

Predictors of Unintended Pregnancies among Female Students in Kenya: A Case Study of the Siaya National Polytechnic

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ABSTRACT

Despite the global decline in unintended pregnancies, the rate remains high in Kenya, particularly in Siaya County, where The Siaya National Polytechnic (TSNP) is located. The Kenya National Bureau of Statistics reported in the 2023 Demographic and Health Survey that teenage pregnancy in this county stood at 21%. These unplanned pregnancies often result in illegal abortion, health issues, trauma, stigmatization, economic burden due to prolonged study periods and poor academic performance. However, predictors of unintended pregnancies among technical college female students, particularly at TSNP, have not been clearly understood. This study sought to determine potential predictors of unintended pregnancies among female students at TSNP to support prevention, management and inform policy formulation. A cross-sectional survey design was employed. Data was collected using structured questionnaires administered to a sample of 306 female students of TSNP drawn from a population of 1475 female students who consented. Data analysis was conducted using IBM SPSS software version 25.0. Descriptive statistics were used to analyze predictors, while

Chi-square (χ^2) tests examined the relationships between predictors and unintended pregnancies. Bivariate logistic regression model tested associations between variables. Odds ratios (ORs) with 95% confidence intervals and a marginal error of 0.05 were used to determine statistical significance. The findings revealed that 73.2% of female students had not conceived, while 26.8% had conceived. Among those who had conceived, 57.3% indicated that their pregnancies were unintended. Unintended pregnancies were significantly associated with the following factors: not using condoms (RO=6.577; 95% CI; 3.623-11.94; P=0.000), age at first sexual intercourse (OR=2.29; 95% CI=1.260-4.140; P=0.010), difficulty in getting meals when in college (OR = 2.333; 95% CI = 1.094-4.975; P=0.028) and sleeping arrangements at home (OR = 2.333; 95% CI = 1.094-4.975; P=0.028). In conclusion, social, demographic, cultural and socioeconomic factors were found to influence unintended pregnancies among female students. Health education should focus on sensitizing TSNP students on condom use, while policies should support access to meals and parental involvement in housing during schooling.

Keywords: unintended pregnancies, TSNP, female students

INTRODUCTION

About 121 million pregnancies which occur worldwide every year are unintended (United Nations Population Fund (UNFPA), 2022). Globally, approximately 74 million women in low- and middle-income countries have unplanned pregnancies yearly (GuilamoRamos et al., 2018). In sub-Saharan Africa, 35% of pregnancies among 15–19-year-olds are unplanned (World Health Organization [WHO], 2018). In Kenya, the 2014 Demographic and Health Survey (DHS) established that 47% of births among adolescents were either mistimed or unwanted (Kenya National Bureau of Statistics [KNBS], 2014). The adolescent abortion rate in the country stands at 38 abortions per 1,000 girls aged 15–19 annually, which is one of the highest globally (Sedgh et al., 2015). In Siaya County, the KNBS reported in their 2023 DHS that teenage pregnancy stood at 21%, the second highest in the country after Homabay and Migori counties, both at 23% (KNBS & ICF, 2023).

In Kenyan technical institutions, particularly at Siaya National Polytechnic, unintended pregnancies remain a major challenge. As colleges strive to improve student access, success and completion, untimely parenting is a major factor that interferes not only with the health of the mother and newborn, but also with the study period. This has increased the financial burden on the government, the institution, and parents or guardians, who struggle to finance extended study durations. Unplanned pregnancies among technical college female students pose a serious health concern and are associated with adverse social outcomes that impact education progress and future career prospects negatively (Mbelle et al., 2018). In low- and middle-income countries, public health challenges facing females with unintended pregnancies include unsafe abortion, depression and anxiety, premature birth and low birth weight (Dixit et al., 2012; Ikamari et al., 2013; Ali et al., 2016). Additionally, unplanned pregnancy results in unsafe and illegal abortions, contributing to maternal morbidity and mortality (Mutinta, 2022).

