

The Impact of Inadequate Sex Education

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ABSTRACT

The unintended pregnancies and abortion rates in the United States are among the highest of most industrialized countries. To address these rates, an increase in federal funding for sex education programs focused on the promotion of abstinence from sex has been prevalent over the past decades. However, with federal funding dedicated towards abstinence-only sex education which excludes important health topics such as contraception and sexually transmitted diseases, youths across the nation are ill-equipped with the necessary knowledge and skills to make informed choices on their sexual health. In an effort to improve the current sex education curriculum employed throughout the states, this study seeks to examine the impact of inadequate sex education on female teens ages 13-18 contraceptive knowledge and awareness, with a focus on South Florida. To conduct this study, the evaluation research method was carried out by the means of a survey via social media platforms. Findings revealed that inadequate sex education impacted participants' contraceptive awareness and knowledge negatively, demonstrating the ineffectiveness of abstinence-only sex education in reducing rates of unintended pregnancies and abortion rates in the United States due to the medical misinformation conveyed by these programs. Among broader implications, a change in sex education systems to be geared toward comprehensive sex education could be highly beneficial along with federal improvements of the current sex education curricula.

Introduction

The rise of unintended pregnancies and abortion rates in the United States has raised a concern over the quality of information delivered by sex education curriculums throughout the country. The United States continues to rank first among developed nations in rates of pregnancy, abortion, and sexually transmitted infections and diseases (Blanton, 2019). This is because majority of the teenagers are uninformed on the topic of sex education where they have little to no knowledge and awareness on health-protective topics like “sexually transmitted diseases (STDs)” or contraception—also known as birth control—designed to prevent pregnancy.

Sex Education, the provision of information about a broad variety of health topics related to sex and sexuality, is taught in two main forms in the United States: abstinence-only and comprehensive sex education. Abstinence-only sex education focuses exclusively on abstaining from sex as a way of avoiding unintended pregnancies and STDs. On the other hand, comprehensive sex education not only stresses the abstinence-only approach but equips adolescents with knowledge concerning contraceptives and STDs. Most states throughout the United States have implemented the abstinence-only approach with the support of federal funding from the government as a way of emphasizing to adolescents that abstinence from sex is the only proper and effective option. Florida is among the 29 states that require that abstinence be stressed while the provision of information on contraception is not required (Guttmacher Institute, 2020). School districts across Florida have chosen to adopt the abstinence-only sex education approach which fails to address health topics that are deemed too controversial: sexual expression, contraception, STDs, and much more. According to the Waxman Report conducted in 2004, 11 out of the 13 federally funded abstinence-only sex education curricula contain pervasive errors and misinformation on a wide range of important sexual and reproductive health issues (Waxman, 2004). Even though the objective of abstinence-only programs is to promote sexual abstinence before

marriage and to reduce teen pregnancy, it has instead provided adolescents with misinformation regarding a wide range of health topics. The pervasive medical misinformation conveyed by these programs, specific information regarding contraceptive uses and effectiveness, is one of the main causes for the high unintended pregnancies and abortion rates among teens in the United States. After all, sex education programs that lack comprehensive sex education prevent teens from fully educating themselves on their reproductive health to make informed decisions. The integration of contraceptive knowledge within sex education programs is of paramount importance as not only is contraception the key factor towards reducing teenage pregnancy but it can reduce reproductive health risks as well. Therefore, there is a distinct correlation between sex education and awareness and knowledge of contraceptives where the quality of information delivered by sex education programs can impact teens' knowledge and understanding of contraceptive methods and effectiveness.

