

Spatial and Environmental Antecedents of Prevalence of Teenage Pregnancy in Yenagoa, Bayelsa State

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Abstract

This paper examines the spatial and environmental dynamics of teenage pregnancy in Yenagoa, intending to understand the complexity of spatial and environmental antecedents of teenage pregnancy to reduce early childbearing and improve the livelihood and wellbeing of young women. A multi-stage sampling technique involving three stages was adopted. A set of structured questionnaire was administered systematically upon 415 statistically determined respondents. Results revealed that 46.3% of the respondents are less than 14 years, 48.4% are between 15-19 years and 5.3% are over 20 years. Result of ANOVA showed that teenage pregnancy varies significantly over space with f values of location/neighbourhood ($F=3.700$), education ($F=3.694$), household size ($F=1.059$) at 0.5 significance level. Result of the logistic regression revealed that the likelihood of teenage pregnancy in Yenagoa is influenced by wrong use of contraceptives with exponential beta ($\text{Exp}\beta$) ratio of 4.994, followed by household size (1.293), housing quality (1.175) and neighborhood (1.119). Teenage pregnancy as a complex problem requires a comprehensive approach to reduce its occurrence, enhance life opportunities and actualize the life plans of these young mothers.

Keywords: *Spatial; Environmental Factors; Teenage Pregnancy; Logistic regression; Bayelsa State; Nigeria*

1. Introduction

The United Nations Children Fund (UNICEF, 2008), defined teenage pregnancy as “a teenage girl, usually between the ages of 13-19 years and girls that have not reached legal adulthood becoming pregnant, which varies across the world. Globally, this is considered serious public health and social problem (Ganchimeg, Ota, Morisaki, Laopaiboon, Lumbiganon, Zhang, Yamdamsuren, Temmerman, Say & Tunçalp, 2014; Ashimolowo, Ojebiyi, Adelokun & Ogunyomi, 2017; Habitu, Yalew Bisetegn, 2018)

The World Bank (2020) reported that teenage mothers are the percentage of women between the ages 15-19 who have had children or are currently pregnant in Nigeria was reported at 18.7% in 2018. According to WHO (2016), teenage pregnancy is a serious major health issues because of its link with mortality for both mother and child. Babies born to mothers under 20 years of age face higher risks of low birth weight, pre-term delivery, and severe complications .

NDHS (2018), reported that Childbearing during teenage years do have negative consequences, mostly on educational attainment, as such pregnant teenage girls are more likely to withdraw from school. Adayanju and Afolayan (2012) and Thasher, 2015 submitted that teenage pregnancy is one of the factors adversely affecting female education in Nigeria.

Teenage pregnancy could be generationally influenced by biological heritability, generational transmission of family norms, indirect effect of Socio- economic and family environment through education deficits, and directly through the mother’s role modeling (Kahn & Anderson, 1991). The females that have their first baby in their adolescence are more likely to pass on the risky traits, which could lead to undesirable outcomes in their offspring (Jaffee, Caspi & Moffitt, 2001; Izugbara, 2015). The influence of a mother’s teenage pregnancy, therefore, works through the environment created and parenting style assumed because of a mother’s teenage childbearing.

The report of the Nigeria Demographic Health Survey (2018) presented in Table 1 showed the national distribution and percentage of female aged 15-19 years who have had a live birth or who are pregnant with their first child, and the percentage who have begun childbearing.

Table 1: Teenage Pregnancy and Motherhood in Nigeria

Percentage of women aged between 15-19				
Ages	Have had a live birth	Pregnant with first child	Have begun childbearing	Number of Women
<15 yrs	6.7	3.2	9.9	5,242
15 yrs	0.8	1.5	2.4	2,078
16 yrs	4.5	3.9	8.4	1,585
17 yrs	16.6	4.7	21.3	1,579
18 yrs	24.4	6.1	30.6	1,921
19 yrs	30.9	6.1	37.0	1,286
Urban	6.5	1.9	8.4	3,813
Rural	20.9	6.3	27.2	4,635

Source: Nigeria Demographic Health Survey, 2018.