Despite the overwhelming concern about unintended pregnancies which pose not only health risks but also lead to study interference among technical students, limited data exist to predict the causes of unplanned pregnancy. The current data on unintended pregnancy among technical training female students in Kenya is unknown. Concerns have been raised regarding the elevated rates of unintended pregnancy among female students at TSNP, yet limited studies have focused on predictors of the same. The burden of unintended pregnancies and the overwhelming responsibilities of early parenting can elevate emotional and financial stress on the young women involved, impeding academic performance and leading to increased overall course completion costs (Njuguna, 2020). Furthermore, unintended children are more likely to experience premature birth, infant morbidity and mortality, poor mental wellbeing, poor utilization of antenatal care, less breastfeeding, reduced vaccine uptake, malnutrition and limited education (Santelli et al., 2003). Preventing early unintended pregnancies among adolescents is essential for their sexual and reproductive health and the successful transition to adulthood (Mumah et al., 2020).

This study, therefore, sort to determine factors associated with unintended pregnancies among female students at The Siaya National Polytechnic.

MATERIALS AND METHODS

The study was anchored on a cross-sectional research design which guided the investigation into factors determining unintended pregnancies among female students at The Siaya National Polytechnic (TSNP). The cross sectional design was preferred because it enabled the study to make statistical inferences about the population of interest using the numerical data collected from different study participants at a single point in time.

Research Approach

The study adopted purely quantitative research approach in which quantitative data were collected and analyzed numerically. The quantitative research approach was preferred in this study because it was best suited in making prediction, testing causal associations among study variables thereby generalizing results to the wider population.

Sampling Technique

The desired sample size was calculated using the statistical formula for population less than 10,000 using Cochran formula:

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where n_0 = the desired sample size if population is more than 10,000.

Z =standard normal deviate at required confidence level usually set at 95% giving Z statistical of 1.96.

P =proportion of the study population estimated to have the characteristics being measured 50% (0.5)

$Q = 1-P$; ($Q = 1-0.5 = 0.5$)

e = level of statistical significance set, usually set as 0.05

$$\frac{(1.96)^2 \times (0.5) \times (0.5)}{(0.05)^2} = 385 \text{ students}$$

Since the sample size was smaller, less than 10,000; Cochran's sample size recommendation formula was used:

Where:

n0 = Cochran's sample size recommendation

N = the population size **n** = the new adjusted sample size

In this case the number of female students in TSNP were 1475 in the target population

'n' was calculated as: $385 / \{1 + (384 / 1475)\} \approx 306$

Sampling Procedures

A sample size of 306 female students were drawn using probability proportion to size sampling technique. This sampling was important since TSNP had ten academic departments with different number of female students. The sample population per department was proportional to their population. This accorded each female student in every department equal chance of selection.

Data Collection Instrument

Data was gathered from the female participants using a structured questionnaire that was used to collect socio-demographic information and other variables, this was administered online. The study variables measured in the instrument included; The dependent variable (Unintended pregnancy) which was binary, that is having conceived was (Intended=0; and unintended pregnancy=1).The independent variables included demographic profiles, sexual behavioral variables such as number of sexual partners, ever used contraceptives and failed to work, ever engaged in sexual intercourse, ever carried pregnancy to term, ever had sexual partners using condoms, staying together with boyfriend, ever taken illicit drug and age at which sexual involvement began. Data on knowledge and practices on unintended pregnancy comprised of variables such as the frequency of interacting with parents /guardians in discussing issues of sexual life. The source of money was assessed through questioning the study subjects on how often the parents sent them money.

Data Analysis

Descriptive statistics (percentages and frequency counts) were used to summarize the demographic and behavioral profiles of the study sample. The Chi-square test was used to establish the relationship between various predictors and unintended pregnancies. Bivariate logistic regression models were used to assess the association between unintended pregnancies and selected potential predictors. All statistically significant variables were entered into a multivariate logistic regression model to select the predictors of unintended pregnancies. Odds ratios (ORs) with 95% confidence limit within a marginal error of 0.05 were considered as statistically significant. Data analysis was done using IBM SPSS software version 25.0.