Literature Review

A vast majority of studies have been conducted to examine the impact of sex education on knowledge and awareness of contraception. When sex education is comprehensive, one that is medically accurate and seeks to provide teens with knowledge and skills, students not only feel more informed, but make safer choices and have healthier outcomes (Hall et al., 2016). In turn, when sex education is inadequate, one that fails to provide teens with accurate information on protective health topics, teens lack knowledge and skills to permit them to make informed decisions to protect their well-being. One research conducted by Reis and her team aimed to explore the significance of incorporating sex education courses within schools and their effect in promoting healthy sexual behaviors among Portuguese university students. In "The effects of sex education in promoting sexual and reproductive health in Portuguese university students," Reis—an executive coordinator of the Health Education for University students—obtained data of this association through distributing a nationally representative survey among 3,278 Portuguese university students. Reis et al. used the "Sexual and Reproductive Health in University Students (HBSC/SRHCS)" survey that included several questions that covered a wide variety of topics including but not limited to sexual behavior, knowledge concerning contraceptive methods, and attitudes towards STDs. To analyze the data collected, Reis et al. used the "Statistical Package for Social Sciences (SPSS)" version 19 which used descriptive statistics to give general descriptions of the collected data and the chi-square test to compare the sexual risk behaviors of students who either had or had not received sex education (Reis et al., 2011). The findings of their study demonstrated a positive correlation between receiving sex education in school and protective sexual behaviors. Students who received formal sex education in school not only had fewer sexual risk behaviors than their fellow peers, but considerable knowledge about contraceptives and STDs as well as positive attitudes towards contraceptive uses and effectiveness. As indicated from the survey, the mean total score of students in relation to knowledge concerning contraceptive methods and STDs is 7.17; with young people who have not had sex education showing less knowledge, ranging around a mean of 6.94 (Reis et al., 2011). As for the students who did receive sex education in the past year or so, their mean range around 7.35, showing significantly greater knowledge as compared to those who did not receive sex education.

Another research conducted by Pazol et al. took a different approach from Reis and her team to evaluate whether educational interventions can help increase contraceptive knowledge. In "Impact of Contraceptive Education on Contraceptive Knowledge and Decision Making: A Systematic Review," Pazol—the Deputy Associate Director of CDC's Division of Reproductive Health—and her team used the method of systematic review to obtain data about educational interventions; they identified peer-reviewed articles and previous studies that examined the impact of educational interventions on knowledge (Pazol et al., 2015). The previous studies they used were not only personally analyzed by healthcare providers and educators of sex education but aided by a wide range of tools such as printed materials, videotapes, or audios. Unlike Reis et al. method of obtaining data on the association of sex education and healthy sexual behaviors through national surveys, Pazol and her team turned to a different approach—systematic review. This approach was the best method to evaluate the extent to which educational interventions are effective in increasing contraceptive knowledge as it acknowledged the aspects of educational interventions that best promote

informed decision-making. Through this approach, Pazol and her team examined a total of 17 included studies in their research; only 15 of the 17 studies examined the impact of educational interventions on contraceptive knowledge. Within the 15 studies examined, only 14 of these studies found notable results in improvement of contraceptive knowledge where only 1 out of the 15 studies did not show notable improvement in contraceptive knowledge while the rest showed a strong positive correlation between the two. Similar to the findings of Reis et al., Pazol and her team concluded that educational interventions could help increase an individual's knowledge of contraceptive uses, methods, and effectiveness. Ultimately, the findings of Reis and Pazol demonstrated a positive correlation between sex education and an increase in contraceptive knowledge.

Contrary to the beliefs and findings of Reis and her team, Moira Lynch took a different perspective on whether educational interventions can help increase contraceptive knowledge. In “Abstinence-only Sex Education in the United States: How Abstinence Curricula Have Harmed America,” Lynch—an Assistant Vice President of Union Bank who received her degree of Bachelor of Arts in University Honors and Community Health Education—compiled and reviewed articles published from 1982 to 2015 that pertained to abstinence-sex education in the United States. Upon investigation, her findings concluded that sex education programs that push the abstinence-only agenda do not demonstrate success in increasing rates of contraceptive knowledge nor reducing rates of sexual activity. Instead, the medically inaccurate information provided by these programs is an unsound means to promote abstinence until marriage and proven to be ineffective in reducing rates of teen pregnancy (Lynch, 2017). Unlike the research of Pazol and Reis that demonstrated the positive impact of sex education programs in increasing contraceptive knowledge, Lynch’s findings counteracted this. Her findings concluded that abstinence-only sex education fails to adequately protect and equip America’s youth with the necessary contraceptive knowledge, unlike comprehensive sex education which offers far more positive results. It is through comprehensive sex education that youths in America are adequately prepared to prevent transmission of STDs and pregnancy where the implementation of these programs will promote healthier sexual behaviors and attitudes.

