual involvement.			
Summary for current clinical practice question: Given that sexual initiation is an age-graded activity, results other than sexual initiation, such as knowledge, intentions, or interim sexual behaviors addressed in comprehensive classes may still be beneficial to the youth as they get older and become sexually active.			

Source: Raghupathy, S.. Klein, C., & Card, J. (2013). Online activities for enhancing sex education curricula: Preliminary evidence on the effectiveness of the abstinence and contraception education storehouse. *National Institutes of Health.12* (2), 160-171. Doi: 10.1080/15381501.2013.790749			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: To conduct preliminary evaluation of the abstinence and contraception education storehouse classroom-based resource designed to supplement existing sex education curricula. **Sample/Setting:** 335 student ages 14-19 **Johns Hopkins Evidence Appraisal:** **Strength:** Level 1 **Quality:** Good	Randomized control trial with data being collected at the onset of intervention, and 3 months after the completion of the intervention	**Results:** Treatment group was significantly more likely to report having the intention to not be sexually active in the next year, knowledge surrounding STIs	**Strengths:** Randomized control trial using large high-risk populations in California. **Limitations:** Small sample size **Conclusion:** Resource such as ACES offers a wide variety of options to reinvigorate existing prevention programs with fresh content and added interactivity without substantially modifying existing curriculum.

Author Recommendations: Implement an interactive program to help increase involvement in developing and internalizing the message sex-education is trying to get across.
Summary for current clinical practice question: Resource such as ACES offers a wide variety of options to reinvigorate existing prevention programs with fresh content and added interactivity without substantially modifying existing curriculum.

Source: Rohrbach, L. A., Berglas, N.F., Jerman, P., Angulo-Olaiz, F., Chih-Ping, C., Constantine, N. A. (2015). A rights-based sexuality education curriculum for adolescents: 1-year outcomes from a cluster-randomized trial. *Journal of Adolescent Health*. *57,* 399-406.doi.org/10.1016/j.jadohealth.2015.07.004.

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose/Sample This study, evaluates the impact of the rights-based sexuality education on adolescents' sexual health behaviors and psychosocial outcomes 1 year after participation. **Sample/Setting:** 10 public charter schools in the South and East Los Angeles area. Students were predominantly Hispanic (84%) or African-American (14%), and most were eligible for free	randomized trial within 10 urban high schools, ninth-grade classrooms were randomized to receive a rights-based curriculum or a basic sex education (control) curriculum. The intervention was delivered across two school years (2011e2012, 2012e2013). Surveys were completed by 1,447 students at pretest and 1-year follow-up. Multilevel analyses examined curriculum effects on behavioral and psychosocial outcomes, including four primary outcomes: pregnancy risk, sexually transmitted	**Results** Students who received the rights-based curriculum had higher scores on six/ nine psychosocial outcomes, including sexual health knowledge, attitudes about relationship rights, partner communication, protection self-efficacy, access to health information, and awareness of sexual health services. These students were also more likely to report use of sexual health services and more	**Strengths:** included its cluster-randomized design and use of a standard-of care control curriculum, strong follow-up rate without indication of differential attrition between curriculum groups and use of multilevel analysis to account for the clustered design. **Limitations:** the use of self-report outcome measures, which might be subject to response bias. Also, the SEI and control curricula were compared within the context of two school conditions representing different versions of the multicomponent