Ethical Consideration

This study sought ethical approval from Scientific Ethical Review Unit (SERU) – KEMRI (SSC NO. 1438). Further, permission was sought from The Siaya National Polytechnic (TSNP). Voluntary informed consent was obtained from the study participants before taking part in the study. In addition, the data collected from this study was confidential and only used for the purpose explained in the consent forms. Participation in this study presented no life-threatening risks.

RESULTS

Socio-Demographic Characteristics Of Study Participants

The data for this study were collected from 306 respondents who were female students from TSNP. The response rate was 100%. The findings in Table 1 shows that a large portion of female students (73.2%) confessed to

having not conceived. Findings shows that 71.6% of the students were aged 22 years and above. 57.3% of the students surveyed indicated that their pregnancy was unintended implying that the pregnancy occurred at a time when they would prefer to have it later or did not want it to happen at all. In this study, 42.7% reported their pregnancy was intended implying it occurred at a time when they wanted it. As per the course type; majority (51.3%) were from technical courses, followed by social sciences (34%). The number of female students undertaking certificate courses (53.5%) outnumbered the ones in diploma level (46.7%). Religion-wise, the findings established that majority of the students were from a Catholic background (70.3%). The study findings further revealed that majority (79.6%) of the students hailed from Siaya County as compared to other residential places. Majority of the students (83.3%) were getting their rental money from their parents/guardians.

TABLE 1. Socio-Demographic Factors Determining Unintended Pregnancies

Variable	Category	Frequency	Percent
Conceived or not Conceived	Conceived	82	26.8
	Not conceived	224	73.2
Intended or not Intended	Intended	175	57.3
	Unintended	131	42.7
Age	<22 years	87	28.4
	22-26 years	192	61.7
	>26 years	27	9.9
Occupation	Unemployed	280	91.5
	Salaried	3	1.0
	Self-employed	23	7.5
Educational level	Certificate	163	53.5
	Diploma	143	46.7
Course type	Business	45	14.7
	Social Sciences	104	34
	Technical courses	157	51.3
Religion	Atheist	9	2.9
	Catholic	215	70.3
	Protestants	82	26.8
County	Bungoma	5	1.6
	Busia	4	1.3
	Homabay	30	9.8
	Kilifi	3	1.0
	Kisumu	27	8.8
	Migori	6	2.0
	Siaya	216	79.6
	West Pokot	4	1.3
	Not indicated	11	3.6
Source of rent	Boyfriend	7	2.3
	Parent/Guardian	255	83.3
	Sponsor	3	1.0
	Well wisher	41	13.4
Frequency with which money is sent by parent/guardian	Fairly often	92	30.1
	Not so often	60	19.6
	Often	87	28.4
	Very often	67	21.9

Factors Associated with Unintended Pregnancies

This study revealed association between age and unintended pregnancies among technical students however, those who were above 26 years old were more likely to be pregnant (ORs =2.634; 95% CI =1.457-4.761; P=0.01) than aged between 22-26 years (ORs =2.290; 95% CI =1.26-4.14; P=0.00). Age at which one got involved in

sex was also significantly associated with unexpected pregnancies (OR=2.29; 95% CI=1.260-4.140; P=0.010). This showed that age at which female students got involved in sexual intercourse was 2.29 times more likely to lead to unintended pregnancies (Table 2).

Despite Chi-square tests showing a relationship between knowledge of family planning methods and unplanned pregnancies ($\chi^2= 17.84$; P= 0.00), the findings established no association between these variables OR=0.496; 95% CI=0.865-1.490) however there was high statistical significance (P=0.000).

Data generated from this study demonstrated strong association between condom use and unplanned pregnancies (RO=6.577; 95% CI; 3.623-11.94; P=0.000), those who were not using condom during intercourse were 6.577 times more likely to have unintended pregnancies.