Although many studies have been conducted on the correlation between sex education and the awareness and knowledge of contraceptives, there remains a significant gap of how inadequate sex education, specifically delivered in South Florida public schools, impact knowledge and awareness of female teens ages 13-18. In the studies mentioned above, as indicated, a strong positive relationship exists between sex education and an individual’s awareness and knowledge of contraceptives. Well implemented sex education programs that deliver not only accurate information, but also a wide array of health topics is proven to be effective in increasing the use of contraception among sexually active youth (Planned Parenthood, 2014). In turn, there is a weaker correlation between sex education and knowledge and awareness of contraception when sex education is inadequate and fails to provide accurate information on health topics like sexual risk behaviors. However, the extent to which inadequate sex education can impact contraceptive knowledge is unknown, especially among teens attending school. Most of the previous studies conducted tended to focus primarily on the correlation between sex education and awareness/knowledge of contraceptives among women of older ages. Until recently, very few studies have been devoted to the association of inadequate sex education—in this case, abstinence-only sex education—and awareness/knowledge of contraceptives among teens in a particular region. Thus, leading to the research question: How has the inadequate sex education delivered in South Florida public schools impacted the awareness and knowledge of contraceptives among female teens ages 13-18?

Methodology

The Evaluation Research Approach

For the purpose of this research, an evaluation research method consisting of surveys was employed in order to gauge the degree to which the inadequate sex education delivered in South Florida public schools has impacted the awareness

and knowledge of contraceptives among female teens ages 13-18. Evaluation Research can be defined as the systematic assessment of the worth or merit of time, money, effort, and resources spent in order to achieve a goal (QuestionPro, 2019). In essence, this method is used to study a program to not only understand how well it reaches its goal but assesses the program to determine the improvements that could be made, which is the main objective of the research in the case of sex education programs. The underlying purpose of this methodology—assessing a specific problem to ensure usability—enables the researcher to carry out their objective efficiently and appropriately, thus making evaluation research the optimal method to approach the question driving this study. Essentially, this method helps the researcher to gain insight, the areas of improvements and strengths, about the inadequate sex education program delivered by South Florida public schools and assess the effects of the program, allowing for the data collected to be used to enhance the quality and accuracy of the information delivered by the program in the future.

The Utilization of Survey

The survey utilized within this research was created through Google Forms and distributed towards the targeted audience of this research, female teens ages 13-18 in South Florida public schools who were currently taking or had taken a sex education course delivered by their school, via the social media app Instagram. Prior to administering the survey, the content and ethics of the research were thoroughly reviewed and approved by the “Institutional Review Board (IRB)” in order to assure appropriate measures and steps were taken before data collection. The survey was designed in a way to best assess the participants' awareness and knowledge of contraceptives, in other words, the survey was divided into two sections—awareness of contraceptives and knowledge of contraceptives. All questions within the survey were carried out in the form of “multiple choice question (MCQ)” as it not only permits wide sampling and coverage of content that can be adjusted in terms of its difficulty, but efficient to administer and score as quickly as possible.

Section I: Awareness of Contraceptives

The first section of the survey assessed the participants' awareness of contraceptives. In the context of this study, awareness is considered as the participants' ability to recognize the different contraceptive methods that exist. To measure the participants' contraceptive awareness, a four-point scale was utilized. The four-point scale, also known as a self-report measure, relies on the information provided by the participants themselves; in other words, the responses were based on the participants' subjective perceptions and beliefs about contraceptives. A series of questions, each corresponding to a specific contraceptive method, was presented along with the four-point scale to assess how much participants thought they knew about the existence of each of the 10 methods (condoms, vaginal ring, implant, diaphragm, sterilization, cervical cap, the patch, the pill, the shot, and the IUD). Considering that the number of contraceptive methods varies far and wide, only 10 contraceptive methods were used and examined in this research as it was not feasible to analyze all the contraceptive methods that exist. For each of the contraceptive methods, the responses were coded by the four-point scale: (1) “Heard nothing”, (2) “Heard a little”, (3) “Heard some”, and (4) “Heard a lot”. The use of a self-report survey allowed for the respondents of the survey to assess their current awareness of different contraceptive methods based on their knowledge and attitudes of these methods for having participated in a sex education program delivered by their school.

