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Substance use and sexual cognitive orientation as predictors of academic performance among pregnant adolescents in Nigeria



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ABSTRACT

Despite extensive research on the subject, the persistent prevalence of unwanted pregnancies and school dropouts among teenage girls remains a significant concern. This study aims to elucidate the complex dynamics underlying substance use, adolescent psycho-cognitive predispositions, and academic achievement among pregnant teenagers in selected metropolitan areas of Nigeria. Using a cross-sectional study design, we enrolled 400 consenting pregnant teenagers from three chosen states in Nigeria (Niger state, Lagos, and Port Harcourt) between January and April 2021, employing the snowball sampling technique. Data were collected through a validated self-administered questionnaire and subjected to analysis using Structural Equation Modeling with Smart-PLs to illustrate path analysis representing the dynamics of the phenomenon. The findings revealed that substance use, including alcohol ($\beta=-0.224$, $p<0.001$) and psychoactive drugs ($\beta=0.211$, $p<0.001$), significantly influenced sexual-cognitive orientation, encompassing knowledge/perception ($\beta=-0.229$, $p<0.001$) and attitude ($\beta=-0.171$, $p<0.001$). Furthermore, sexual-cognitive orientation ($\beta=0.443$, $p<0.001$) and attitude ($\beta=-0.168$, $p<0.001$) significantly predicted academic performance. Substance use with abuse potential was found to impair the cognitive ability to make decisions regarding safe sex, and sexual activity negatively affected the academic performance of pregnant students. This study highlights the need for a multi-level approach, addressing individual and environmental factors, to facilitate positive lifestyle modifications related to sexual cognitive orientation and harm reduction, ultimately improving the academic performance of pregnant teenagers.

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1. Introduction

Teenage pregnancies have increased school dropout rates and female illiteracy in developing countries and sub-Saharan Africa for decades. According to global reports, approximately 16 million teenage girls between the ages of 15 and 19 give birth annually (Otegbayo et al., 2023). In addition, there are 2.5 million births to girls under

16 in developing regions (WHO, 2018). Teenage girls account for about 11% of the global birth rate (Asnong et al., 2018). The prevalence of teenage pregnancy is associated with sexual and health behaviors, such as early sexual activity, unprotected sex, substance use, early substance debut, multiple sexual partners, and non-contraception use, all of which can expose adolescents to sexually transmitted diseases (STDs) and unplanned pregnancy (Kanku and Mash, 2010; Kaphagawani and Kalipeni, 2017; Vincent and Alemu, 2016).

According to the 2019 Nigeria Demographic Health Survey, 65 percent of adolescent females aged 15 or older have never used contraception (NPCN, 2019). In addition, almost 95% of these births occur in developing nations (Asnong et al., 2018). Nigeria has the highest childbirth prevalence in Sub-Saharan

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Africa, contributing to a substantial number of newborns in Nigeria. Stella (2019) reported that approximately 23% of young Nigerian females aged 15 to 19 give birth yearly. Rapid population growth in sub-Saharan Africa due to high birth rates is a global public health concern. More worryingly, adolescents make up most of the population in developing countries, particularly in sub-Saharan Africa and Nigeria (WHO, 2018). Moreover, female adolescents in sub-Saharan Africa and Nigeria are among the most disadvantaged and marginalized in terms of access to education, sexual health services, and social opportunities (Nmadu et al., 2020). Teenage girls and women in this region are vulnerable to child marriage, domestic violence, unemployment, poverty, gender inequality, and economic discrimination (PI, 2019; Nmadu et al., 2020).

In Nigeria, adolescent pregnancy reduces social and economic opportunities for adolescent girls and the female population. Pregnant students are usually expelled or suspended from school for having a negative influence on other students (Nmadu et al., 2010; Onyeka et al., 2011). In addition, those who do pursue education are likely to be ridiculed or isolated by students and teachers. These hostile learning environments may therefore affect their motivation to strive for academic excellence, increasing the likelihood of dropping out of school. Low socioeconomic status, low attendance due to prenatal obligations, and lack of family or school support also contribute to school dropout among these girls (Nmadu et al., 2010; Onyeka et al., 2011). This has consistently made women second-class citizens and exacerbated gender inequality, as women lack the social and economic skills to compete in the same arena as men (Nmadu et al., 2010; Onyeka et al., 2011).

The use of substances with abuse potential among adolescents has increased over the years, leading to various sexual risk practices. Health and cognitive consequences are widespread among this population. Globally, more than four in ten young adults under 25 use substances with potential abuse. Reportedly, the critical risk for initiation of substance use is between early (12-14 years) and late (15-17 years) adolescence (UNODC, 2018). Many teenagers use drugs as a coping mechanism for social and psychological challenges (Mesic et al., 2013; Dembo et al., 2014; Obadeji et al., 2020). In Nigeria, one in four women uses drugs with abuse potential (UNODC, 2018). The prevalence of substance use varies between the southern (13.8%-22%) and northern (10%-14%) regions of the country, and some of the most used substances are alcohol and psychoactive drugs (tramadol, codeine, morphine), which are often found in cough syrups. In addition, women (2.5%) use cough syrups for non-medical interventions more than men (2.3%); this suggests that more females abuse substances than males in Nigeria (UNODC, 2018).