or reduced-price lunch (88%).The final sample included 1,447 students in 91 classrooms, of which **Johns Hopkins Evidence Appraisal:** **Strength:** I **Quality:** Good	infection risk, multiple sexual partners, and use of sexual health services.	likely to carry a condom. No effects were found for other sexual health behaviors, possibly because of low prevalence of sexual activity in the sample. **Conclusion:** The Right-based curriculum had significant, positive effects on psychosocial and some behavioral outcomes one year later, however, it may not be enough to change future sexual behaviors among younger adolescents, especially those who are not sexually active yet.	intervention. The study lacked adequate statistical power to examine the interaction between the effect of the curriculum and that of the school-wide components.
Author Recommendations: Adolescent development theory suggests that interventions should be provided early, and prevention education before sexual initiation is an important strategy for the promotion of safe sexual behaviors. At the same time, booster sessions provided throughout adolescence might be required to reinforce messages, reduce risks, and promote healthy decisions as more youth begin to engage in sexual relationships.			
Summary for current clinical practice question: The implications of these findings are a larger understanding of a rights-based approach for young adolescents is not fully clear. It would not be appropriate however to conclude that such interventions have no effect on adolescent sexual behaviors. It is a challenge for any study to find an impact of an intervention on low-prevalence outcomes especially when those are sexuality education programs that target younger adolescents.			

Source: Rousta, R., Najmabadi, K.M., Asgharipour, N., & Saki, A. (2018). Effects of group training on maternal knowledge and attitude toward sexual health education to 12-14 years old boys. *Journal of Midwifery & Reproductive Health. 7* (4), 1936-1945. DOI: 10.22038/jmrh.2019.29106.1313.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: aimed to investigate the effect of group training on maternal knowledge and attitude toward sexual health education to boys within the age range of 12-14 years old **Sample/Setting:** 90 mothers with young teens in Mashhad **Johns Hopkins Evidence Appraisal:**	**Design:** Randomized control trial was carried out on a total of 90 mothers with young teens in Mashhad in 2016. They were randomly divided into intervention and control groups. The data were collected using a demographic and a self-structured questionnaire for maternal knowledge and attitude. The intervention group received four training sessions once a week and the control group did not receive any training. The outcome variables were measured 15 days after the intervention and were analyzed using the Chi-square, Fisher's exact, Kruskal-Wallis, Mann-Whitney U, and Wilcoxon	**Results:** There was no significant difference between two groups before intervention ($P>0.05$). However, a significant difference was seen between the two groups in terms of differences in the scores of knowledge ($P<0.001$) and attitude ($P<0.001$) at the beginning	**Strengths:** Randomization of larger groups, validity and reliability of questionnaires **Limitations:** focuses solely on males, individual differences, mother's mental status affecting the answers, sensitivity of the subject influencing the completion of the questionnaire, as well as the exchange of information between the intervention and control groups despite the planned measures. **Conclusion:** Group training can result in significant changes in maternal knowledge and attitude with regard to the young teens' sexual health education.

Strength: Level 1 **Quality:** Poor	signed-rank tests, as well as the independent and paired t-test.	and end of the study.	
Author Recommendations: attracting parental involvement by means of organizing training sessions for families and collaborating with parents and training institutes can improve the level of adolescent sexual health and enhance the level of knowledge and attitude of the family, school, as well as the community.			
Summary for current clinical practice question: Including the parents when providing sexual education can help increase knowledge for the youth.			

Source: Serowoky, M. L., George, N., Yarandi, H. (2015). Using the program logic model to evaluate cuidate: A sexual health program. *Worldview on Evidence-Based Nursing*, 12 (5), 297-305.

Purpose/Sample	Design (Method/Instruments)	Results	Strengths/Limitations
Purpose: This study aimed at reviewing the program logic model (PLM) which was used as the systematic approach to plan, implement and evaluate a sustainable model of sexual health group programing population. **Sample/Setting:** Three cohorts (24) Latina female adolescents between the ages of 13–18 years of age. **Level of evidence:** **Level:** II **Quality:** low	**Design:** Cu´ıdate is a six-module curriculum designed for adolescents' 13–18 year olds that was done at a existing health center within a inner city school. Participants completed a 26-item outcome tool at baseline, immediately following the completion of the program and at 8–12 weeks. A quasi-experimental, repeated measures design was used to evaluate program effectiveness.	**Results:** Cu´ıdate! was done within the existing school structure and, below projected Costs. It also had a high participant retention (95.8%). Three cohorts of female teens demonstrated significant increase in STI or HIV knowledge, self-efficacy, and intent to use condoms ($p < .01$). Condom use increased and no participants initiated sexual behavior or report any new STIs or pregnancies. The program was such a success that the school continues to	**Strength:** They were able to get more participates when having food provided while also not taking time away from their regular classes. **Limitations:** Extra cost was incurred by having the program over the lunch hour. Limited number of participants. **Conclusion:** A evidence-based intervention program can be sustained in a school-based health centers with similar results of efficacy.