Section II: Knowledge of Contraceptives

The second section of the survey assessed participants' subjective and objective knowledge of contraceptives. In the context of this study, knowledge can be defined as participants' in-depth understanding of what contraceptive is along with the uses, effectiveness, and limitations of different contraceptive methods. To measure participants' subjective knowledge of contraceptives, their perceived or self-assessed knowledge, a four-point scale was once again utilized to assess the level of contraceptive knowledge in which the participants believe they currently have as a result of having taken a sex education program delivered by their school. The responses to the query, “On a scale of 1-4, how well do you know about contraception and the uses/effectiveness of different existing contraception methods?”, were

coded by the four-point scale: (1) “No knowledge”, (2) “A little knowledge”, (3) “Some knowledge”, and (4) “A lot of knowledge”. The application of the four-point scale enabled the researcher to measure the participants’ subjective knowledge as accurately as possible, laying the groundwork for measuring the objective knowledge of participants. Since subjective knowledge is based on one’s personal experience and not factual, the researcher also assessed the participants’ objective knowledge in order to not only show the participants’ actual knowledge of contraceptives in correlation to their subjective rating of their contraceptive knowledge but to ensure the accuracy of their rating. To measure the participants’ objective knowledge of contraceptives, a series of in-depth questions about contraception and the uses/effectiveness of different methods was administered in the form of MCQs. A total of 15 detailed questions were presented in this section; the specificity of these questions with concrete answers enabled the researcher to have a more thorough understanding of the extent to which participants understood contraceptives as the questions posed each possessed contrasting difficulty levels. Table 1 shows examples of questions with varying difficulty levels.

Table 1. Example of questions with contrasting difficulty levels.

Question difficulty level	Question examples
Easy	What is the purpose of contraception?
Medium	Which methods of birth control need a prescription?
Hard	The vaginal contraceptive ring can be used on a continuous or extended basis. For how long does a ring provide adequate hormonal suppression?

The variety of questions concerning contraceptives, each with contrasting difficulty levels, allows the researcher to gauge as accurately as possible the degree of contraceptive knowledge possessed by the participants. The varying difficulty levels of the questions helped to identify the scope of the participants’ in-depth knowledge of contraceptives and if their results were parallel to the subjective rating of their contraceptive knowledge. In addition, some of the questions within the survey were derived from medical databases such as the *Health Library of BayCare* and the *Health Encyclopedia of the University of Rochester Medical Center*. The utilization of well-crafted questions from these medical databases, consisting of peer-reviewed and credible information, permits the researcher to not only have a greater comprehensive understanding of the participant’s contraceptive knowledge, but to accurately measure the degree of contraceptive knowledge possessed by these participants to a greater extent.

Results and Data Analysis

The research consisted of two sections. The first section of the research focused on the participants’ awareness of contraceptives through the utilization of a four-point scale. The second section focused on the participants’ subjective and objective knowledge of contraceptives through the utilization of not only a four-point scale but a 15 MCQ test. Since the quantity of the data collected is too large to display within this section, but helpful in providing a comprehensive understanding of the research, the raw data collected will be included within the Appendix. **Appendix A** consists of data compiled from the first section of the research, while **Appendix B** consists of data compiled from the second section of the research.

In the first section of the research, data were gathered on participants’ awareness of contraceptives. Participants were asked to rate their awareness of each contraceptive (total of 10 contraceptives) method based on the four-point scale; the data of participants’ awareness of each contraceptive are presented in Appendix A. To ensure the raw data expresses an amount that is typical of all 76 participants within the research, the arithmetic mean of each point value of the four-point scale was calculated. The mean of each point value represents the level of contraceptive awareness possessed by the participants of the study for a total of 10 contraceptive methods.

To calculate the average of each point value of the four-point scale, the following formula was implemented:

$$\left(\frac{\text{Total amount of times [Specific point value] was chosen out of all contraceptives}}{\text{The total sum of answers of all participants}} \right)$$

Below shows the average contraceptive awareness of each point value of the four-point scale. The compiled data of the calculated mean of each point value are constructed into a pie chart in order to illustrate proportion.

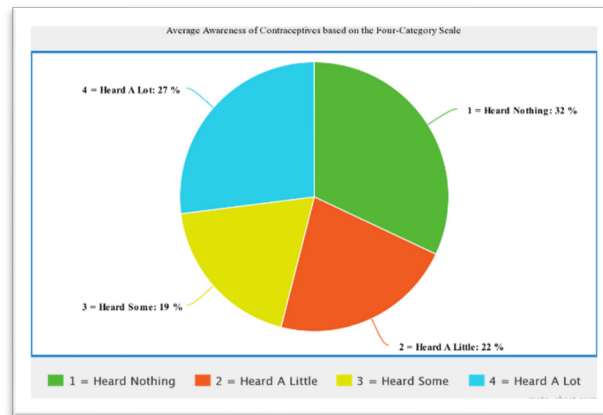


Figure 1. Average Awareness of Contraceptives based on the Four-Point Scale.