Substance use and abuse are mainly attributed to peer influence, parental influence, enhancement of

sexual performance, and impairment of the cognitive ability to make safe decisions (Snyder and Smith, 2015; Yin, 2019; Adejoh et al., 2020). The diminishment of cognitive capacity concerning prudent decision-making renders adolescent females vulnerable to engaging in unprotected sexual activities, thereby increasing the risks of contracting sexually transmitted infections and experiencing unplanned pregnancies (Snyder and Smith, 2015; Yin, 2019; Adejoh et al., 2020). The prevalence of teen pregnancy and substance use underpins the need to promote safer sex widely, encourage contraceptive use, and take harm reduction measures. In addition, the mental, physical, and emotional changes associated with adolescent pregnancy, academic responsibility, and limited individual, social, and environmental support may increase adolescent students' reliance on substance use as an escape route from their challenges (Snyder and Smith, 2015; Bugbee et al., 2019).

While pregnant teenage girls are socially, individually, and environmentally disadvantaged in many ways, particularly by unequal access to sexual health services, which is likely one of the reasons they are more likely to engage in risky sexual behavior and unplanned pregnancies, research also suggests that use of substances with abuse potential puts teenage girls at risk for risky sexual behavior (Asante et al., 2014; Lo et al., 2019). In addition, empirical studies suggest that sexual knowledge and the ability to respond appropriately based on available information may influence teenage girls' academic performance (Asante et al., 2014; Lo et al., 2019). Sutarso et al. (2016) found that substance use (drugs and alcohol) impaired teenage girls' ability to make safe decisions about sexual activity. The study suggests that impaired cognitive abilities affect safe decision-making and increase the risk of unprotected sex and multiple sexual acts (Sutarso et al., 2016). Sutarso et al. (2016) and Negesa (2018) emphasized that sexual (romantic) dating or engagement could distract adolescents, especially girls, from focusing on their education (Negesa, 2018).

This empirical evidence suggests efforts in this direction can significantly reduce sex-related morbidity and mortality caused by teenage pregnancies and abortions and, most importantly, improve women's literacy, employability, and empowerment. To do so, however, it is necessary to understand the role of substance use on sexual and health behaviors, as well as sexual behaviors, on the academic success of pregnant female students to develop effective interventions to help them reach their desired academic potential. This study uses human ecological theory to illuminate the dynamics of substance use, sexual health behaviors, and academic success.

The human ecological theory is a complex theory that adopts multiple interplays of factors (Darling, 2007). It offers a framework to understand the forces associated with substance use and its potential risk outcomes (Johnson, 2008; Jones et al.,

2017). This theory explains how substance use among teenage girls influences their sexual cognitive orientation (Knowledge, perception, and attitudes regarding sexual matters). It further explains how sexual cognitive orientation (Knowledge, perception, and attitudes regarding sexual matters) can influence the academic performance of pregnant teenagers.

According to Bronfenbrenner's ecological theory, exposure to substance use and risk of abuse may occur through the microsystem, macrosystem, mesosystem, exosystem, and chronosystem, and these often occur within the individual, social, and environmental levels (Rowlands, 2010; Odimegwu and Mkwanaenzi, 2016). Emphatically, this theory suggests that individual characteristics such as exposure to substance use and potential for abuse can impair the cognitive ability of a person's response to sexual activities (Dockery et al., 2010; Sipsma et al., 2015).

Furthermore, the use of substances can lead to sexual misconduct, impaired reproductive Knowledge, lack of self-control, and poor sexual behavior (Dockery et al., 2010; Sipsma et al., 2015). In addition, social characteristics such as weak parental control and relationships, negative peer influence, gender-based violence, early marriages, gender superiority perception, and poverty are determinants of substance use and abuse (Dockery et al., 2010; Sipsma et al., 2015). On the other hand, environmental exposure such as poor neighborhoods, poor school infrastructure, lack of youth-friendly reproductive health services, absence of counseling services on sex education, and lack of confidentiality at clinics exacerbate the consequences of substance abuse on risky sexual practice, which may influence the cognitive ability to study (Dockery et al., 2010; Sipsma et al., 2015).

These environmental and individual disadvantages may affect sexual behavior in terms of knowledge and ability to make informed decisions about sexual practices. Impaired cognitive abilities resulting from substance use can make teens vulnerable to risky sexual and health behaviors, affecting their ability to manage their school responsibilities (Bugbee et al., 2019). Also, physiological changes due to pregnancy may exacerbate their experiences and affect their ability to study (Nnodim and Albert, 2016). Therefore, the lack of environmental, social, and individual support can worsen academic outcomes and make them vulnerable to dropping out.

However, empirical studies suggest that behavioral modification of sexual-cognitive orientation through enhanced sexual and reproductive health education, and enhancement of harm-reduction skills are likely interventions to halt the outcome of unwanted pregnancy on the academic performance of pregnant adolescent students (Stanard et al., 2010; Laser and Nicotera, 2011). Behavioral control can alter the perceptions of the personal and social consequences of substance use and abuse potential and boost self-efficacy.