Not less than 10 million unplanned pregnancies occur per annum among females aged between 15-19 years in the developing world. Globally, the main cause of death among females between 15-19-year-old is complications during pregnancy and childbirth. Few job opportunities exist for young women who drop out of school due to pregnancy, which often results in a cycle of poverty in these women's families. Adolescent mothers and their offspring are at risk and because the offspring face a host of challenges such as malnutrition, inadequate education and poor development (WHO, 2014; Ayele, 2013).

Several studies such as Olamide (2006) studied youth and teenage pregnancy in Bayelsa State. Ayuba and Gani (2010) evaluated the risk factors associated with teenage pregnancy and compare the obstetric and fetal outcomes of older parturient in the Niger Delta of Nigeria. Onyeka, Juhani, Ilika & Vaskilampi, (2011) assessed efforts of high schools to prevent unintended pregnancy among students in Anambra, Nigeria and their reactions to pregnant students before and after delivery. Olaitan, Talabi, Olumirin & Onigbibde (2012) studied the risks experienced during pregnancy among teenagers in South-Western Nigeria. Samuel and Kpe-Nobana (2018) studied the prevalence of adolescent pregnancy among secondary school students in the Ogbia Local Government Area of Bayelsa State. Gunawarden, Fantaye and Yaya (2019) utilized a review and narrative synthesis to study the predictors of pregnancy among young people in sub-Saharan Africa.

A review of past studies provided a direction for this study, it was revealed that there is a dearth of research on the geographic dimension of teenage pregnancy at the household level in Bayelsa State, This study therefore, examines the environmental factors influencing teenage pregnancy among households in Yenagoa, It also examines the complexity of spatial and environmental antecedents of prevalence of teenage pregnancy and suggest ways to reduce early childbearing, improve the livelihood and wellbeing of young women in Yenagoa, Bayelsa State, Nigeria. The hypothesis that teenage pregnancy varies among households in selected neighborhoods in

Yenagoa was proposed for this study. Apart from this introductory section, section two discusses the health belief model, section three discusses the research methods and study location, followed by a discussion of findings analysis and decision of the hypothesis in section four, while section five concludes.

2 Theoretical Framework

Reviewing relevant literature revealed that theory played important role in developing an effective approach required to reducing the antecedents or risk factors of teenage pregnancy by increasing the protective factors of teenage pregnancy. In this study, the target antecedents are spatial and environmental hence, the choice and application of the health belief model.

2.1 Health Belief Model

The Health Belief Model adapted from Brindis, Sattley and Mamo (2005) focuses personal goals and optimism about the future, self-efficacy, threat appraisal, problem-solving, and decision-making skills. Specifically, the application of the Health Belief Model in this study considers the individual perceived susceptibility to adolescent pregnancy, perceived severity or consequences of teenage pregnancy, a perceived barrier such as poor communication between partners, and perceived benefits such as the wrong usage of contraceptives. The spatial, environmental, and demographic variables considered such as residential neighborhood, housing environment, housing conditions, size of households and household economics also influence an individual's health-related behavior such as susceptibility to adolescent pregnancy.

