

Adolescents' Sources of Sexuality Education and their Sexual Beliefs and Practices: Rethinking the Analog and Digital Sources

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ABSTRACT

This study investigated the awareness level and sources of sex education, beliefs, and practices of adolescents across gender, location, and school type. Sources of sex education were categorized as either analog or digital. Guided by four research questions, a stratified random sample of 162 adolescents with the sampling frame constructed to ensure proportionate representation of adolescents was conducted. Data were collected using a 7-point Likert scale instrument, adolescents knowledge of Sexuality Education Questionnaire. The instrument was rigorously tested for face and content validity, been reviewed, and validated by experts in measurement and evaluation and health education. The Cronbach alpha reliability coefficient was 0.70, indicating moderate reliability on a pilot study of 50 adolescents. Descriptive and inferential statistics were employed to explore relationships. Results showed, the adolescents demonstrated a moderate and comparable level of awareness of sexuality education across groups. The results also showed that digital sources especially the internet had the greatest influence on the adolescents' sexual awareness, beliefs, and practices across gender, location, and school types. The findings underscore the need for educators and policymakers to create comprehensive and inclusive sex education programs in all schools that integrate both analog and digital sources to cater to the diverse needs of adolescents.

KEY WORDS: Adolescents; analog sources; awareness; beliefs; digital sources; practices; sex education

INTRODUCTION

As children enter puberty, their interest in sex increases, with most of them unprepared for the situation they are faced with, thus information from society is needed to clarify this situation for them (AHI, 2008). The level of sex education awareness among adolescents is deficient in most developing nations. This is evident by recent research conducted in the Eastern region of Nigeria that indicates a lack or moderate level of sex education among adolescents (Okah et al., 2023). In Zambia, similar research carried out by Mbizvo et al. in 2023 shows a high level of misinformation regarding sexuality and limited access to sexual and reproductive health (SRH) services and information (Mbizvo et al., 2023). The importance of adolescents gaining early and accurate knowledge of sexual education is highlighted by the statistics on teenage pregnancy, adolescent abortions, and the use of contraceptives among adolescents (Finkel and Finkel, 1985; Okah et al., 2023). Despite some advancements in recent times, there is a crucial need for comprehensive sexual education to empower adolescents to make well-informed decisions.

The society which encompasses the parents, teachers, peers, and the digital world are the channels through which the children can learn practices to shape their beliefs and help them gain control over their bodies as well as improve their

health and lives. Adolescents' sexual beliefs and practices are influenced by analog and digital sources found in their interactions with society. Humans are considered analog beings trapped in a digital world (Norman, 1998; Pool, 1997). The parents, teachers, and peers form the analog sources while the internet and social media form the digital sources. Research has shown that adolescents constantly want to receive sexual information from their parents, teachers, peers, and social media (Musa, 2020). In Africa for instance, it is believed that the teaching of sexuality matters would go a long way to reduce the incidence of unplanned and unwanted pregnancy and other sexuality issues (Zulu et al., 2019). Despite the eroding of traditional norms, values, and expectations, parents still exert enormous influence on children because they are the first group of people who set moral standards for their children as role models. In a typical Nigerian setting, it is assumed that the best way to prevent early sexual interest among adolescents is by keeping them almost completely or completely uninformed of sex and sexuality matters, sometimes until marriage night. In some rural Nigerian homes, children are shy to ask questions about sexuality, and those who do are often stigmatized, constantly, and closely watched (Musa, 2020). This occurs irrespective of the fact that sexual activities and sexuality are available in the media, schools, and among other groups in society and young people are constantly accessing

information on sexuality and reproductive health because of the interconnectivity of the world by internet and various social media sources. Adolescents need information not only about physiology and a better understanding of the norms that society has set for sexual behavior but also to acquire skills necessary to develop healthy behaviors and responsible decisions about sex (Kirby, 2011). At the core of sexuality education policy is the idea that there is a substantial need to support adolescents in delaying their sexual debut to reduce the number of sexual partners and to increase safer sex practices (Zulu et al., 2019), studies in Botswana, Nigeria, and South Africa have shown that sexuality education may contribute to overcoming the challenges of adolescents' SRH that is faced by other African countries (Naezer et al. 2017).