Additionally, behavioral control could equally improve the academic outcomes of pregnant teenage students (Lanari et al., 2020). Therefore, this study aims to evaluate the effect of substance use on the sexual knowledge and attitudes of pregnant teenage students. It also endeavors to clarify the impact of sexual health and attitude on the academic performance of pregnant Nigerian adolescents.

While numerous studies conducted in Nigeria have identified school expulsion, suspension, early marriage, and poverty as prominent factors contributing to academic disruptions among pregnant students, there exist notable exceptions. A notable gap exists in the available data concerning the impact of substance use on the sexual health and attitudes of pregnant adolescent students, as well as the reciprocal influence of sexual and reproductive health and attitudes on their academic performance.

Despite the scarcity of comprehensive data and the alarming rise in the concurrent issues of substance abuse, teenage pregnancy, and school dropout among adolescent girls, it is imperative to prioritize research in this domain. Such research endeavors could shed light on the intricate interplay between substance use, sexual knowledge, attitudes, and the academic outcomes of pregnant students. This, in turn, can facilitate the identification of targeted social and behavioral interventions aimed at supporting pregnant students in Nigeria.

It is crucial to underscore that education is a fundamental human right, and it possesses the potential to liberate teenage mothers from the social and economic disadvantages they face. Consequently, adolescent pregnancy should never serve as a pretext for denying these young women their right to education.

2. Methodology

2.1. Study design and population

The cross-sectional study adhered rigorously to the principles outlined in the Declaration of Helsinki and received ethical approval from both the Ethics Committee (UM. TNC2/UMREC-529) of the University of Malaya, Kuala Lumpur, Malaysia, and the Federal Ministry of Health, Nigeria (STA/495/Vol/171. I.). Employing a cross-sectional research design, the study successfully recruited a total of 400 willing pregnant adolescents for participation. Data collection was executed through the utilization of a meticulously structured self-administered questionnaire.

The study specifically focused on older adolescent females, ranging in age from 15 to 19 years, who were confirmed as pregnant during the data collection period. The mean age of the respondents stood at 17.25 years (Standard Deviation = 1.30). The majority of the study cohort were in marital unions, while a minority remained unmarried. Those who were married resided with their respective spouses, whereas the unmarried individuals either lived with their parents or extended family

members. A noteworthy proportion of the respondents inhabited urban locales. It is important to note that all pregnant respondents were concurrently enrolled in educational institutions and participated in the study remotely from their homes. These educational institutions encompassed both public and private schools situated within the selected regions of investigation.

2.2. Sampling procedure and sampling

Participants in this study were recruited from distinct geographical regions in Nigeria, namely Lagos, Port Harcourt, and Niger State, over a duration spanning 8 to 16 weeks, commencing from January through April 2021. The selection of these specific regions was based on recommendations from the Ministry of Health and consultation with experts within Nigeria. Importantly, these three regions were chosen due to their capacity to represent the rich and diverse cultural heritage of the nation.

To navigate the sensitive nature of teenage pregnancy in Nigeria and the potential apprehension surrounding its disclosure, a purposive snowball sampling method was meticulously employed for participant identification. This method was deemed suitable given the circumstances. Moreover, the fear of stigmatization posed a significant barrier to the direct identification of eligible participants. Consequently, a referral-based approach was adopted to enlist pregnant teenagers in the study. Eligibility criteria necessitated participants to be pregnant, aged between 15 and 19 years, and concurrently enrolled in an educational institution.

Prior to data collection, informed written consent was thoughtfully presented to both the parents/guardians of the participants and the participants themselves. The administration of questionnaires followed the attainment of consent, and respondents were afforded ample time to complete the questionnaires. The study ultimately encompassed a total of 400 pregnant teenagers. The sample size determination adhered to the methodology outlined by [Krejcie and Morgan \(1970\)](#) and was calculated as $n=384$ with a 95% confidence interval. Given the nature of the survey study, the sample size was cautiously increased to 400 to account for potential non-responses.

2.3. Research instrument

In the study conducted by [Reinert and Allen \(2007\)](#), the measurement of alcohol use among participants was executed using the Alcohol Use Disorders Identification Test (AUDIT) screening tool. After undergoing expert validation and pilot testing, the items employed to operationalize the variables were streamlined to a total of nine (9).

Concurrently, the assessment of drug use and abuse potential was accomplished through the utilization of the Drug Use Screening Test (DUST) screening tool, as developed by [Skinner \(1982\)](#).

To evaluate the knowledge, perception, and sexual attitudes of pregnant teenagers, the Assessment of Sexual Knowledge (ASK) instrument, developed by [Galea et al. \(2004\)](#), was applied. Specifically, 20 items were employed to measure knowledge and perception, while 11 items were employed to assess sexual attitudes.

For the measurement of academic achievement, items were adapted from the works of [Montero-Marin et al. \(2011; 2014\)](#).