It was discovered that difficulty in getting meals while in college was strongly associated with unintended pregnancies and it was 1.8 times more likely to lead to unintended pregnancies (OR = 1.842; 95% CI = 1.030-3.294; P=0. 0.040). The findings in this study further revealed that where female students slept while at home was strongly associated with unintended pregnancies and it is 2.33 times more likely to lead to unintended pregnancies (OR = 2.333; 95% CI = 1.094-4.975; P=0.028) (Table 2).

TABLE 2. Bivariate Models of the Association Between Unintended Pregnancy and Various Predictors

Item	S.E	Nagelkerke R	χ^2 (Chi-square)	Odds ratio(ORs)	95% CI	P-value
Age	0.304	0.044	9.500(0.023<0.05)	Ref	1.26-4.14	0.01
<22	0.302	0.071	15.41(0.00<0.05)	2.290	1.457-4.761	0.00
22-26				2.634		
>26						
Knowledge on family planning methods	0.562	0.08	17.84(0.00<0.05)	0.496	0.865-1.490	0.000
Family planning methods known	0.410	0.207	47.05(0.00<0.05)	0.297	0.133-0.663	0.003
Information source of family Planning	1.29	0.102	22.21(0.014<0.05)	0.072	0.029-0.176	0.000
Ever used contraceptive	0.779	0.012	26(0.04<0.05).380	0.125	0.027-0.575	0.000
Contraceptive failing to work	0.327	0.070	15.083(0.00<0.05)	0.277	0.145-0.526	0.000
Ever had sex	0.302	0.071	15.407(0.00<0.05)	2.634	1.457-4.761	0.000
Not using condom	0.304	0.177	39.772(0.00<0.05)	6.577	3.623-11.94	0.000
Number of sexual partners	0.292	0.143	31.554(0.00<0.05)	0.202	0.114-0.358	0.000
Age got involved in sex	0.304	0.044	9.495(0.00<0.05)	2.29	1.26-4.14	0.010
Staying with boy friend	0.360	0.166	37.131(0.00<0.05)	0.122	0.060-0.247	0.000
Ever taken illicit drug	0.346	0.072	15.095(0.00<0.05)	0.253	0.128-0.498	0.000
Difficulty in getting meals in college	0.297	0.021	4.490(0.034<0.05)	1.842	1.030-3.294	0.040
Who buys clothing &personal effects	0.393	0.055	11.77(0.019<0.05)	0.313	0.098-0.999	0.045
Where sleep when at home	0.386	0.126	27.661(0.00<0.05)	2.333	1.094-4.975	0.028

DISCUSSION OF FINDINGS

In this study, we established significant association between age and unintended pregnancies among female students and that the likelihood of unintended pregnancies among the female students was significantly reduced between 22-26 years. This could be attributed to the fact that as the students mature in age, their ability to make sound social decision could be increasing. These results were in tandem with the findings of Yazdkhasti *et al.*, (2015) who established that age was one of the risk factors associated with unplanned pregnancies. Similarly, a cross-sectional survey conducted in Mwanza, Tanzania, among young adults aged 15-30 years revealed that older age was significantly associated with unplanned pregnancy (Calvert *et al.*, 2013). These findings suggests that young female adults who are less than 21 years old are more likely to have unintended pregnancies than those who are 22 years and above. These findings were in tandem with the results of Iseyemi *et al.*, (2017) who

established that demographic factors such as young age under 20 years was associated with unintended pregnancy.

This study reports an association between knowledge of family planning method and unintended pregnancy. It further suggests that knowledge of family planning was likely to reduce unintended pregnancy among the female students. These results were consistent with the findings of Adeneye, *et al.*, (2017) who also revealed in their study that knowledge of family planning methods was significantly associated with pregnancy. Similar sentiments were echoed in Ethiopia by Ahmed *et al.*, (2012) who in their cross sectional study among Ethiopian undergraduate female students established low knowledge and awareness levels of effective contraceptive use amongst students in tertiary institutions. In addition, recent studies (Obiyan *et al.*, 2023, Sharma *et al.*, 2021) corroborated the same findings that there was an association between knowledge and unintended pregnancy among adolescents and young adults. The female students who were knowledgeable about family planning measures had reduced chances of having unintended pregnancies since they might have used family planning measures to reduce the likelihood of becoming pregnant. This hypothesis could be supported by the fact that the female students whose sexual partners did not use condoms as one way of family planning significantly had high chances of becoming pregnant.