The digital world is a world of electronic technology through which humans communicate. This research defines the analog space as all the humans - parents, teachers, and peers that the adolescents can relate with to get information about sexuality education, while the digital space is the world of the internet, social media, and all electronic devices. This study seeks to evaluate the level of sexual education awareness among adolescents and the various avenues through which they obtain this information, whether from analog or digital sources. The investigation was carried out among adolescents in Southern Nigeria as was done earlier in Eastern Nigeria, to determine the overall awareness of sex education among them and considering factors such as gender, location, and school types. In addition, the study aims to examine whether their knowledge sources (analog or digital) influence their decisions and adherence to safe practices.

LITERATURE REVIEW

The adolescent period occurs between the age range of 10 and 19 years during which the adolescents go through stages of exploring and transforming of their physical and emotional states. The period is characterized by secondary sexual growth, changes in hormonal secretion, emotional, cognitive, and psychosocial development, and engagement in risky behaviors for example substance abuse, intentional and unintentional injuries, and unprotected sex, that puts them at risk of unwanted pregnancy and/or contracting sexually transmitted infections. Nearly half of the world's population which is 6.2 billion people comprises adolescents and young people and 85% of this group of people are from developing countries (WHO, 2014).

Adolescents usually experience sexual feelings and can react by engaging in sexual intercourse which may be oral or anal sex. Some deny their sexual feelings by engaging intensely in non-sexual pursuits; others can have socially acceptable intercourse through early, sometimes pre-arranged marriages (WHO, 2014). Research carried out in Nigeria by Idonije et al. (2011) revealed that 57.7% male and 26% female students from their sample size of 690 and 814 male and female students respectively were sexually active at the time of the study.

About 17% of the male students had their sexual debut at age 9, 33% had theirs at 10–14 years and 37% at 15–18 years. For the female students, 55.1% had their sexual debut between the ages of 15 and 18 whereas only 28.5% had their first sexual intercourse at <15 years old. Odimegwu et al. (2002) found out in a study carried out in Nigeria that adolescents with low parental support were more sexually active than those who with more parental support. In Greece, Tsitsika et al. (2014) reported that out of 1,074 adolescents (14–16 years), 21.8% had experienced sexual intercourse with a male/female ratio of 3/1 ($p < 0.001$). Females that had poor educational and cultural backgrounds with little parental with little or no parental support tend to experience sexarche at a younger age.

Early sexual debut among adolescents has been linked to several negative outcomes which include:

1. Low educational attainment
2. Unplanned pregnancy. Adolescent pregnancies may be accompanied by increased levels of mortality and morbidity which may be a result of less antenatal care and delayed intrapartum care due to the stigma attached to adolescent pregnancy.
3. Sexually transmitted infections, including HIV, are included. About 84 million persons are currently infected with HIV and about 38 million people are living with the virus (UNAIDS, 2022).

AIDS is currently the number one cause of death among adolescents in Africa, and a second leading cause of adolescent deaths worldwide with sub-Saharan Africa having the highest number of deaths. (UNICEF, 2019). 1.9 million people are estimated to be living with HIV in Nigeria which accounts for a prevalence of 1.4%. Among 0–14 years, HIV prevalence is approximately 0.2% while that of adolescents in Nigeria is 3.5% which is the highest among countries in West and Central Africa. Badru et al. (2020) in their study in Akwa Ibom, reported 72% of 1,818 adolescents are aware of HIV, although awareness was higher among those who reside in the urban areas than adolescents in the rural areas.

Adolescents have been said to initiate and perform sexual activity early with many not having the right knowledge, which results in many unplanned pregnancies, miscarriages, or induced abortions (Murro et al., 2021). At the core of sex education policy is the idea that there is a substantial need to support adolescents to increase safer sex practices (Zulu et al., 2019). Adolescent pregnancy, induced abortions, and HIV/AIDS infection in Nigeria have become major problems because of adolescents' sexual activity. Girls between ages 15 and 16 give birth every year and 95% of these pregnancies occur in developing countries (WHO, 2014). In rural areas, 32% of teenagers from public and private schools have given birth, compared with 10% in urban areas (NPC, 2014). Adolescents get information from either the analog or digital world and this information should help them acquire the skills necessary to engage in responsible decision-making about sex (Kirby, 2011; Marta Reis et al., 2011; Olowu et al., 2023).