To ascertain the validity and reliability of the study instruments, the adopted items underwent a meticulous validation process, involving the compilation and submission of items to five experts in the respective fields. Items retained within the scales were reviewed by multiple experts specializing in the relevant subject areas.

In preparation for the main study, a pilot study, encompassing a test and retest phase, was conducted. Thirty consenting pregnant teenage students were administered the survey questions in one of the study locations, specifically Niger State. Following a two-week interval, the same survey questionnaires were once again administered to the same cohort of respondents at the same study location. Subsequently, responses were compared to assess internal consistency and the accuracy of the study instruments. The reliability index of Cronbach's alpha ($\alpha=0.72$) was applied to assess the items related to academic performance. In contrast, the kappa coefficient index was employed for items related to substance use (alcohol and drug abuse) and sexual cognitive orientation, given their dichotomous response nature (yes/no). The retained elements exhibited reliability coefficients ranging from 0.45 to 0.677.

2.4. Variables

In this study, demographic information encompassed marital status and educational level. Substance use was defined as the consumption of alcohol and psychoactive drugs with the potential for abuse. Alcohol use was assessed using a set of nine items. These items gauged the frequency of consumption, the ability to control consumption, the harm caused to oneself or others, the need for medical attention due to excessive consumption, cognitive disorientation resulting from consumption, and engaging in activities under the influence of alcohol. Six of these variables featured multiple-choice responses and were scored on a 0–5-point Likert scale, while the remaining three items utilized a dichotomous response format (1=Yes, 0=No), each assigned their respective scores. Similarly, the evaluation of psychoactive drug use and the potential for abuse was conducted using 21 items, all employing a dichotomous response format (1=Yes, 0=No). These items inquired about various aspects of drug use, including the use of unprescribed drugs, misuse of prescribed medications, seeking family help for drug-related problems, experiencing blackouts or flashbacks due to drug use, neglecting

family or school due to consumption, engaging in criminal activities to obtain drugs, exhibiting unusual behavior under the influence, committing unlawful acts under the influence, feeling remorse or regret for specific behaviors after drug use, disputes with partners over drug use, involvement in fights due to influence, arrests for illegal drug possession, and participation in treatment programs due to drug use. Sexual cognitive orientation, encompassing sexual knowledge, perception, and attitude, determines individuals' ability to respond appropriately to sexual and reproductive health matters based on available information. Sexual knowledge and perception variables consisted of items related to perceptions of contraceptive use, understanding of sexually transmitted infections, their symptoms and treatment measures, comprehension of the consequences of unsafe sex, knowledge of menstruation and puberty, and perceptions about pregnancy. Sexual attitudinal responses were assessed based on the ability to make informed decisions, such as personal accountability, readiness, and confidence in preventing unwanted pregnancies through safe sexual practices. The responses for sexual cognitive orientation employed a dichotomous format (1=yes, 2=no, and 0=I don't know), and each response was scored accordingly at its respective point.

Academic Performance was defined according to the definition and measure of [Montero-Marin et al. \(2011; 2014\)](#) to evaluate the academic performance of pregnant teenage students. Consequently, academic Performance contained questions such as cumulative grade point average (CGPA), ability to concentrate during studies, and number of subjects failed. Hence, responses to questions on CGPA were rated with a Likert scale of 1=<2.5, 2=2.5-3.5, and 3=>3.5. One of the questions on academic achievement was subjective in nature as it was related to personal perception that influenced the ability to concentrate during study. Therefore, a rating scale of 1=Always, 2=sometimes, and 3=never were used. Furthermore, the rating scale of 1=two or more, 2=one, and 0=none was applied in responses for subjects who failed.

2.5. Data analysis

Statistical analysis for this research was performed utilizing SPSS Version 23 and the Partial Least Square-Structural Equation Model (PLS-SEM) software. To begin, descriptive analysis was carried out to compute frequencies, means, and standard deviations.

Subsequently, Structural Equation Modeling (SEM) was employed to elucidate path analysis, revealing the intricate relationships between the dependent variable, which is academic achievement, and a set of independent variables, namely substance use (specifically alcohol and psychoactive drugs), as well as sexual orientation encompassing knowledge, perception, and attitude towards the response to sexual and reproductive health knowledge. This

approach allowed for a comprehensive examination of the interplay among these critical factors within the research framework.

2.6. Precede construct framework

Predisposing factors refer to individual-level attributes that promote or influence behavior, either before or during its occurrence. In the context of this study, the predisposing factors under examination were substance use, specifically focusing on alcohol and psychoactive drugs.

Reinforcing factors, on the other hand, pertain to environmental-level influences aimed at strengthening or discouraging the repetition of a particular behavior. In this study, sexual cognitive orientation, which encompasses sexual and reproductive health knowledge and attitude, was assessed as a reinforcing factor.

Enabling factors encompass the environmental attributes that facilitate action, competence, or the availability of resources required to engage in a specific behavior. Thus, initiatives aimed at enhancing behavioral competence can be achieved through programs, services, resource affordability, availability, accessibility, or the acquisition of new personal skills. In this study, the enabling factors encompassed sexual and reproductive health knowledge and attitude.