(limited sample size)		use it with the addition of a community health worker and a registered nurse as facilitators.	
Author Recommendations: Costs need to be cut further for sustainability, so they recommended modifying the type of facilitator from an APRN to a RN. Role-playing is recommended in the future to help discuss negotiating safer sex with an established partner. This may present a challenge, so more in-depth discussion is needed. Future efforts at replicating or sustaining such program should include additional sessions that are either in person or through social media. In such programs, teens should be encouraged to communicate with their parents, as they often play a vital role in their life and can help promote smart choices. Reframing how we provide sexual education and health counseling so that it is delivered in a safe place where teens can feel comfortable and open to learning amongst their peers may also help improve their knowledge and intentions of partaking safer sex practices.			
Summary for current clinical practice question: Once again it is identified how important it is to involve parents when attempting to make an impact on a teen's behavior. Parents play an important role in their development and should be encouraged to discuss safe sexual practices with their teen. Furthermore, this study shows how important it is to provide a safe area for teens to learn about safe practices with their peers to help make a lifelong impact.			

Source: Shegog, R., Rushing, S.C., Jessen, C., Lane, F. & Gorman, G. (2017). Native IYG: Improving psychosocial protective factors for hiv/sti and teen pregnancy prevention among youth in American Indian/Alaska Native communities. *Journal of Applied Research on Children. 8* (1) Article 3. Retrieved from http://digitalcommons.library.tmc.edu/childrenatrisk/vol8/iss1/3

Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: evaluate the effect of Native It's Your Game (Native IYG), an online culturally sensitive 13-lesson HIV, STI, pregnancy prevention curriculum adapted for youth in tribal middle schools. **Sample/Setting:** 402 youth ages 12-14 years old who were incorporated from 24 tribal sites in Alaska, Arizona, and the Pacific Northwest. **Level of evidence:** **Level:** I **Quality:** good	**Design:** randomized controlled study incorporating 25 tribal sites in Alaska, Arizona, and the Pacific Northwest with planned online survey measurement at baseline and 3-month follow-up. 13-lesson, multimedia HIV, STI, and pregnancy prevention curriculum designed to be accessible to middle school students during their typical school health education or physical education lessons, or during after school or summer camp programs. Each lesson is approximately 35 minutes long and features interactive activities,	**Results:** At first follow-up, AI/AN youth exposed to Native IYG reported greater knowledge about condoms (beta=0.323, P<0.001) and HIV/STIs (beta=0.232, P<0.001), greater self-efficacy to acquire condoms (beta=0.332, P<0.001) and use condoms (beta=0.464, P<0.001), and more reasons not	**Strength:** Randomization at the site level within each region provided a robust study design. **Limitations:** Internet access was variable and difficult to standardize across five states, which threatened program fidelity and exposure. **Conclusion:** The study found that Native IYG significantly affected protective factors for sexual health. Native IYG increased youth knowledge related to condoms and to HIV/STI, improved youth self-efficacy for condom use and for condom availability, and increased the reasons youth had for