The task of all education stakeholders, administrators, teachers, and parents is to ensure that sexuality education is fully taught in our secondary schools and that digital sources are safe places to get information (Obiekea et al., 2013). There is the fear of adolescents getting information from the digital world where there may be no restrictions on the information they dabble into.

Adolescents are the parents of the future, and their health will be a determinant of the health of their families and generations to come. Moreover, the behavioral patterns and attitudes that they develop during their teens will influence their capability to guide their offspring. If they have children before they are sufficiently mature, they may jeopardize their health and well-being as well as their children's health.

Parents, teachers, and the media have a unique position in the education on the sexuality of their adolescents because they are the agents of socialization and for parents, the saying goes that "charity begins at home." The perception of parents is very important in motivating adolescents to improve their SRH. The result of a study conducted in Kenya showed one of the perceived barriers to contraceptive use by adolescents is their parental approval (Kinaro, 2013). Robinson et al. (2017) demonstrated in their study that many parents consider sex education to be both important and relevant to their children and that it needs to be a collaborative process between families and schools while some parents consider their children's sexuality education to be their responsibility. Afifi et al. (2008) opined that parents are generally shy and embarrassed to talk about sexuality because some of them are unsure about the right timing to approach their children and are afraid that they may not have adequate knowledge and thus misinform their children. Biddlecom et al. (2009) in their study concluded that programs that would improve adolescents' SRH should include different levels of parental involvement.

The exposure to sex education by teachers has been shown to affect secondary school students (Ogunsanmi et al., 2016), especially when blended with culture and school curriculum.

A study on how sources of sexual information relate to adolescents' beliefs about sex was carried out by Amy et al. (2000) and they found that analog sources (of which parents and peers) were the most common sources of sexual information for the adolescents. This result is contrary to the study by Afifi et al. (2008) who discovered that parents had little influence on adolescents' knowledge of sex education. Amy et al. (2000) also found out that though mass media, one of the digital sources was an important contributor to adolescents' sexual knowledge, the sexual information from the analog and digital sources varied and affected them differently. In all the cases, the adolescents identified their parents especially mothers to be the highest influence on their sexual education. There were also significant differences in media as a source of sexual knowledge concerning gender in favor of females.

Studies have been conducted to determine the factors that influence adolescents' sexual beliefs and sexual practices

as well as their sources of information (Reina et al., 2010; Musa, 2020; Ehiaghe and Barrow, 2022) but these studies have been with conflicting results and at different places and times globally. This study was to find out how the analog and digital sources informed and influenced adolescents' sexuality education, sexual beliefs, and practices concerning gender, location, and school type in Delta State Nigeria. Three research questions guided this study.

Research Questions

1. Are adolescents aware of the concept of sexuality education in Delta state secondary schools?
2. Are there significant differences in adolescents' awareness of sexuality education by gender, location, and school types?
3. Will there be major differences in adolescents' sources of sexuality education (whether analog and digital) by gender, location, and school type?
4. Will the analog or digital source of sex education influence adolescents' beliefs and practices?

METHODOLOGY

A cross-sectional design was employed to examine the relationships between analog and digital sources of sex education and adolescents' awareness and beliefs about sexuality education. A stratified random sample of 162 adolescents across different gender, location, and school type participated in the study. The sampling frame was constructed to ensure proportionate representation of adolescents from eight strata with each stratum carefully constructed to represent specific combinations such as rural public-school males and females; rural private-school males and females; urban public-school males and females; and urban private-school males and females. Data were collected using a 7-point Likert scale instrument adolescents knowledge of Sexuality Education Questionnaire. The instrument was rigorously tested for face, content, and construct validity, as well as reliability, using a pilot study with a separate sample of 50 adolescents. The Cronbach alpha reliability coefficient was 0.70, indicating moderate reliability. The instrument was also reviewed and validated by experts in measurement and evaluation and health education. Descriptive statistics were used to summarize the data, while inferential statistics, including t-tests and Chi-square tests, were applied to explore the relationships between analog and digital sources of sex education and adolescents' awareness level on sex education.

FINDINGS

Research Question 1

Are adolescents aware of the concept of sexuality education in Delta State secondary schools?

Table 1 presents the mean and standard deviation for each item, providing an overall measure of the respondents' perception of awareness.