The behavior of interest in this study was described as decision-making related to safe sex practices and its impact on academic outcomes. [Fig. 1](#) visually illustrates the presentation of the PRECEDE meta-model, which encompasses these factors and their relationships.

[Fig. 1](#), a presentation of variables in the ecological assessment phase of the PRECEDE meta-model, shows the objectives of the study. It equally demonstrates the pathways between predisposing, reinforcing, enabling factors and academic achievement of pregnant teenagers.

3. Result

3.1. Demographic characteristics of respondents

[Table 1](#) presents the distribution of selected demographic variables for the participants. A larger proportion of pregnant teenagers were attending primary and secondary school at the time of data collection and a moderate proportion were at tertiary level. A significant proportion of the pregnant teenagers were married, while a moderate number of pregnant respondents were single.

Table 1: Frequency distribution of demographic characteristics

No.	Variable	Level	n	%
1	Level of education	Primary	140	35
		Secondary	158	39.5
		Tertiary	102	25.6
2	Marital status	Married	255	63.7
		Single	145	36.5

3.2. Substance use

The collective mean score for alcohol abuse in this study was calculated to be (M=8.35, SD=10.51). Notably, a substantial majority of pregnant

participants exhibited a low risk for alcohol abuse, while a smaller proportion indicated a high risk for alcohol abuse. Please refer to [Table 2](#) for a concise summary of these findings.

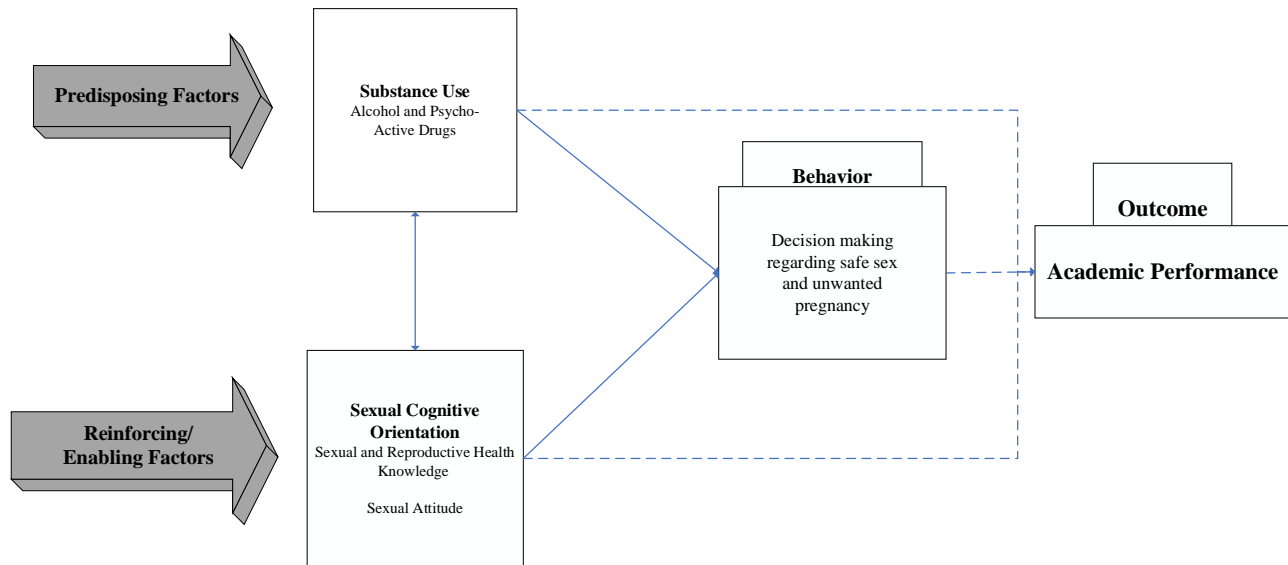


Fig. 1: Presents the linkages between the variables as adopted from the PRECEDE Framework and PRECEDE construct pathway

Similarly, the mean score for drug abuse among pregnant teenagers was found to be (M=8.35, SD=10.51). In the assessment of the risk associated with drug abuse, the results indicated that a significantly large portion of the participants, approximately 61.8%, manifested a low risk for drug abuse. In contrast, a moderate proportion, accounting for 38.3% of the participants, displayed a high risk for drug abuse. For a comprehensive overview of these findings, kindly consult [Table 2](#).

Table 2: Substance use and abuse potential

Variable	Level	n	%	M	SD
Drugs Use	Low	247	61.8	8.04	8.50
	High	153	38.3		
Alcohol Use	Low	316	79	8.35	10.51
	High	84	21		

3.3. Sexual cognitive orientation

The descriptive results for sexual cognitive orientation are described in [Table 3](#). The total mean score for perception, Knowledge was (M=8.83, SD=5.79) and for attitude was (M=4.70, SD=2.21). Apparently, the perception and knowledge of sexual reproductive health-related matters among pregnant teenagers was considered inadequate. Similarly,

sexual attitude towards a decision on safe sex and unwanted pregnancy was considered poor.

