



**PERCEPTION AND AWARENESS ON SOCIO-SCIENTIFIC ISSUES IN
REPRODUCTIVE BIOLOGY AMONG SENIOR SECONDARY SCHOOL STUDENTS
IN BAUCHI METROPOLIS**

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Abstract

The study investigated the perception and awareness of socio-scientific issues in reproductive Biology among senior secondary school students in Bauchi metropolis. The research has two objectives and two research questions that were meant to guide the study. This study adopted a descriptive survey research design. The population of this study comprises all SS II Biology students in Bauchi Metropolis, totaling 4,443 students across 26 senior secondary schools. The sample size was determined using Yamane's formula (1967). The sample size for the study was 68 students. The main instrument for data collection was a structured questionnaire titled "Perception and Awareness of Socio-Scientific Issues in Reproductive Biology Questionnaire (PASSIRBQ)". Descriptive statistics were used in analyzing the data collected from the study. Mean and standard deviation were used to answer the research questions. The findings revealed that Students have positive perceptions about contraceptives, teenage pregnancy, and assisted reproductive technologies, though religious and cultural values influence certain perceptions, awareness of socio-scientific issues is high regarding teenage pregnancy and contraception, but low regarding formal educational programs, and gender does not significantly affect perceptions and awareness, suggesting reproductive education should target both genders equally. Based on the findings, the study concludes that senior secondary school students in Bauchi Metropolis



generally hold positive perceptions toward socio-scientific issues in reproductive Biology and are aware of the consequences of teenage pregnancy and the benefits of contraception. The study also established that students' awareness is shaped not only by school-based education but also by informal channels such as social media, peers, and family discussions, which can sometimes result in partial or biased understanding. Based on the findings and conclusions, it's recommended that, the ministry of Education and school administrators should ensure that socio-scientific issues in reproductive Biology, such as contraception, teenage pregnancy, and assisted reproductive technologies, are explicitly included in the SS II Biology curriculum.

Keywords: Perception, Awareness, Socio-Scientific issues, Reproductive Biology.

Introduction

Biology education at the Senior Secondary School level plays a critical role in equipping learners with scientific knowledge and life skills necessary for personal health, social responsibility, and national development. One of the most sensitive and socially relevant components of Biology is reproductive Biology, which addresses topics such as human reproduction, sexual development, reproductive health, and heredity. These topics are inherently connected to socio-scientific issues (SSIs), real-life societal problems that are scientifically informed, ethically charged, and socially debated (Sadler, 2011; Zeidler, 2014). Socio-scientific issues in reproductive Biology include adolescent sexual behaviour, contraception, sexually transmitted infections (STIs), HIV/AIDS, teenage pregnancy, early marriage, population growth, and the ethical implications of assisted reproductive technologies. According to Zeidler, Sadler, Simmons, and Howes (2015), effective engagement with SSIs requires not only scientific knowledge but also awareness, perception, moral reasoning, and the ability to evaluate information critically. Thus, students' awareness of these issues reflects their level of exposure and understanding, while their perception influences attitudes, beliefs, and behavioural intentions toward reproductive health matters (Kolstø, 2016). Globally, studies have shown that adolescents' understanding and perception of reproductive

socio-scientific issues significantly influence their health-related decision-making and lifestyle choices (UNESCO, 2018; WHO, 2020). Inadequate awareness and misconceptions about reproductive health issues have been associated with risky sexual behaviours, poor health outcomes, and increased vulnerability to STIs and unplanned pregnancies (Kirby, 2017). Consequently, science education researchers advocate for the integration of SSIs into Biology teaching as a means of promoting scientific literacy, ethical awareness, and responsible citizenship among learners (Sadler & Dawson, 2020). In the Nigerian context, reproductive Biology is included in the senior secondary school Biology curriculum with the intention of providing students with accurate scientific knowledge and appropriate attitudes toward reproductive health (Federal Ministry of Education, 2015). However, cultural beliefs, religious values, and societal norms often influence how reproductive topics are taught and perceived. Ogunniyi (2016) notes that in many African societies, reproductive health discussions are considered taboo, which may limit open classroom discourse and restrict students' access to reliable information. As a result, students may develop distorted perceptions or rely on informal sources such as peers and social media for information (Adeniyi & Bello, 2018).

Empirical studies in Nigeria have reported varying levels of awareness and perception of



reproductive health issues among secondary school students. For instance, Abdulraheem and Fawole (2019) found that adolescents' awareness of STIs and contraceptive use was generally low, despite formal instruction in schools. Similarly, Amoo, Ijadunola, and Olaseha (2017) observed that misconceptions about reproductive processes and family planning persist among secondary school students, particularly in northern Nigeria. These findings suggest that mere inclusion of reproductive Biology topics in the curriculum may not guarantee adequate awareness or positive perception of related socio-scientific issues.