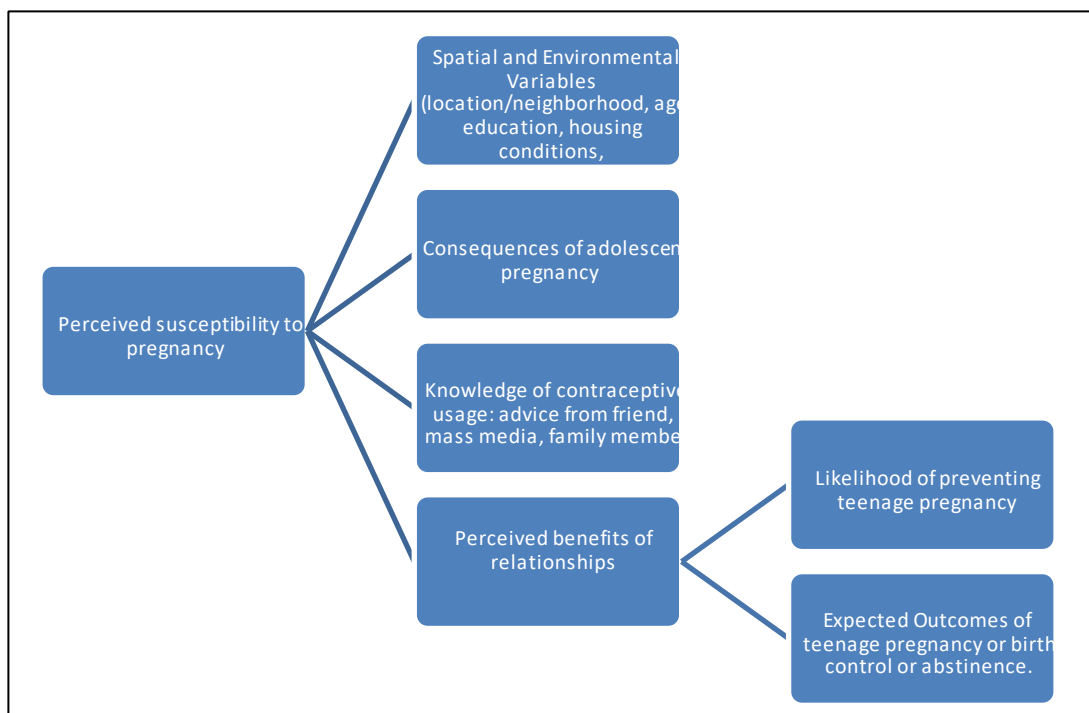


Figure 1: Health Belief Model

Source: Adapted from Brindis, Sattley & Mamo (2005) by present author Deinne & Omidiji, (2022)

3. Research Methodology

3.1 Sampling Technique

This study aims to examine the spatial and environmental factors influencing teenage pregnancy among households in Yenagoa. To achieve this aim, a multi-stage sampling technique involving three stages was adopted. At the first stage, Yenagoa was purposively chosen for this study due to the prevalent (spatial) neighborhood effects of teenage pregnancy. In the second stage, 21 neighborhoods within Yenagoa were involved in this study, while in the third stage, a structured questionnaire on (location/neighborhood, age at first pregnancy, household economics, household size, type of household, housing quality, contraceptive usage, consequences of teenage pregnancy and coping mechanisms) was administered systematically to 415 respondents using an interval of every 10th house within each neighborhood after the first house was randomly determined. The respondents were mainly pregnant teenagers, teenage mothers, and women within child bearing age and currently residing among the 21 neighborhoods within Yenagoa namely: (Agudama, Ahenfa, Akenpai, Amarata, Azikoro, Biogbolo, Edepie, Ekeki, Etegwe, Igbogene, Kpansia, Okaka, Okutukutu, Onopa, Opolo Ovom, Swali, Yenagoa, Yenegwe, Yenizuepie, and Yenizuegene).

Descriptive and inferential statistics were employed to analyzed the data. Descriptive statistics were used to describe the demographic characteristics of respondents, while inferential statistics

such as ANOVA were used to test the variations in the spatial and environmental factors influencing teenage pregnancy in Yenagoa.

3.2 Sample Size

To determine the sample size, Krejcie & Morgan's (1970) formula was adopted.

The formula is stated thus:

$$S = X^2 \cdot NP(1 - P) + (N-1) + X^2P(1-P).$$

Where:

S = sample size required

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level
 (3.841)

$$1.96 \times 1.96 = 3.8416$$

N = size of population

P = population proportion (assumed to be .50 since this would provide the maximum sample size). d= degree of accuracy expressed as a proportion (0.05).

Using the level of confidence approach, the sample size was computed thus: $Z \text{ values}^2(p \times q) e^2$

where: 1.96 = z value of 95 percent level of confidence

$$p = 100\% - q$$

$$q = 100\% - p$$

e = allowable error margin

n = sample size.

Computation of Sample Size and Application of Confidence Level

Approach: $Z \text{ values}^2(p \times q) e^2$

$$\begin{aligned} & \frac{1.96^2(50 \times 50)}{5^2} \\ & 3.841(2,500) \qquad \frac{\quad}{25} \\ & \qquad \qquad \qquad \frac{9602.5}{25} \\ & = 384 \text{ approximately } 400. \end{aligned}$$

This sample size of 400 was further increased by about 5% to account for sampling errors and human errors, hence, 420 of set of questionnaire were distributed and administered, while 415 were retrieved with a response rate of (99.04%). In this study, a 5% error of the estimate was used, as this value is sufficiently large enough to guarantee an accurate prediction at a 95% confidence interval.