Table 3: Frequency distribution of sexual cognitive orientation score

Variable	Level	n	%	M	SD
Perception and knowledge	Inadequate (Negative)	197	49.3	8.83	5.79
	Adequate (Positive)	203	50.7		
Sexual attitude	Low (Negative)	252	63	4.70	2.21
	High (Positive)	148	37		

3.4. Relationship between variables using a structural model

Path analysis was used to assess the research hypotheses. Hence, the pathway model as presented in [Fig. 2](#) revealed that there was a significant relationship between the independent and dependent variables. The study affirms that substance use significantly predicted sexual cognitive orientation. Furthermore, there was a significant relationship between sexual cognitive orientation and the academic performance of pregnant students, as reported in [Table 4](#).

Table 4: List of relative paths for substance use, sexual cognition orientation, and academic performance

Constructs	β	SE	T-value	P-values
Alcohol Abuse -> Perception, Knowledge	-0.224	0.049	4.570	<0.001
Alcohol Abuse -> Sexual Attitude	-0.229	0.052	4.412	<0.001
Drug Abuse -> Perception, Knowledge	0.211	0.052	4.057	<0.001
Drug Abuse -> Sexual Attitude	-0.171	0.050	3.443	<0.001
Perception, Knowledge -> Academic Performance	0.443	0.443	11.067	<0.001
Sexual Attitude -> Academic Performance	0.168	0.171	3.912	<0.001

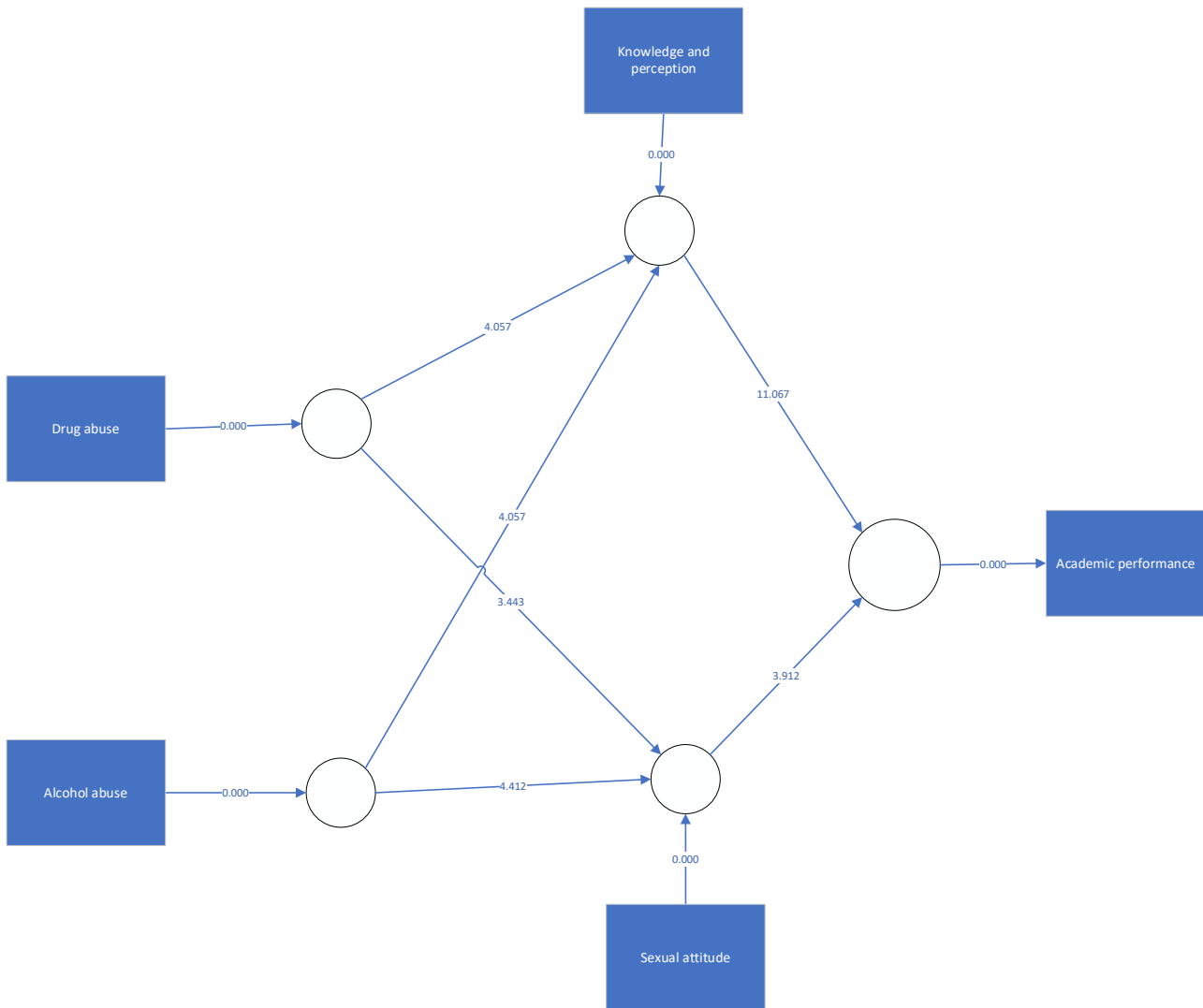


Fig. 2: Relative path model between dependent and independent variables

4. Discussion

Despite the extensive body of empirical research in this field, the ongoing prevalence of unwanted pregnancies and school dropout rates among adolescent girls remains a cause for significant concern. It is disconcerting to note that substance use, particularly with the potential for abuse, continues to rise among teenage girls in Nigeria, yet this specific demographic often receives inadequate attention. Therefore, this study was undertaken to investigate the influence of substance use on the cognitive aspects of sexuality and how these, in turn, impact the academic achievement of pregnant teenagers.