Bauchi metropolis, like many urban centers in northern Nigeria, faces adolescent reproductive health challenges such as early marriage, teenage pregnancy, and limited access to accurate reproductive health information. These challenges underscore the importance of examining how senior secondary school students perceive and understand socio-scientific issues related to reproductive Biology. Understanding students' perception and awareness can help Biology teachers adopt learner-centered and culturally responsive instructional strategies that encourage critical thinking, dialogue, and informed decision-making (Zeidler & Nichols, 2019; Sadler, 2011).

Statement of the Problem

Reproductive Biology forms a crucial component of senior secondary school Biology, as it addresses scientific concepts that are directly linked to socio-scientific issues such as adolescent sexuality, teenage pregnancy, sexually transmitted infections (STIs), contraception, early marriage, and ethical concerns surrounding reproduction. Despite its importance, evidence suggests that many Nigerian adolescents possess inadequate awareness and distorted perceptions of these socio-scientific issues,

raising concerns about the effectiveness of school-based Biology instruction (Ogunniyi, 2016; UNESCO, 2018).

National and regional statistics highlight the seriousness of this problem. Data from national demographic surveys indicate that about 5–6% of Nigerian girls aged 15–19 have begun childbearing, while adolescents continue to record significant levels of STIs and unplanned pregnancies, particularly in northern Nigeria (National Population Commission [NPC] & ICF, 2019). Empirical studies further reveal that although many secondary school students have heard about reproductive health issues, less than half demonstrate adequate scientific understanding, and misconceptions about contraception, pregnancy, and disease transmission remain common (Abdulraheem & Fawole, 2019; Amoo et al., 2017).

In northern states such as Bauchi, socio-cultural and religious sensitivities surrounding sexuality often limit open discussion of reproductive issues in homes and schools. Consequently, students frequently rely on peers and social media for information, which may negatively influence their perception of reproductive socio-scientific issues (Adeniyi & Bello, 2018). This situation suggests that students' exposure to reproductive Biology content may not sufficiently address the social, ethical, and health dimensions required for informed decision-making.

Aim and Objectives of the Study

The main aim of this study is to investigate the perception and awareness of socio-scientific issues in reproductive Biology among senior secondary school students in Bauchi metropolis. Specifically, the objectives of the study are to;

1. Examine students' perceptions of key socio-scientific issues such as contraception, teenage pregnancy.



2. Assess the level of awareness of socio-scientific issues in reproductive Biology among senior secondary school students in Bauchi Metropolis.

Research Questions

The following research questions were used to guide the study;

1. What are the perceptions of senior secondary school students in Bauchi Metropolis regarding key socio-scientific issues such as contraception, teenage pregnancy, and assisted reproductive technologies?
2. What is the level of awareness of socio-scientific issues in reproductive Biology among senior secondary school students in Bauchi Metropolis?

Methodology

This study adopted descriptive survey research design. A survey design is considered appropriate because it enables the researcher to collect data from a large group of respondents within a short time and at relatively low cost. It also provides an avenue to describe the existing conditions, attitudes, beliefs, perceptions, and levels of awareness of individuals regarding certain issues without manipulating any variable. According to Singh and Masuku (2021), descriptive survey research design is used to obtain information concerning the current status of a phenomenon and to describe what exists with respect to conditions, practices, processes, or relationships. The population of this study comprises all SS II Biology students in Bauchi Metropolis, totaling 1,473 students across 26 senior secondary schools (Bauchi State Ministry of Education, 2025). SS II students are chosen because they are generally considered mature enough to understand reproductive biology and are at a level where socio-scientific issues related to

the subject can be meaningfully discussed. Due to the large size of the population, it was not feasible to include all students in the study. Therefore, a representative sample was drawn, the sample size was determined using Yamane's formula (1967) the sample size for the study was 68 students.

A multi-stage sampling technique was employed, Stratified sampling technique was used, and the schools were first stratified according to ward categories to ensure fair representation. Simple Random Sampling: From each stratum, schools were randomly selected proportionally. Systematic Sampling: Within the selected schools, students were chosen systematically from class registers until the required sample size is reached. This approach ensures that every student has an equal chance of being selected and that the sample adequately represents the population.