3.3 The Study area

The study covers Yenagoa, the capital city of Bayelsa State that was created in 1996. The city is located within “latitudes 4° 55’ and 5° 02’ N and 6° 15’ - 6° 25’ East of the GMT” (Ohwo, 2019). The State is bounded by Delta and Rivers States to the north and east respectively, bordered by the Atlantic Ocean across the Western and Southern parts. The estimate of the 1991 Nigerian Population Census of Yenagoa was 50,000 persons, the creation of Bayelsa State increased its population of the city to 300,000 in 2006 (NPC, 2006: Ohwo, 2019).

The state experiences the equatorial type of climate and it rains generally all year round. The rainfall experienced decreases from south to north, with Akassa recording the highest downpour. Human activities are influenced by natural conditions and other ecological activities. The nature of the environment limits the economic activities of the inhabitants to fishing and the establishment of fishing camps, other land uses include agricultural practices such as the cultivation of arable crops and cash crops such as coconut, oil palm, and raffia palm. Human habitation is governed by the concept of environmental determinism due to incessant flooding (see Fig.2).

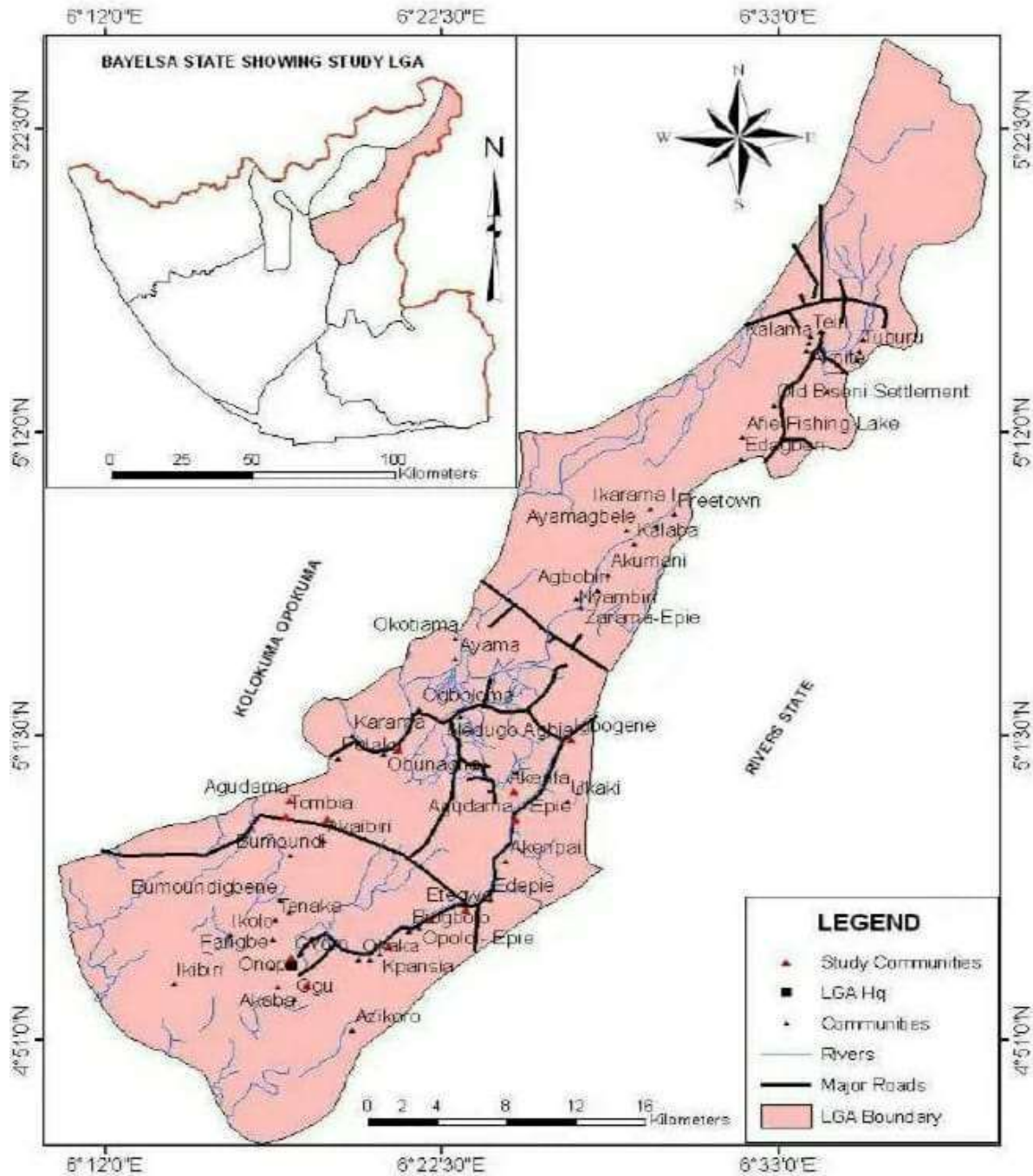


Figure 2: Yenagoa L. G. A. showing the sampled communities
Source: Adapted from Obafemi and Omiunu (2014)

4. Discussion of Results and Findings

4.1 Socio-Demographic Characteristics

Socio-demographic characteristics of respondents such as level of education, income, age, knowledge of the sexual relationship, and consequences of teenage pregnancy are discussed in this section.

Demographic characteristics of respondents in the area revealed that respondents' ages fall within secondary school age groups of less than 14 years, 15-19 years, and post-secondary school-age of over 20 years. A significant proportion of the teenagers 231 representing 55.7% are in secondary school, 157 respondents representing 37.8% earned between (₦20,001-₦50,000), 364 representing 87.7% specified that the ideal age for a sexual relationship as (15-19 years). Ayele (2013), posited that teenage pregnancy and childbearing are more in poor households and teens from the poor families are more prone to become pregnant than those from the wealthiest households.