The findings of this study provide substantial support for the hypothesis that substance use, encompassing both alcohol and psychoactive drugs, can exert a discernible influence on sexual cognitive orientation, which includes perception, knowledge, and attitudes regarding sexual and reproductive matters, among pregnant teenage students. Furthermore, it was found that the sexual cognitive orientation of these pregnant respondents significantly predicted their academic achievement. Descriptive results revealed that a substantial

proportion of pregnant teenagers, approximately 61% and 79%, displayed a low inclination toward substance use, encompassing psychoactive drugs and alcohol. These results stand in contrast to reports by the UNODC (2018) and the study conducted by Otorkpa (2019), both of which suggested that teenage girls in Nigeria tend to exhibit higher rates of substance abuse compared to their male counterparts. This discrepancy may be attributed to the unique circumstances of pregnancy or socioeconomic factors. Additionally, the study found that the sexual cognitive orientation of the majority of pregnant respondents was notably deficient. This finding aligns with existing literature that has consistently highlighted low levels of sexual knowledge and attitudes among teenage girls, rendering them vulnerable to sexually transmitted diseases, unplanned pregnancies, and repeated pregnancies (Jewkes et al., 2009; Kanku and Mash, 2010; Akanbi et al., 2016).

Furthermore, analysis of SEM revealed that substance use had a statistically significant impact on sexual cognitive orientation. The academic performance of the pregnant respondents was also significantly predicted by the sexual cognitive orientation of the pregnant respondents. In

comparison, [Asante et al. \(2014\)](#) found that having drunk alcohol and alcohol consumption during pregnancy were independently associated with risky sexual behavior (ever having had sex, not using a condom, multiple sexual partners, and survival sex). And use of psychoactive drugs such as marijuana and cigarettes was associated with sex, multiple sexual partners, and non-condom use ([Asante et al., 2014](#)). Consistently, [Baru et al. \(2020\)](#) indicated that alcohol influence increases susceptibility to risky sexual behavior, suggesting that alcohol influence decreases attention to safe sexual practices, alters rational decision-making, and increases risk-taking. [Baru et al. \(2020\)](#) found that 29.6% of teenage girls who consumed alcohol prior to sexual intercourse were found to be approximately three times more likely to engage in risky sexual behaviors than their peers ([Baru et al., 2020](#)).

Subsequently, this study evaluated the impact of sexual-cognitive orientation on the academic performance of pregnant teenagers. The result affirmed that sexual-cognitive orientation significantly influenced the academic performance of pregnant respondents. This finding is consistent with that of empirical studies from Italy and Scotland respectively. The study from Italy by [Lanari et al. \(2020\)](#) suggested that sexually active teenage girls often experience difficulty in balancing sexual activeness with academic commitments, given that this often distracted them from concentrating on their studies. Teenage girls who demonstrated inadequate sexual health knowledge were prone to unsafe sex, exposing them to frequent sexual activeness. Apparently, these sexually active girls found it challenging to balance sexual activeness with academic responsibilities and this negatively influenced their academic grades ([Lanari et al., 2020](#)). Subsequently, [Negesa \(2018\)](#) also believed that sexual heterosexual engagement and non-use of contraceptives significantly predicted academic performance. According to [Negesa \(2018\)](#), sexually active and pregnant students struggled to balance sexual engagement with academic concentration, affecting their commitment to academics. Similarly, [Kumar et al. \(2013\)](#) affirmed that adolescent students with average academic performance did not engage in any form of sexual activity, while students with poor academic performance engaged in sexual activity. [Kumar et al. \(2013\)](#) further highlighted poor sexual health knowledge as a key determinant of sexual attitudes among the respondents. This suggests the importance of sexual health and attitude on academic performance. Sexual attitude especially in case of sexual engagement and non-use of contraceptives can predispose teenagers to academic risks by reducing their motivation to learn, as well as their feeling of connectedness to academic performance. Although the literature studies compared to the present study confirmed that substance use can influence sexual cognitive orientation, sexual cognitive orientation can influence adolescents' academic performance. It is important to note that the results of these studies

were based on nonpregnant teens. However, these results can also be applied to pregnant girls, as both pregnant and nonpregnant girls have something in common, namely the teenage phase, which makes them vulnerable to peer pressure, risky health, and sexual behaviors.