Table 1: Descriptive statistics showing the adolescents awareness of sexuality education among secondary school students in Delta State

Items	n	Mean	Standard deviation
I am aware of the concept of sexuality education	162	5.81	1.380
I have received formal education on the topic of sexuality in school.	162	4.31	2.381
My awareness of sexuality education has been influenced by discussions with my peers	162	4.31	2.062
I actively seek out information related to sexuality education	162	3.46	1.975
I believe that understanding sexuality education is important for my well-being	162	3.59	2.060
I feel confident discussing sexuality topics with adults	162	4.23	2.140
I actively engage in conversations about sexuality with my parents	162	4.07	2.042
Overall mean	162	4.25	2.006
Midpoint value		4.00	

The mean represents the average rating given by the respondents for each item, while the standard deviation shows the level of variation in the responses. In this case, a benchmark of 4 is given, which can serve as a reference point for evaluating the awareness level. Looking at the table, we can observe that the item “I am aware of the concept of sexuality education” has the highest mean score of 5.81. This indicates that, on average, the respondents consider themselves to be highly aware of the concept of sexuality education.

For the item “I have received formal education on the topic of sexuality in school,” the mean score is 4.31. This suggests that, on average, the respondents have received some level of formal education on sexuality in school, but there may be room for improvement. Both the items “My awareness of sexuality education has been influenced by discussions with my peers” and “I feel confident discussing sexuality topics with adults” have the same mean score of 4.31. This indicates that, on average, the respondents perceive their awareness of sexuality education and their confidence in discussing sexuality topics with peers and adults to be at a moderate level.

The item “I actively seek out information related to sexuality education” has a mean score of 3.46, which suggests that, on average, the respondents have a relatively lower inclination to actively seek out information on this topic. Similarly, for the item “I believe that understanding sexuality education is important for my well-being,” the mean score is 3.59. This indicates that, on average, the respondents recognize the importance of understanding sexuality education for their well-being, but there may be room for further awareness and understanding. Finally, the item “I actively engage in conversations about sexuality with my parents” has a mean score of 4.07, suggesting that, on average, the respondents

have a moderate level of engagement in conversations about sexuality with their parents.

Overall, the mean and standard deviation score is 4.25 ± 2.006 . Since the mid value is 4, it shows that the students are aware of the concept of sexuality education, but the awareness is moderate. Therefore, in answer to research question 1, adolescents are moderately aware of sexuality education. These findings provide insights into the awareness level of sexuality education among secondary school students in Delta State. While there are areas where the respondents indicate relatively higher levels of awareness, there are also areas for improvement. These results can guide future interventions and strategies to enhance awareness and education on sexuality among students in Delta State.

Research Question 2

Are there significant differences in the overall awareness of adolescents on sexuality education by gender, location, and school types?

Table 2 contains information on the mean, standard deviation, t-value, degrees of freedom, significance (2-tailed), and mean difference.

For the variable “Gender,” the mean awareness level among male students is 29.4828, with a standard deviation of 5.56064. Among female students, the mean awareness level is 29.9615, with a standard deviation of 6.54918. The t-value is -0.47 , with 160 degrees of freedom and a significance level of 0.639. The average disparity between male and female students is -0.4788 . According to these findings, there is no notable difference in the level of consciousness among students regarding sexuality education based on their gender.

In terms of the variable “Location,” the mean level of awareness among students in rural areas is 30.3452, with a standard deviation of 6.61596. Conversely, the mean level of awareness among students in urban areas is 29.1923, with a standard deviation of 5.70044. The t-statistic is 1.184, with 160 degrees of freedom and a significance level of 0.238. The average difference between students in rural and urban areas is 1.15293. As per these outcomes, there is no significant difference in the awareness level of students regarding sexuality education based on their location.

For the variable “School Type,” the mean awareness level among students in private schools is 30.1059, with a standard deviation of 6.78939. Among students in public schools, the mean awareness level is 29.4416, with a standard deviation of 5.49998 with t-value 0.68 and a significance level of 0.498. The mean difference between students in private and public schools is 0.66432. Based on the findings, there is no statistically significant difference in students’ awareness of sexuality education depending on their school categorization.