	quizzes, animations, peer and expert role model videos, and fact sheets that target determinants of sexual risk taking.	to have sex (beta=1.016, P<0.01) than youth in the comparison group.	delaying sex. Internet-based curriculum used to affect short-term psychosocial protective factors are a promising channel to reach geographically dispersed AI/AN youth. Although results need to be interpreted further, in the context of study limitations, further assessment of the long-term behavioral effects of program is warranted.
Author Recommendations: A utilitarian response may be able to adapt existing evidence-based sexual health programs for use in AI/AN communities however, programs need to be culturally sensitive and relevant to the youth and tribal community in order to optimize acceptance without sacrificing program fidelity and core educational components. Recommendations from this work include the importance of rigorous training, implementation, and quality assurance of data collection; the use of webinar-based training in conjunction with regional in-person site visits could help coordinators to facilitate a smooth implementation and overcome potential barriers in future studies.			
Summary for current clinical practice question: Youth are at risk for high-risk behaviors and specific populations are exposed at earlier ages. This study describes the importance of educating youth at a young age, promoting healthy behaviors in a culturally sensitive way. It also is a great example of how intranet-based curriculum can be used to reach youth in a variety of settings.			

Source: Sherr, M.E., Pooler, D., Stamey, J., Jones, J., Dyer, P. (2013). A randomized effectiveness trial of a sex education program for minority youth in Miami, Florida. *Journal of Evidence Based Social Work. 10*, 53-62. Doi:10.1080/15433714.2011.581533.			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: This study looked at the outcomes of Project U-Turn, a comprehensive sex education program for at risk youth in Miami, Florida. **Sample:** 549 students from five high schools were assigned to the treatment group; 424 from five other schools were assigned to the control group, for a total sample of 973 students.	Experimental randomized trial. A single blinded survey was given as a pretest, at three-month and six-month follow-up. The three waves of data collection allowed for multi-level modeling.	**Results:** The findings indicated that Project U-Turn was not effective, that religious participation was a modest independent factor of teen sexual activity, and that the gender of the teens and their use of alcohol were stronger predictors throughout the study. These findings are important as they report the outcomes of the only Randomized Effectiveness Trial which was used to evaluate a program delivered exclusively to African American and Hispanic youth in just 9 weeks. The minority youth that reported drinking alcohol three to five times in the last 30 days, were almost four times as likely to have had	**Strengths:** three waves of data collection allowed for multi-level modeling. **Limitations:** The study was only done on African American and Hispanic teens. Also the number of possible variables left unaccounted for in the analysis was significant. Peer relationships, relationships with parents and siblings, and relationships with other extended family members could have further influenced how teens responded to questions about their sexual activity.

Johns Hopkins Evidence Appraisal: **Strength:** I **Quality:** Poor		sex within the last three weeks. Youth that reported drinking six or more times were almost five times more likely to have had sex within the last three weeks. Gender, participation in religious services, and refraining from drinking alcohol appeared to influence the probability of how the teens answered the dependent measure.	
Author Recommendations: Further studies on younger children may produce a different finding about sexual behavior as the age of the teens in this study seemed to be a limitation as they were all in high school and it may have been too late to change behavior patterns at this point. Furthermore, this study did not account for religious participation, alcohol or drug use, peer relationships, family relationships, or other factors potentially influencing he findings and therefore future research is needed to examine the effect of these additional factors on the outcomes of interventions.			
Summary for current clinical practice question: Research provides evidence as to what approaches to sex education are effective in decreasing current sexual activity of adolescents. Programs that limit the focus of sex education to abstinence only or contraception-only have minimal impact on changing behaviors. a comprehensive approach conveys the two-part message that abstinence is best but if one chooses to have sex, contraception and protection should be used every time. The current findings suggest that teens engaging in one high-risk behavior are the same teens engaging in other high-risk behaviors. Approaches that isolate alcohol and drug use from sexual activity may not be effective.			