[Lanari et al. \(2020\)](#) and [Parkes et al. \(2010\)](#) echoed that the best way to promote academic performance for teenage girls is by ensuring that they are empowered with the right sexual reproductive health knowledge information. Similarly, [Malga et al. \(2018\)](#) and [Osaikhuwomwan and Osemwenkha \(2013\)](#) suggested the adoption of strategies focused on changing the perception and behavior of the at-risk population. Reestablishing that strategy with a focus on improving behavior at the individual and environmental level might boost the ability to make positively informed decisions on sexual health matters ([Osaikhuwomwan and Osemwenkha, 2013](#); [Malga et al., 2018](#)).

Moreover, the current study assumes that poor access to reproductive health information and services, inadequate access to contraceptive methods, affordability of alcohol and psychoactive drugs, unfavorable distance from home to school, and lack of sex education curriculum in schools may have influenced psycho-cognition. These factors may heighten the outcome of risky health behaviors, unwanted pregnancy, and academic performance ([Barmao-Kiptanui et al., 2015](#); [Sarkar and Ray, 2017](#); [Nabunya et al., 2021](#)). Even previous researchers have proposed the implementation of a life skill curriculum and comprehensive sexuality education into the national education curriculum ([Weatherley et al., 2012](#); [Phongluxa et al., 2020](#)).

This validates the urgent need to intensify efforts to enhance behavioral change intervention, as delay in action might continue to negatively interfere with the academic achievement of pregnant students ([Nash et al., 2019](#)) and limit life opportunities ([Phongluxa et al., 2020](#)). Programs focused on behavior-change intentions such as early sexual education in school curricula, accessibility and affordability to contraceptives, harm reduction programs, and a ban on the purchase of substances with abuse potential by teenagers with punitive actions are some of the approaches that can motivate behavioral competence towards safe sexual practice. Furthermore, this approach can be sustainable in minimizing the outcome of unwanted pregnancy and promoting academic achievement among pregnant teenagers.

5. Conclusion and recommendations

The use of substances with the potential for abuse can significantly impair the cognitive abilities required for making informed decisions regarding safe sexual practices. Conversely, engaging in sexual activity can adversely affect the academic performance of pregnant students. The findings derived from this study underscore the necessity for a comprehensive, multi-level approach that

encompasses factors at both the individual and environmental levels for teenage girls. Such an approach can reciprocally facilitate positive lifestyle modifications in terms of sexual cognitive orientation and harm reduction, ultimately leading to improvements in the academic performance of pregnant teenagers.

Furthermore, it is imperative to direct increased efforts toward educating teenagers about knowledge, perception, and attitudinal responses to sexual and reproductive health matters. This should be achieved through the provision of easily accessible and affordable sexual healthcare services, regardless of marital status. Additionally, the introduction of early reproductive health education, aimed at acquainting young girls with their reproductive systems and functions, should be integrated into school curricula. Social workers play a vital role in designing and implementing intervention programs and reaching out to the targeted population.

Considering the significant impact of financial barriers on academic achievement, particularly for women in developing countries like Nigeria, there is an urgent need for the government to institute policies that are supportive and inclusive of women. Measures should be taken to restrict teenagers' access to substances with penalties for non-compliance. Social intervention programs should also be established to educate and raise awareness about the risks associated with substance use and abuse among teenagers. These programs can be implemented at the school or community level, or a combination of both, to ensure inclusivity. A universal preventive approach may be suitable for all teenagers, while a targeted approach may be more appropriate for at-risk individuals, with intensive rehabilitation focusing on those who are addicted.

Moreover, policies that provide financial and emotional support to pregnant teenagers and teenage mothers with limited financial resources can serve as motivation for them to pursue further education. This support can significantly contribute to their academic achievements and overall well-being. It is also recommended that future research explores effective measures for reintegrating teenage mothers into the educational system, as this could offer a sustainable solution to improving the academic achievements of pregnant teenage students in Nigeria.

6. Strengths

This study extends previous research on the determinants of teenage pregnancy in Nigeria and introduces additional individual and social factors that may determine the academic outcomes of pregnant young girls in Nigeria. The analysis provides a unique strength that measures the severity of substance use and abuse potential related to risky sexual behavior among pregnant students. This finding can inform policy through the

implementation of strategic social interventions using a prevention and recovery approach to address the problem of addiction and improve the sexual and reproductive Knowledge of the target population. Similarly, compared to other studies, it uncovered possible explanations for the high teenage pregnancy rate and other factors that may affect already pregnant girls, especially those who remain in school in Nigeria. This research has also generated evidence-based recommendations for policymakers seeking to reduce the prevalence of teenage pregnancy and school dropout in Nigeria, as policies and strategies that improve social inclusion and behavior change approaches can increase female literacy and competence. This can help reduce teenage pregnancies, repeat pregnancies, and school dropouts in Nigeria.

7. Limitation

Since the present study was a cross-sectional study with a quantitative design, it may not have been possible to demonstrate the cause-and-effect relationships of the variables studied. A longitudinal study might be more effective in examining the relationship. In addition, we only studied pregnant adolescent students who were present and did not include pregnant students who dropped out of school. A comparison of respondents would have given the study a more solid basis for argument. The study used a non-probability sample, so we cannot generalize the result to all target groups in Nigeria.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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