On consideration of the calculated t-values and levels of significance, it is apparent that there is no significant difference in students’ awareness of sexuality education in Delta State

Table 2: Adolescents' awareness of sexuality education by gender, location, and school types

Variable	n	Mean	SD	df	T-test	Sig. (2-tailed)	Mean difference
Gender							
Male	58	29.4828	5.5606	160	-0.470	0.639	-0.4788
Female	104	29.9615	6.5491				
Location							
Rural	84	30.3452	6.6159	160	1.184	0.238	1.1529
Urban	78	29.1923	5.7000				
School type							
Private	85	30.1059	6.7893	160	0.68	0.498	0.6643
Public	77	29.4416	5.4999				

based on gender, location, and school types. These outcomes indicate that students' awareness of sexuality education remains consistent across these variables. Furthermore, the results from the first research question reveal that students possess a moderate level of awareness. Consequently, when combining the findings from research questions one and two, it can be concluded that irrespective of gender, location, and school categorizations, the level of awareness of sexuality education remains moderately consistent.

Research Question 3

Will there be major differences in adolescents' sources of sexuality education (whether analog and digital) by gender, location, and school type?

Table 3 demonstrates that the sources of sexuality education among secondary school students in Delta State vary based on gender, location, and school type. The mean values offer insight into the average assessment provided by students for each source of sexuality education knowledge, favoring digital sources. Female students, those in urban areas, and attending public schools exhibited a higher level of knowledge acquisition through digital sources compared to their counterparts. The mean scores reflect the extent of agreement or disagreement, with a midpoint or benchmark of 4. In terms of gender and school types, the overall means of 4.19 and 4.15, respectively, surpassed the midpoint of 4.00; whereas the overall mean for location of 3.99 fell below the midpoint of 4.00.

Furthermore a Chi-square table was conducted to determine the statistical significance of these difference as in Table 4.

Using the Chi-square test, significant differences were found for gender and school types, but no significant difference was found for location as in Table 4.

Research Question 4

Will the source of sex education influence adolescents' beliefs and practices?

In Table 5, the average of 4.87 surpasses the midpoint of 4, indicating that adolescents generally perceived sexuality

Table 3: Adolescents' sources of sexuality education

Sources	Gender		Location		School types		Average X
	Male	Female	Urban	Rural	Public	Private	
Analog	3.95	3.64	3.27	3.52	3.53	3.96	3.65
Digital	4.57	4.60	4.66	4.52	4.59	4.53	4.57
Average	4.19w		3.99		4.15		4.11
Mid-value	4.00						

education to have a significant impact on their beliefs and safe practices. Furthermore, most adolescents showed that digital sources ($X^2 = 4.54 > 4.00$) held greater influence on them compared to analog sources ($X^2 = 3.81 < 4.00$).

DISCUSSION

This study has unveiled the level of awareness and sources from which adolescents in Delta State, Nigeria, acquire information regarding sexuality education. The respondents exhibited a moderate level of awareness about sexuality education, with mean scores of 4.25 surpassing the midpoint value of 4.00. This can be attributed to the reception of information from teachers, peers, and parents (analog sources), as well as the Internet and social media (digital sources). These findings align with the conclusions drawn by Kirby (2011), Marta Reis et al. (2011), Musa (2020), and Olowu et al. (2023), who observed that adolescents acknowledge the significance of obtaining information from both analog and digital platforms to facilitate responsible decision-making regarding sexual matters. Furthermore, most adolescents in this study concurred that acquiring knowledge about sexuality education is crucial for maintaining safe practices and beliefs. This finding contradicts the results of Okah et al. (2023) and Mbizvo et al. (2023), whose studies revealed a lack of awareness among adolescents regarding sexuality education.

Regarding gender, although no significant difference was found, descriptive results of this study indicates that female adolescents exhibit a higher level of understanding of sex education compared to males as was also observed by Musa (2020) and AHI (2011). This trend appears to be culturally influenced, particularly in Africa, where females tend to experience early pregnancies or marry at a younger age than males, corroborating the World Health Organization's (WHO) report of 2014. Furthermore, interviews with the adolescents showed that the females more than males were more interested in discussing and finding out information about sex because of their sexual orientations and the experiences they get at puberty such as menstruation. They get information from both analog and digital sources and those who get information through digital sources are more exposed to sexual information.