The information in Table 2 showed that 195 representing 46.5% of the respondents surveyed are less than 14 years, 201 respondents representing 48.4% are between 15-19 years while 22 respondents representing 5.3% are over 20 years of age. The result of this study corroborates the findings of (WHO, 2013) showed that a significant teenage pregnancy is found among adolescents between the ages of 15-19 years (see distribution in Table 2). According to Olamide (2006), young ones are often misdirected and influenced by peer pressure; youths prefer listening to their mates instead of learning how to behave from adults. In their discussion, all that in experienced adolescents talk about is sex, clothes, and cosmetics, having a wrong perception of the real world situation and are lured due to peer pressure.

Table 2: Ages of Respondents at First Pregnancy

Ages at First Pregnancy	Frequency	Percentage
< 14 Years	192	46.3
15-19 Years	201	48.4
>20 Years	22	5.3
Total	415	100.0

Source: Authors Field Survey, 2021

The distribution of levels of education of respondents presented in Table 3 showed that 11 respondents representing 2.7% of the respondents surveyed had no formal education, 50 respondents representing 12.0% had primary education, 231 respondents representing 55.7% had secondary education, while 123 respondents representing 29.6% had tertiary education. Teenage mothers are most often than not dropping out of school thereby limiting their access to postsecondary education and consequently limiting their chances of getting better-paid jobs. NDHS, (2018), reported that teenage childbearing decreases with increasing education. The

percentage of teenagers who have begun childbearing rises from 1% among those with more than secondary education to 23% among those with primary education, while 44% had no formal education.

Table 3: Levels of Income of Respondents

Levels of Education	Frequency	Percentage
No Formal Education	11	2.7
Primary Education	50	12.0
Secondary Education	231	55.7
Tertiary Education	123	29.6
Total	415	100.0

Source: Authors Field Survey, 2021

Maynard, (2005) posited that adolescent pregnancy and childbearing directly resulted in the intergenerational transfer of poverty. The income distribution of the respondents presented in Table 4 showed that a significant proportion of the respondents 229 representing 55.2% of all the respondents surveyed earn less than twenty thousand naira (<₦20,000), 157 respondents representing 37.8% earn between twenty thousand and one naira and fifty thousand naira (₦20,001 - ₦50,000), while 25 respondents representing 6.0% earn between fifty thousand and one naira and one hundred thousand naira (₦50,001 - ₦100,000), 4 respondents representing 1.0% earn more than one hundred thousand naira (>₦100,000). This result corroborates the study of Van & Eijk (2007) which revealed that adolescents from lower-income families are more likely to report having sexual intercourse regardless of the family structure.