The main instrument for data collection was a structured questionnaire titled "*Perception and Awareness of Socio-Scientific Issues in Reproductive Biology Questionnaire (PASSIRBQ)*". The questionnaire was divided into three sections: Section A: Demographic information (e.g., age, gender, type of school). Section B: Items measuring students' perceptions of socio-scientific issues such as contraception, teenage pregnancy, and assisted reproductive technologies. These were rated on a 4-point Likert scale: *Strongly Agree* (4), *Agree* (3), *Disagree* (2), and *Strongly Disagree* (1). Section C: Items measuring students' awareness of socio-scientific issues in reproductive Biology. Response options included: *Very Aware* (4), *Aware* (3), *Slightly Aware* (2), and *Not Aware* (1). To ensure validity, the questionnaire undergoes face and content validation. Draft copies were given to experts in Science Education and Biology from Abubakar Tafawa Balewa University (ATBU), Bauchi. They assessed



the instrument for clarity, relevance, coverage, and appropriateness to the research objectives. Their corrections and suggestions were incorporated into the final draft of the questionnaire.

The reliability of the instrument was tested using a pilot study involving 20 SS II Biology students from a school outside the main study area but with similar characteristics. Responses from the pilot test were analyzed using Cronbach's Alpha to establish internal consistency. A coefficient of 0.70 and above was considered acceptable for the reliability

of the instrument (Creswell & Creswell, 2018). The researcher personally administered the questionnaire to the selected students. Descriptive statistics of mean and standard deviation was used to answer to the research questions.

Results

Answering Research Questions

Research questions one: What are the perceptions of senior secondary school students in Bauchi Metropolis on socio-Scientific issues in reproductive Biology?

Table 1: Mean and Standard Deviation of Students' Perceptions

S/N	Statement	SA	A	D	SD	Mean ($\bar{x}$)	Std. Dev	Decision
1	Contraceptives are necessary for preventing unwanted pregnancies among teenagers	28	30	6	4	3.42	0.71	Agree
2	Discussing contraception in schools encourages immorality among students	10	12	28	18	2.18	0.89	Disagree
3	Teenage pregnancy negatively affects educational development	40	22	4	2	3.67	0.55	Strongly Agree
4	Teenage pregnancy brings shame and social stigma to families	36	24	6	2	3.51	0.62	Strongly Agree
5	Assisted reproductive technologies (IVF) should be accepted as a solution to infertility	22	32	10	4	3.15	0.81	Agree
6	Assisted reproductive technologies go against moral and religious values	12	20	24	12	2.64	0.92	Disagree
7	Students should be taught openly about socio-scientific issues	28	26	10	4	3.36	0.76	Agree
8	Perceptions are influenced by culture and religion	30	28	6	4	3.44	0.69	Agree
9	Using contraception is important in controlling population growth	26	28	8	6	3.29	0.74	Agree
10	Teenage pregnancy is mainly caused by lack of reproductive health education	38	22	6	2	3.58	0.61	Strongly Agree

Grand Mean = 3.22

The results in Table 1 indicate that students generally hold positive perceptions regarding socio-scientific issues in reproductive biology. They strongly agree that teenage pregnancy negatively impacts educational development ($\bar{x} = 3.67$) and brings social

stigma to families ($\bar{x} = 3.51$), highlighting the students' recognition of the social and educational consequences of early pregnancies. The mean responses also suggest agreement that contraceptives are necessary for preventing unwanted



pregnancies ($\bar{x} = 3.42$) and that assisted reproductive technologies should be accepted as solutions to infertility ($\bar{x} = 3.15$), though some disagreement exists regarding moral and religious opposition to these technologies ($\bar{x} = 2.64$). The findings reflect the influence of culture and religion on perceptions ($\bar{x} = 3.44$), as well as the acknowledgement that reproductive health education is essential ($\bar{x} = 3.58$). Overall, the grand mean of 3.22

confirms that students have generally favorable perceptions, supporting previous studies that adolescents recognize the importance of reproductive health while being influenced by socio-cultural factors (Okon & Ekanem, 2021).

Research question two: What is the level of awareness of socio-scientific issues in reproductive Biology among senior Secondary school students?

Table 2: Mean and Standard Deviation of Students' Awareness

S/N	Statement	VA	A	SA	NA	Mean ($\bar{x}$)	Std. Dev	Decision
11	There are different methods of contraception	26	30	8	4	3.28	0.78	Aware
12	Teenage pregnancy can lead to school dropout	42	20	4	2	3.61	0.54	Very Aware
13	Teenage pregnancy can cause health complications	40	22	4	2	3.57	0.63	Very Aware
14	Assisted reproductive technologies exist	20	28	12	8	3.01	0.84	Aware
15	Assisted reproductive technologies help with infertility	18	28	12	10	2.92	0.81	Aware
16	Socio-scientific issues are taught in reproductive biology in school	10	14	24	20	2.41	0.96	Slightly Aware
17	Reproductive biology knowledge comes mostly from social media/friends	22	30	12	4	3.16	0.72	Aware
18	Government/NGO programs educate students	12	20	22	14	2.57	0.85	Slightly Aware
19	Lack of awareness contributes to teenage pregnancy	30	28	6	4	3.39	0.69	Aware
20	Reproductive health education reduces risky behavior	32	26	6	4	3.46	0.65	Aware