Source: Stanger-Hall, K. F., & Hall, D.(2011). Abstinence-only education and teen pregnancy rates: why we need comprehensive sex education in the U.S. *PloS one*, *6* (10): e24658. Doi: 10.1371/ journal.pone.0024658			
Purpose/Sample	**Design (Method/Instruments)**	**Results**	**Strengths/Limitations**
Purpose: It was the goal of this study to evaluate the current sex-education approach in the U.S., and to identify the most effective educational approach to reduce the high U.S. teen pregnancy rates. **Sample:** Data on abstinence education were retrieved from the Education Commission of the States. 48 states were analyzed (all U.S. states except North Dakota and Wyoming) as they do not have any policy or state law	Data on abstinence education were reviewed from the Education commission of the States. Only 38 states had sex education laws, thirty of those state laws contained abstinence education provisions, 8 states did not. Each state was assigned ordinal values from 0 through 3 to each of these four categories, respectively. A higher category value indicates more emphasis on abstinence with level 3 stressing abstinence only until marriage as the fundamental teaching standard (similar to the federal definition of abstinence only education), if sex or HIV/STD education is taught, the	**Results:** The level of abstinence education (no provision, covered, promoted, stressed) was positively correlated with both teen pregnancy (Spearman's rho = 0.510, p = 0.001) and teen birth (rho = 0.605, p ,0.001) rates indicating that abstinence education in the U.S. does not cause abstinence behavior. **Conclusion:** National data show that the	**Strengths:** This large-scale analysis was able to provide scientific evidence to help legislators make the decision between what type of federal funding program to choose for their state by evaluating the most recent data on the effectiveness of different sex education programs with regard to preventing teen pregnancy for the U.S by using the most recent teenage pregnancy, abortion, and birth data from all U.S. states along with information on each state's prescribed sex education. **Limitations:** Only white and black teens populations were included because the Hispanic teen population numbers were not normally distributed.

regarding sex, STI or HIV education. **Setting:** The most recent teenage pregnancy, abortion, and birth data from all U.S. states along with information on each state's prescribed sex education. Information on the sex education laws and policies for all 50 US states was retrieved from the website of the Sexuality Information and Education Council of the US (SIECUS). **Johns Hopkins Evidence Appraisal:** **Strength: Level III** **Quality: Good**	primary emphasis of a level 2 provision is to promote abstinence in school aged teens if sex education or HIV/STD education is taught, but discussion of contraception is not prohibited. Level 1 covers abstinence for school-aged teens as part of a comprehensive sex or HIV/STD education curriculum, which should include medically accurate information on contraception and protection from HIV/STDs. Level 0 laws on sex education and/or HIV education do not specifically mention abstinence. Additionally, data on teen pregnancy, birth and abortion rates were retrieved for the 48 states from the most recent national reports, which cover data through 2005. This data was used to determine whether there is a significant correlation between level of prescribed abstinence education and teen pregnancy and birth rates across states.	incidence of teenage pregnancies and births remain positively correlated with the degree of abstinence education across states: States that taught comprehensive sex and/or HIV education and covered abstinence along with contraception and condom use tended to have the lowest teen pregnancy rates, while states with abstinence-only sex education laws that stress abstinence until marriage, were significantly less successful in preventing teen pregnancies.	
Author Recommendations: An important first step towards lowering the high teen pregnancy rates would be states requiring that comprehensive sex education (with abstinence as a desired behavior) is taught in all public schools. Another important step would involve specialized teacher training. Presently the sex education and STD/HIV curricula are often taught by faculty with little training in this area. As a further modification, ''sex education'' could be split into a coordinated social studies component (ethics, behavior and decision-making, including planning for the future) and a science			

component (human reproductive biology and biology of STDs, including pregnancy and STD prevention), each taught by trained teachers in their respective field.
Summary for current clinical practice question: Abstinence-only programs tend to promote abstinence behavior through emotion, such as romantic notions of marriage, moralizing, fear of STDs, and by spreading scientifically incorrect information as a result, these programs may actually be promoting irresponsible, high-risk teenage behavior by keeping teens uneducated with regard to reproductive knowledge and sound decision-making instead of giving them the tools to make educated decisions regarding their reproductive health.