Another finding of this research was that no significant difference was found between rural and urban students' awareness of sexuality education. However, the descriptive shows that the rural students had slightly higher awareness than the urban students which is consistent with a study conducted

Table 4: Chi-square test showing adolescents' sources of sexuality education

Source	Gender			Location			School type		
	Male	Female	Chi-square	Rural	Urban	Chi-square	Public	Private	Chi-square
Analog	25	38	0.0002*	38	34	0.0556**	27	36	0.00018*
Digital	33	66		46	44		50	49	
Total	58	104	162	84	78	162	77	85	162

P* < 0.05, P** > 0.05

Table 5: Digital and analog sources and adolescents' beliefs and practices

Items	Mean	Standard deviation	Source of influence
Getting sexuality education is important for my safe practice	4.83	2.002	General=X = 4.87
Getting sexuality education is important for my sound beliefs	4.91	1.917	
Information on sex education from my parents influenced my beliefs and safe practices more	4.09	2.215	Analog X=3.81
Information on sex education from my teachers influenced my beliefs and safe practices more	3.52	2.062	
Information on sex education from my peers influenced my beliefs and safe practices more	3.94	2.054	
Information on sex education from media, TV, and radio influences my beliefs and safe practices more	3.63	2.009	Digital X=4.54
Information on sex education from the internet and social media influences my beliefs and safe practices more	5.44	1.626	

by Jahan (2019) that delved into the disparities in sex education information between rural and urban students. Jahan observed that rural students demonstrated a stronger inclination towards utilizing digital platforms, such as Facebook, to access information compared to their urban counterparts. This preference can be attributed to the cultural constraints that impede access to traditional sources among rural students, prompting them to seek information through the most easily accessible digital medium, namely Facebook. The outcomes of this study starkly contrast with the conclusions drawn by Blinn-Pike (2008), whose research on the differences in sex education instruction between rural and urban schools revealed that rural students were not as exposed to sex education as their urban counterparts. Furthermore, these findings contradict the statistics provided by NPC (2014), which indicated that 32% of teenagers in rural areas have experienced pregnancy due to a lack of adequate sex education, in comparison to 10% in urban areas where knowledge of sexuality education is more prevalent. Therefore, the results of this study suggest that students in rural areas of Southern Nigeria have a comparable level of awareness regarding sexuality education with the urban students. Furthermore, interviews with the students

showed that the female students from rural areas that had access to phones spend a lot of time on the internet surfing for information on sexuality than other things. Although this has its negative implication, it did make them more knowledgeable.

The findings of this study indicate although, no significant difference was found, descriptive statistics shows that students attending public schools generally have lower levels of awareness compared to their peers attending private schools. This aligns with the conclusions drawn by Reina et al. (2010), who found that a significant proportion of low-income public-school students lack adequate information about contraception, leading to serious SRH issues. Neglecting reproductive health can result in a heightened risk of challenging transitions to parenthood, long-term consequences, and early pregnancy or motherhood, all of which can hinder academic success and economic potential. In essence, regardless of gender, location, or school type, female, rural, and private school adolescents displayed greater knowledge levels compared to their counterparts, although the disparities in awareness were not statistically significant in any of the scenarios.

Furthermore, findings on the adolescents' sources of sexuality education show that digital sources tend to have a greater impact on informing and influencing the awareness of sexuality education, sexual beliefs, and practices in adolescents compared to analog sources. This aligns with the research conducted by Afifi et al. (2008), in contrast to the studies carried out by Amy et al. (2000).

However, in this study, regardless of whether the source was analog or digital, there was no significant difference in location. However, significant differences were seen along gender and school type lines, with females and public-school students showing a preference in favour of digital sources. There are also notable negative effects of the digital sources on the adolescents if left unguided and recommendations are made based on such.

CONCLUSION

This study provides valuable insight into the level of awareness and sources of information on sexuality education among adolescents in Delta State, Nigeria. The respondents with a mean score of 4.25 showed a moderate understanding of sexuality education. This awareness can be attributed to the combination of information from analog sources (teachers, peers, and parents) and digital sources (Internet and social media) but slightly more from digital sources.

The results highlight the importance of both analog and digital sources in helping adolescents' understanding of sexuality education. The concurrence among most adolescents in this study on the significance of getting knowledge from multiple sources underscores the need for a comprehensive approach to sexuality education.