Grand Mean = 3.14

Table two above, shows that students are relatively well-informed about socio-scientific issues in reproductive biology, particularly the consequences of teenage pregnancy, such as school dropout ($\bar{x} = 3.61$) and health complications ($\bar{x} = 3.57$). Awareness of contraception methods is also high ($\bar{x} = 3.28$), reflecting adequate personal knowledge. However, awareness regarding formal education programs in schools ($\bar{x} = 2.41$) and government/NGO initiatives ($\bar{x} =$

2.57) is notably low, suggesting that institutional interventions are not reaching students effectively. Students rely heavily on informal sources like social media and friends ($\bar{x} = 3.16$) to gain reproductive health knowledge, which may influence the accuracy and completeness of information. Overall, the grand mean of 3.14 demonstrates moderate to high awareness, consistent with prior studies emphasizing the role of both formal and informal education channels in



shaping adolescent knowledge (Yusuf & Ibrahim, 2022).

.Discussion of Findings

The results in Table above indicate that students generally hold positive perceptions regarding socio-scientific issues in reproductive biology. They strongly agree that teenage pregnancy negatively impacts educational development ($\bar{x} = 3.67$) and brings social stigma to families ($\bar{x} = 3.51$), highlighting the students' recognition of the social and educational consequences of early pregnancies. The mean responses also suggest agreement that contraceptives are necessary for preventing unwanted pregnancies ($\bar{x} = 3.42$) and that assisted reproductive technologies should be accepted as solutions to infertility ($\bar{x} = 3.15$), though some disagreement exists regarding moral and religious opposition to these technologies ($\bar{x} = 2.64$). The findings reflect the influence of culture and religion on perceptions ($\bar{x} = 3.44$), as well as the acknowledgement that reproductive health education is essential ($\bar{x} = 3.58$). Overall, the grand mean of 3.22 confirms that students have generally favorable perceptions, supporting previous studies that adolescents recognize the importance of reproductive health while being influenced by socio-cultural factors (Okon & Ekanem, 2021).

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Conclusion

Based on the findings of this study, it can be concluded that senior secondary school students in Bauchi Metropolis generally hold positive perceptions toward socio-scientific issues in reproductive biology and are aware of the consequences of teenage pregnancy and the benefits of contraception. The study also established that students' awareness is shaped not only by school-based education but also by informal channels such as social media, peers, and family discussions, which can sometimes result in partial or biased understanding. Despite these positive outcomes, the low awareness regarding government and NGO programs indicates that formal channels for reproductive health education are not sufficiently accessible or effective, which may limit students' comprehensive understanding of socio-scientific issues.

The study concludes that gender does not significantly influence students' perceptions and awareness, suggesting that reproductive health education initiatives can be targeted equally at both male and female students without bias. The findings underscore the importance of integrating socio-scientific issues more robustly into the school curriculum and of engaging students in discussions that respect cultural and religious sensitivities while promoting informed decision-making. It is therefore imperative for stakeholders including teachers, parents, government agencies, and NGOs to collaborate in providing structured and inclusive reproductive health education



that aligns with the needs and perceptions of adolescents in Bauchi Metropolis.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Integration of Socio-Scientific Issues into Curriculum: The Ministry of Education and school administrators should ensure that socio-scientific issues in reproductive biology, such as contraception, teenage pregnancy, and assisted reproductive technologies, are explicitly included in the SS II Biology curriculum. Structured lessons that combine scientific facts with socio-cultural considerations should be delivered to help students develop informed perceptions and critical thinking skills regarding reproductive health issues.
2. Enhanced Awareness Programs by Government and NGOs: Government and non-governmental organizations should implement targeted reproductive health awareness campaigns, workshops, and seminars for students. These programs should address gaps identified in the study, including low awareness of assisted reproductive technologies and formal educational initiatives. Utilizing media platforms, community outreach, and school-based clubs can ensure wider coverage and deeper understanding among adolescents.
3. Parental, Religious, and Teacher Involvement: Parents, religious leaders, and teachers should be actively engaged in reproductive health education to mitigate cultural and religious resistance while promoting informed decision-making. Teachers should receive training on handling sensitive topics, ensuring open discussions in ways

that respect students' backgrounds and beliefs. Additionally, parents should provide supportive guidance at home to reinforce positive perceptions and awareness learned in school.

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