This study established that economic constrains like difficulties in getting meals while in college, buying clothing and personal effects are strongly associated with unintended pregnancies and it is 1.8 times more likely to lead to unintended pregnancies. The findings of this study imply that socioeconomic constrains among female students are a major factor that contributes to unintended pregnancies. These tenets and the results of the present investigations are in general agreement with the findings of Iseyemi *et al.*, (2017) who investigated women with low socioeconomic status and revealed that they were 1.8 times more likely to have an unintended pregnancy. Yazdkhasti (2015) concurred with the argument and also observed that some socioeconomic factors are associated with unplanned pregnancy. Similar study in Maichew town, northern Ethiopia also agreed with the same sentiment that socioeconomic factors are associated with unintended pregnancy among pregnant women (Kassahun *et al.*, 2017). Lack of financial resources may create challenges in access to food, clothing and personal effects. This might occur due to multiple circumstances, such as parents not having enough money to buy these items after paying school fees and other bills.

This present study reported an association between sociocultural practices such as where female students sleep while at home and unintended pregnancies. Those students who were not sleeping in their parents' houses had high chances of becoming pregnant than those who were sleeping in their parents' houses. The results of this study corroborates other findings (East *et al.*, 2007 and Dulitha *et al.*, 2012) that reported a relationship between parental monitoring and adolescent pregnancy risk. However, few studies have reported contradictory findings by failing to show the association between parental strict control and adolescent pregnancy risk. For instance, Resnick *et al.*, (1997) reported that parental regulatory mechanism (being home at bedtime) was not related to adolescents' pregnancy history.

In addition, consumption of illicit drugs was significantly associated with unintended pregnancies in this study. Evidence supports the link between substance use and unintended pregnancies, according to Connery *et al.*, 2014 and Salas-Wright, *et al.*, 2015, who reported that substance use among adolescents increase the risk of unplanned pregnancies.

However, a cross sectional study done among black American adolescents revealed a contrasting finding and established that substance users (alcohol/marijuana) reported fewer pregnancy compared to non-substance users (Dir *et al.*, 2019). The association of illicit drug use and unintended pregnancies reported in this study was in agreement with earlier reports from other geographical regions (Embersin-Kyprianou *et al.*, 2020; McCarthy *et al.*, 2018; Cheng *et al.*, 2016) that also established a link between substance abuse and untimed pregnancies. These findings can partly be attributed to the fact that drug abuse interferes with mental faculty hence the consumers may not be concerned with the fact that they might become pregnant during sex.

CONCLUSION

The study suggests that the predictors of unintended pregnancies are as follows; socio-economic factors (difficulty in getting meals, buying clothes and other personal effects), socio-cultural factors (where female

students sleep when at home) and social factors (Lack of condom use, multiple sex partners and illicit drug use). Specific interventions targeting these predictors of unintended pregnancies are therefore necessary. Consequently, health education should focus on sensitization on the use of both female and male condoms while education policy should be formulated to ensure easy access to meals when in college. Parents and guardians should be sensitized on the need to sleep in the same house with their daughters when still in schools or colleges.

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Contributions

Gabriel O. Ng'ong'a, Steven Onyango, Violet Atieno, Maricus Ahomo, Mary Mercy Ochieng' and Daniel Randa conceptualized the study, participated in its design and implementation, and wrote and reviewed the manuscript. Gabriel O. Ng'ong'a and Bernard Manyala took part in statistical analyses. All authors read and approved the final draft of the manuscript.

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Consent of publication

The authors affirm that participants provided informed consent for the publication regarding their data.

Competing interests

The authors declare that they have no competing interest.

Data Availability

Data for this study will be made available upon request.

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