As seen in Figure 1, the highest mean coded response to awareness of contraceptives of all 76 participants was “Heard Nothing” (point value 1) with a mean score of 32%. Precisely, point value 1 was chosen 241 times out of a grand sum of 760 responses by the 76 participants. Even though the difference between point value 1’s mean and the mean of the 3 other point values is not as wide and significant, even so, the data provides crucial results. Point Value 1, located at the extreme end of the scale spectrum, being the highest mean coded response among the participants, distinctly indicates that the typical shared response by most participants in the research is that they have no perceived awareness of the existence of a variety of contraceptives.

Table 2 shows the participants' subjective rating of their contraceptive knowledge through the utilization of a four-point scale.

Table 2. Subjective Rating of Contraceptive Knowledge.

Four-Point Scale	Contraceptive Knowledge Percentage
1 = I have no knowledge about contraception (Never heard of the term or have any knowledge about contraceptives at all)	2.6%
2 = I have a little knowledge about contraception (Heard/know the term but have no knowledge about contraceptives)	11.8%
3 = I have some knowledge about contraception (Heard/know the term and know the uses/effectiveness of some common contraceptives)	63.2%
4 = I have a lot of knowledge about contraception (Heard/know the term and know the uses/effectiveness of different existing contraceptive methods to a wide extent, can apply the knowledge)	22.4%

As seen in Table 2, results indicated that most of the participants (63.2%) believed that they have some knowledge about contraceptives (point value 3), while only a few participants (2.6%) believed they have no knowledge about contraceptives (point value 1). The high percentage of those who chose point value 3 (“some knowledge”) indicates that most of the participants feel confident about their knowledge and skills of contraceptives where they can identify and discuss detailed information about contraception.

To ensure the accuracy behind the participants’ subjective rating of their contraceptive knowledge, a 15-question test consisting of multiple choice and true/false questions was administered to the participants. Figure 2 shows the test scores, specifically the number of questions correct, on the contraceptive knowledge test of each participant using the raw data displayed in Appendix B.

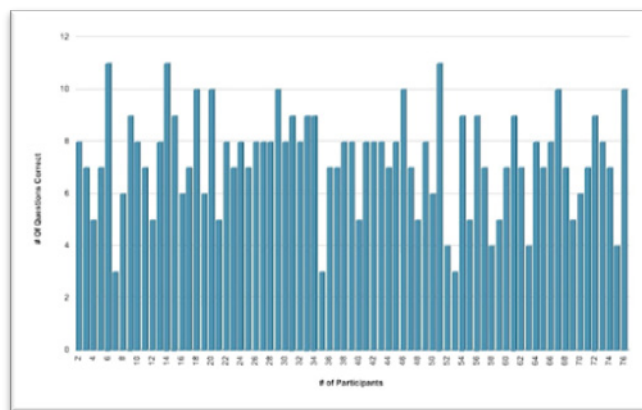


Figure 2. Contraceptive Knowledge Test Scores.

As seen in Figure 2, the quantity of the data gathered is too large and complex to analyze sophisticatedly. In order to analyze and discuss the data results as best as possible, the arithmetic mean of the test scores was once again calculated. The arithmetic mean is especially beneficial when working with a large group of data as it allows for each value in the dataset to be accounted for.

To calculate the arithmetic mean of the contraceptive knowledge test scores, the following formula was implemented:

$$\left(\frac{\text{The total sum of all test scores}}{\text{The total number of participants}} \right)$$

The calculation revealed that the average test score of all 76 participants is 49%. In order to have a complete understanding of what an average test score of 49% means in terms of contraceptive knowledge, the typical academic grading system of the United States was utilized.

Table 3. United States Academic Grading System.

Letter Grade	Scale (Percentage)
A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
F	0% - 59%

In accordance with the United States academic grading system, an average test score of 49%, situated between the scale percentage of 0% - 59%, is considered as receiving an academic letter grade of an “F”. “F” which stands for “fail,” denotes a failing grade. Since 49% is a failing grade under the United States academic grading system, this clearly indicates that most of the participants fail to demonstrate sufficient or high levels of contraceptive knowledge.

The result of participants’ subjective rating of their contraceptive knowledge is especially important in relation to their objective knowledge test result. The results of Table 2 unveils that most of the participants (63.2%) perceived that they have some knowledge about contraception. Similarly, the arithmetic mean calculation of the raw data from Figure 2 revealed that the average contraceptive knowledge test scores of participants were 49%, a failing grade. This signifies that the results of participants’ objective knowledge (49%) differed significantly from their subjective rating (63.2%) of their contraceptive knowledge. In other words, participants did not have a sufficient understanding of contraceptives as they perceived so.