Table 4: Estimated Income of Household/Respondents

Household Income	Frequency	Percentage
< ₦20,000	229	55.2
₦20,001- ₦50,000	157	37.8
₦50,001- ₦100,000	25	6.0
> ₦100,000	4	1.0
Total	415	100.0

Source: Authors Field Survey, 2021

The distribution of household size presented in Table 5 showed that 82 households representing 19.8% had less than 3 persons such households are either single or cohabiting households, and a significant proportion of the households 220 representing 53,0% had between 4-6 persons, while 86 households representing 20.7% had between 7-10 persons.

Table 5: Size of Household

Number of Persons	Frequency	Percentage
< 3	82	19.8
4-6	220	53.0
7-10	86	20.7
> 10	27	6.5
Total	415	100.0

Source: Authors Field Survey, 2021

The ideal ages for sexual relationships presented in Table 6 showed that only 8 respondents representing 1.9% of the respondents surveyed said the ideal age for sexual experiment and early relationship is around 14 years, 364 respondents representing 87.7% of the respondents surveyed said the ideal age for a sexual relationship is between 15-19 years, while 43 respondents representing 10.4% of the respondents surveyed said the ideal age for a sexual relationship should be when a lady is matured over 20 years. This result is in tandem with the reports of NDHS (2018) that the tendency to initiate sexual intercourse before age 15 is higher among women than men ((9% and 2%) respectively. Eight percent of women aged 15-19 were married by age 15, while 1% had given birth by that age. No man reported fathering a child before age 15. Acquisition of knowledge on contraceptive usage due to contact with the environment shows that 170 teenagers representing 41.0% of the respondents surveyed acquired knowledge on contraceptive usage due to interaction with the immediate environment, while 245 teenagers representing 59.0% knew little about contraceptive usage.

Table 6: Ideal Ages for Sexual Relationship

Age For Sexual Relationship	Frequency	Percentage
< 14 Years	8	1.9
15-19 Years	364	87.7
>20 Years	43	10.4
Total	415	100.0

Source: Authors Field Survey, 2021

The coping strategies adopted by teenage mothers presented in Table 7 showed that a substantial percentage of the teenage mothers 187 representing 45.1% were encouraged by their family members and friends during their trial periods, 64 teenage mothers representing 15.4% gave their babies to foster parents to nurture, 69 teenage mothers representing 16.6% moved to new locations and environment, while 76 teenage mothers representing 18.3% took the risk of aborting the pregnancy.

Table 7: Coping Strategies

Coping Strategies	Frequency	Percentage
Encouraged by family and friends	187	45.1
Gave baby to another person to nurse	64	15.4
Moved to another location/environment	69	16.6
Aborted the pregnancy	76	18.3
Others (raised the child as a single parent)	19	4.6
Total	415	100.0

Source: Authors Field Survey, 2021

4.2 Social consequences of adolescent pregnancy

Table 8 showed that 96 respondents representing 23.1% experienced suffering, deprivations, and poverty while the child experienced stunted growth due to neglect by the person responsible for the pregnancy, 90 respondents representing 21.7% experienced inferiority complex, 68 respondents representing 16.4% dropped out of school, 81 respondents representing 19.5% experienced post-partum depression, 30 respondents representing 7.2% raised their children as single mothers, while 27 respondents representing 6.5% indicated that children from teenage mothers are exposed to violence and child abuse. This result corroborates the findings of Raj & Bochmer, 2013 that social consequences for unmarried adolescents include: stigma, rejection or violence by partners, parents and peers.