The findings emphasize the importance of combining analog and digital sources to help adolescents understand sex education. The study's results have implications for the development of comprehensive and inclusive sexuality education programs that cater to the diverse needs of adolescents. Sex education through both analog and digital sources can qualitatively shape adolescents' beliefs and practices by providing comprehensive and engaging sex education programs; thus, adolescents can develop a robust understanding of sex education and make informed decisions about their sexual health and sexual habits such as using contraceptives when the need arises or prevent adolescent sex. Also, while analog sources provide a structured and controlled environment for learning, digital sources offer convenience, accessibility, and anonymity. However, both sources have their limitations, and it is necessary to consider these when developing and implementing sex education programs. By understanding the strengths and limitations of analog and digital sources, educators and healthcare professionals can create comprehensive and effective sex education programs that meet the diverse needs of adolescents.

RECOMMENDATION

1. The government and education authorities should enforce measures to ensure adolescents irrespective of gender, location or school type get appropriate and adequate information from both analog and digital sources
2. There should be mass sensitization at the grassroots and at town halls of local government areas for adolescents on safe sex practices by the government and education authorities
3. Sex education should begin in schools and at home before the adolescent age so that before that age, they would have gotten adequate knowledge of safe practices from both analog sources before they begin to have access to digital sources
4. Adolescents should not be allowed access to certain sites using digital means, but parental guidance should be activated on their mobile phones. And both teachers and parents should monitor the adolescents with mobile phones.

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REFERENCES

Action Health Incorporated (AHI). (2011). *Policy Brief: A Promise to Keep Empowering Out-of-School Adolescent Girls in Lagos-Nigeria*. Nigeria:

- Action Health Incorporated.
- Affi, T.D., Joseph, A., & Aldeis, D. (2008). "Why can't we just talk about it?" Observational study of parents' and adolescents' conversations about sex. *Journal of Adolescent Research*, 22(1), 3-31.
- Amy, B., Michael, H., Martin, F., & Amy, J. (2000). How sources of sexual information relate to adolescents' beliefs about sex. *American Journal of Health Behavior*, 33(1), 37-48.
- Badru, T., Mwaisaka, J., Khamofu, H., Agbakwuru, C., Adedokun, O., Pandey, S.R...& Torpey, K. (2017). HIV comprehensive knowledge and prevalence among young adolescents in Nigeria: evidence from Akwa Ibom AIDS indicator survey. *BMC Public Health*, 20, 45.
- Biddlecom, A., Awusabo-Asare, K., & Bankole, A. (2009). Role of parents in adolescent sexual activity and contraceptive use in four African countries. *International Perspectives on Sexual and Reproductive Health*, 35(2), 72-81.
- Blinn-Pike, L. (2008). Sex education in rural schools in the United States: Impact of rural educators' community identities. *Sex Education*, 8(1), 77-92.
- Ehiaghe, A., & Barrow, A. (2022). Parental knowledge, willingness, and attitude towards contraceptive usage among their unmarried adolescents in Edo State-Nigeria. *International Journal of Reproductive Medicine*, 23, 8533174.
- Finkel, L., & Finkel, S. (1985). Sex education in high school. *Society*, 23(1), 48-52.
- Idonije, B.O., Oluba, O.M., & Otamar, H.O. (2011). A study of knowledge, attitude, and practice of contraception among secondary school students in Elpoma, Nigeria. *Journal of Physics Conference Series*, 2, 22-27.
- Jahan, R. (2019). *Knowledge of Sex Education among Urban and Rural Adolescents: Educational and Counselling Psychology*. doi: 10.13140/RG.2.2.21321.49761. Available from: https://www.researchgate.net/publication/334645182_knowledge_of_sex_education_among_urban_and_rural_adolescents [Last accessed on 2025 Mar].
- Kinaro, J.W. (2013). *Perceptions and Barriers to Contraceptive use among Adolescents: A Case Study of Nairobi*. University of Nairobi Research Archives. Available from <https://erepository.uonbi.ac.ke/handle/11295/43838> [Last accessed on 2023 May 05].
- Kirby, D. (2011). *The Impact of Sex Education on the Sexual Behavior of Young People*. New York: United Nations, Department of Economics and Social Affairs.
- Mbizvo, M., Kasonda, T., Muntalima, N., Rosen, J., Inambwae, S., Namukonda, E., Mungoni, R., Okpara, N., Phiri, C., Nachela, C., & Kangale, C. (2023). Comprehensive sexuality education linked to sexual and reproductive health services reduces early and unintended pregnancies among in-school adolescent girls in Zambia. *BMC Public Health*, 23(1), 348.
- Murro, R., Chawla, R., Pyne, S., & Venkatesh, S.E. (2021). *Adding It Up: Investing in the Sexual and Reproductive Health of Adolescents in India*. New York: Guttmacher Institute.
- Musa, A. (2020). Sex education in Nigeria: attitude of secondary school adolescents and the role of parents and stakeholders. *Journal of Educational Development*, 1(1), 1-30.
- Naezer, N., Rommes, E., & Jansen, W. (2017). Empowerment through sex education? Rethinking paradoxical policies. *Sex Education*, 17(6), 712-728.
- National Population Nigeria, & ICF International. (2014). *Nigeria Demographic and Health Survey 2013*. Abuja, Nigeria: NPC and ICF International.
- Norman, D. (1998). *The Invisible Computer*. Cambridge, MA: MIT Press.
- Obiekea, P., Ovri, F., & Chukwuma, E. (2013). Sexual education: An intervention and social adjustment programme for youths in secondary education in Nigeria. *Africa Research Review*, 7(1), 28322-28339.
- Odimegwu, C.O., Solanke, L.B., & Adedokun, A. (2002). Parental characteristics and adolescent sexual behavior in Bida LGA of Niger State, Nigeria. *African Journal of Reproductive Health*, 75(3), 135-138.
- Ogunsanmi, O., Afolabi, I., Olaoye, T., & Ajike, S. (2016). Sexuality education in Christian homes: Knowledge and perception of young people in Ife Central Local Government Osun State. *International Journal of Science and Research*, 5(2), 697-700.
- Okah, P., Onalu, C., Aghedo, G., Iyiani, C., & Abonyi, S (2023). Factors associated with the premarital sex among adolescents and the need for introduction of functional sex-education in secondary schools in Ebonyi