The results of the two sections provide statistical evidence that the inadequate sex education delivered in South Florida public schools impacted the awareness and knowledge of contraceptives among female teens ages 13-18 negatively as reported by the participants’ low scores. These results are akin to much of the previous literature which suggests that inadequate sex education negatively impacts one’s awareness and knowledge of contraceptives.

Conclusion

The cohort findings make apparent that the inadequate sex education delivered in South Florida public schools impacted the awareness and knowledge of teens ages 13-18 negatively as indicated by findings of teens disturbingly low levels of contraceptive awareness and knowledge. Teens' low level of awareness and knowledge about contraceptives may partially reflect the strong emphasis on the standards of abstinence-only education that prevailed in Florida schools for years. The analysis of inadequate sex education delivered in South Florida public schools has shown that there are several consequences associated with not educating our teens with medically accurate information on contraception. Instead, a shift to a more comprehensive sex education curriculum has the potential to increase contraceptive awareness and knowledge of future generations.

Limitations

There were certain limitations that developed over the course of the study that must be addressed in order to have a better interpretation of the findings and the validity of the research. Much of these limitations stem from the current environment of remotely conducted research due to the ongoing coronavirus pandemic. Due to the above parameters, the collection of the quantity of data of this research was limited. The participant was unable to collect a wide array of data results as preferred due to the restrictions presented by remote research where data collection is dependent solely on online marketing rather than face-to-face marketing. As a result, the researcher had to discover means in piquing the interests of individuals in taking the survey. The limits in the quantity of data collected may skew the findings of the research, altering the accuracy and usefulness of the data. If more data were harnessed, the research would be much more precise and meaningful. Another limitation the researcher faced was ensuring the accuracy of the participants' objective knowledge test results due to the issue with academic integrity in an online testing environment. As the tests were conducted virtually with no proctoring, there was no way to ensure the authenticity of participants' test results. Participants may be apt to cheat due to their concern over negative evaluation—the need for approval and test anxiety—thus affecting the validity of the test results in representing participants' authentic knowledge of contraceptives. Additionally, sex education is not the only factor that cultivates the contraceptive awareness and knowledge of youth; peers, parents, the media, and other outside sources are among many factors that may also need to be considered. Consideration of these external sources is key in ensuring the accuracy of the research's result in conveying the purpose of the research.

Implications

The results of this study can serve as a framework for healthcare professionals and policy makers to address concerns over the current sex education curriculum implemented in South Florida, proposing initiatives to improve the curriculum. To ensure the curriculum is successful in improving the overall health and well-being of the youths, educators and policymakers will set out to reform the current sex education system through a joint effort, establishing funds and resources for sex education programs to be more adequate and accessible. Additionally, federal, state, and local policymakers may be geared towards implementing a more comprehensive sex education rather than abstinence-only sex education with the expectations of adolescents to remain abstinent. They will strive to dismantle barriers that prevent youths' access to medically accurate information on their sex and sexuality, reinforcing positive health behaviors.

Although the delivery of inadequate sex education in South Florida may seem of concern to only healthcare professionals, this research should in fact concern all young people across our nation. It is through adequate sex education that youths report essential knowledge and skills on their sexual and reproductive health and development. When sex education is inadequate—fails to include information about sexuality, contraception, and condoms—youths are less informed to make safe and responsible choices to protect their sexual health and well-being. Thus, resulting in higher rates of unplanned pregnancies and abortion rates.

Future Research

Future research can redirect the focus of this study away from solely middle and high school students (ages 13-18) to university students (ages 19-24) as well. Since university students constitute a larger portion of contraception users than teens, surveying a wider age demographic will allow for research findings to be more widely applicable and representative of the overall contraceptive awareness and knowledge of the female population. This serves as a steppingstone for policymakers toward better strategic and planning decisions in delivering sex and sexuality information. Additionally, future researchers can gauge the contraceptive awareness and knowledge of males to validate whether

the result and conclusion of this study can be applied and generalized to the male population as well. After all, few studies have been directed towards examining the current contraceptive knowledge and awareness of males, but prior research has indicated the importance of males in influencing the contraceptive decisions and practices of their female partners.

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