Table 8: Consequences of Teenage Pregnancy

Consequences of Teenage Pregnancy	Frequency	Percentage
Sufferings, Poverty, and Stunted Growth of Baby	96	23.1
Remain unmarried	23	5.5
Inferiority Complex	90	21.7
Stopped Schooling/ Dropped out of School	68	16.4
Unhappy/Depression	81	19.5
Single Parenting	30	7.2
Exposure to Violence and Child Abuse	27	6.5
Total	415	100.0

Source: Authors Field Survey, 2021

4.3 Test of Hypothesis

The hypothesis that spatial and environmental factors influencing teenage pregnancy vary among households in selected neighborhoods in Yenagoa was analyzed using One-way ANOVA to explain the individual contribution of each independent variable to the variation in teenage pregnancy experienced. The result of the factors influencing teenage pregnancy showed a significant variation over space with f values of location/neighborhood ($F=3.700$), education levels ($F=3.694$), housing quality ($F=1.617$), and household size (1.059) at 0.5 significance level, (see Table 9)

Table 9: One-Way ANOVA

Location/Neighborhood	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	16.280	13	1.252	3.700	0.001
Within Groups	135.711	401	0.338		
Total	151.990	414			
Education Levels	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.991	3	1.330	3.694	0.012
Within Groups	148.000	411	0.360		
Total	151.990	414			
Household Size	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.166	3	0.389	1.059	0.366
Within Groups	150.825	411	0.367		
Total	151.990	414			
Housing Quality	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.571	13	0.582	1.617	0.078
Within Groups	144.419	401	0.360		
Total	151.990	414			

Source: Authors Field Survey, 2021

4.4 Likelihood effects of teenage pregnancy

The likelihood of teenage pregnancy was analyzed using logistic regression analysis. The binary dependent variable is coded as one (1) if the respondent is pregnant or had a child and zero (0) otherwise. The explanatory variables include neighborhood, household size, type of household, formal sex education, wrong use of contraceptives due to peer influence, and housing quality/environment. The result of the logistic regression utilized to determine the likelihood of teenage pregnancy in Yenagoa due to spatial and environmental influence using the exponential beta ($\text{Exp}\beta$) weights showed that the wrong use of contraceptives was (4 times) more likely to influence teenage pregnancy, followed by household size, type of households and neighborhoods such as (poverty-stricken neighborhoods) were more than (1 time) likely to influence teenage pregnancy in the area studied (see Table 10).

Table 10: Spatial and Environmental Factors

Spatial and Environmental	B	S.E	Wald	df	Sig.	Exp(β)	95% CI for EXP(B)	
							Lower	Upper
Location/Neighborhood	0.113	0.041	7.451	1	0.006	1.119	1.032	1.213
Household size/No. of Dependants	0.257	0.191	1.818	1	0.178	1.293	0.890	1.880
Type of Households	0.161	0.281	0.329	1	0.567	1.175	0.677	2.038
Sex Education on Relationships	-0.844	0.578	2.132	1	0.144	0.430	0.138	1.335
Wrong Contraceptive Usage	1.608	0.439	13.390	1	0.000	4.994	2.110	11.818
Housing Quality	-0.014	0.045	0.097	1	0.755	0.986	0.903	1.077
Constant	-4.188	1.772	5.586	1	0.018	0.015		
2 log-likelihood	282.753 ^a							
Cox & Snell R Square	0.088							
Nagelkerke R Square	0.163							

Source: Authors Field Survey, 2021

(a) Variable(s) entered in step 1: Location, Household size, Type of households, family sex education, wrong contraceptive usage, and housing quality.

5. Conclusion

This study aimed to examine the spatial and environmental factors influencing teenage pregnancy in Yenagoa to understand the complexity of spatial and environmental antecedents of teenage pregnancy to reduce early childbearing and improve the livelihood and wellbeing of young women. Teenage pregnancy adversely affects the education of female teenagers in Bayelsa State, South-southern, Nigeria. Teenagers surveyed acquired knowledge on contraceptive usage due to interaction with their immediate environments such as peers, friends, and the use of mass media. Adolescents from poor families are often victims of teenage pregnancy. Spatial and environmental factors influenced teenage pregnancy with significant variations over space. Hence, a comprehensive approach such as comprehensive family life

education, additional developmental skills, self-reliance, and making smart choices enhance the life opportunities of teenage mothers.

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