- state, Nigeria. *Cogent Social Sciences*, 9(1), 2220234.
- Olowu, F.O., Amoo, P.O., Oyekale, R.A., Okunola, D.R., Agboola, V., Akingbade, O., & Popoola, O.P. (2023). Awareness and perceived benefit of sexuality education among adolescents in selected secondary schools in Ile-Ife. *African Journal of Health Nursing and Midwifery*, 6(3), 74-85. doi: 10.52589/AJHNM-MNBEZS0E
- Pool, R. (1997). *Beyond Engineering: How Society Shapes Technology*. New York: Oxford University Press.
- Reina, M., Ciaravino, H., Liovera, N., & Castelo-Branco, C. (2010) Contraception knowledge and sexual behavior in secondary school students. *Gynecological Endocrinology*, 26(7), 479-483.
- Reis, M., Ramiro, L., Matos, M.G., & Diniz, J.A. (2011). The effects of sex education in promoting sexual and reproductive health in Portuguese university students. *Procedia-Social and Behavioural Sciences*, 29, 477-485. doi: 10.1016/j.sbspro.2011.11.266
- Robinson, K.H., Smith, E., & Davis, C. (2017). Responsibilities, tensions, and ways forward: Parents' perspectives on children's sexuality education. *Sex Education*, 17(3), 333-347.
- Tsitsika, A., Andrie, E., Deligeorgiou, E., Tzavara, C., Sakou, I., Greydanus, D.,... & Bakoula, C. (2014). Experiencing sexuality in youths living in Greece: Contraceptive practices, risk-taking and psychosocial status. *Journal of Pediatric and Adolescent Gynecology*, 27(4), 232-239.
- UNAIDS. (2022). *Global AIDS Update 2022*. Available from: <https://aidsinfo.unaids.org/UNAIDS2022> [Last accessed on 2024 May 05].
- UNICEF. (2019). *Adolescent Deaths from AIDS Tripled Since 2000*. Available from: https://www.unicef.org/media/media_86384.html
- World Health Organization. (2014). *Unsafe Abortion: Global and Regional Estimates of the Incidences of Unsafe Abortion and Associated Mortality in 2000*. Geneva: World Health Organization.
- Zulu, M.J., Blystad, A., Haaland, M.E.S., Michelo, C., Haukanes, H., & Moland, K.M. (2019). Why teach sexuality education in school? Teacher discretion in implementing comprehensive sexuality education in rural Zambia. *International Journal for Equity in Health*, 18, 116.