Association Between Sexual Violence and Unintended Pregnancy Among Young Girls in South Africa

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Research article

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Abstract

**Background:** Unintended pregnancy has dire consequences on the health and socioeconomic wellbeing of young girls (aged 15–24 years). While most studies tend to focus on lack of access to contraceptive information and services, and poverty as the main contributing factor to early-unintended pregnancies, the influence of sexual violence has received limited attention. Understanding the link between sexual violence and unintended pregnancy is critical towards developing a multifaceted intervention to reduce unintended pregnancies among young girls in South Africa, a country with high teenage pregnancy rates.

**Methods:** Drawing from cross-sectional data obtained among young girls in a South African university between June and November 2018, we estimated the magnitude of unintended pregnancy among young girls and also examined the effect of sexual violence on unintended pregnancy. A final sample of 451 girls aged 17–24 years, selected using stratified sampling, were included in the analysis. We used adjusted and unadjusted logistic regression analysis to examine the effect of sexual violence on unintended pregnancy.

**Results:** The analysis shows that 41.9% of all respondents had experienced an unintended pregnancy, and 25.9% of those unintended pregnancies ended in abortions. Unintended pregnancy was higher among survivors of sexual violence (57.0%) compared to those who never experienced sexual abuse (36.8%). In the multivariable analysis, sexual violence was consistently and robustly associated with increased odds of having an unintended pregnancy (AOR:1.76; 95% CI: 1.07–2.90).

**Conclusion:** Addressing unintended pregnancies among young girls in South Africa requires interventions that not only increase access to contraceptive information and services, but also reduce sexual violence and cater for survivors.

**Background**

Unintended pregnancy, especially among adolescent and young girls remains a concerning health and social problem in sub-Saharan Africa (SSA) and worldwide(1, 2). Between 2010 and 2014, approximately 44.5% of all pregnancies and 23% of births were unintended worldwide(2). Unintended pregnancy is the main reason for having an abortion. Of the approximately 99 million unintended pregnancies that occur each year, more than half (56%) end in abortion. Unintended pregnancy has deleterious consequences, including a heightened risk of maternal depression(3), and late initiation of antenatal care(4).

Adolescent and young women (aged 15–24 years) are at high risk of having an unintended pregnancy because they are far more likely to be sexually active more than ever and also more likely to delay marriage in order to complete schooling, and become better prepared to join the labour force(5). A study conducted in Uganda shows that sexually active adolescent girls had the highest rate of abortion (76.1 abortions per 1000 women 15–19) of all women within the reproductive age group(6). Another study in Kenya shows that severe complications of unsafe abortion were most common among adolescent girls(7).
With figures as high as 102.8 pregnant adolescents per 1000 girls aged 15–19 years, SSA has the highest rates of teenage pregnancies in the world\(^8\). Early unintended pregnancy has dire health and socioeconomic consequences. Globally, pregnancy and childbirth complications are one of the leading causes of deaths among adolescent girls. Adolescent mothers face an increased risk of perinatal morbidities such as eclampsia, puerperal endometritis, systemic infections, low birth weight, preterm delivery and severe neonatal conditions\(^9\–\(^{11}\). Indeed, early adolescent pregnancy has been linked with increased risk of HIV infection\(^{12}\). Furthermore, early childbearing also negatively impacts girls’ socioeconomic development and empowerment, further bolstering the vicious cycle of poverty\(^{13}\–\(^{16}\).

In South Africa, young girls continue to get pregnant at alarmingly high rates, with about 28% of girls having begun childbearing by their nineteenth birthday\(^{17}\). Contributing factors have been described as multifaceted, and include individual, household, community, and structural factors. At the individual level, the high prevalence of unintended pregnancies has been associated with limited contraceptive knowledge, correct and consistent usage, accessibility, and uptake of contraception\(^{18}\). At the household and family level, household poverty, lack of family support, death of parents, lack of communication with parents about sex encounters, and single-parent family structure are associated with early-unintended pregnancies\(^{19}\–\(^{23}\). At the community level, community-level poverty, rural residence, cultural norms that foster gender inequality and violence against women are among the factors associated with a higher likelihood of unintended pregnancies \(^{19},\ 20\). Structural factors associated with the increased level of early unintended pregnancy include restrictive policies - such as laws on age of consent for contraception services, healthcare systems failures, inadequate access to contraception as well as epileptic availability and access to healthcare services\(^{24},\ 25\).

While several studies have focused on the influence of contraceptive access and poverty on the increased risk of having an unplanned pregnancy\(^{1},\ 18,\ 19\), the contribution of sexual violence to increased risk of unintended pregnancy particularly among young girls has received limited attention. Although several studies have linked sexual violence to increased risk of HIV infection\(^{26},\ 27\), poor mental health outcomes\(^{28},\ 29\), poor self-rated health\(^{29}\) and non-use of contraceptives\(^{27}\), no study has examined the link between the experience of sexual violence and unintended pregnancy among adolescent and young women in South Africa. This is the case despite the reported high prevalence of sexual violence in the country\(^{29}\–\(^{32}\). Our study fills this gap by determining the magnitude of unintended pregnancies as well as examining the relationship between sexual violence and unintended pregnancies among adolescents and young girls in South Africa.

**Methods**

**Study design and setting**

We performed a secondary analysis of sexual health and wellbeing of adolescent and young adults project. The cross-sectional study was conducted among students aged 17-24 years in a South African university located in Eastern Cape province. We selected the university conveniently in a setting with high
sexual violence and HIV prevalence setting(33). Our focus on adolescent and young women is influenced by the fact that new HIV infection rates were disproportionately high among this cohort in South Africa(34). University students were recruited because of ease of accessibility and lack of funds for a household survey. The full details of the methodology for the study has been published elsewhere(35, 36). Only unmarried male and female students aged 15 to 24 years well eligible for the study. Visiting students from another university, married students and those aged over 24 years were ineligible for selection.

A total of 833 participants were estimated to be the appropriate sample size for the main study based on ±3.3% precision level, a 95% confidence level, and a student population of 6000 and 10% possible attrition, using MaCorr Sample Size Calculator. We employed stratified sampling to ensure representativeness. Stratification was based on the following characteristics of students, sex, faculties and years of study. First, the ratio of male to female students at the university was 2:3. As such, we included 510 females and 323 males in the study. We drew participants from all faculties based on probability proportionate to the size of the faculty, including social sciences and humanities (n=216), law (n=120), health sciences (100), management and commerce (150) and education (246). Students were also stratified by year of study to ensure the final sample is representative of the distribution of study by year of study. We recruited participants from their lecture halls because we were unable to get a comprehensive list of all students. Well-trained research assistants administered the survey using ODK collect installed on android devices. The research assistants were postgraduate students and were trained on using the ODK application, ethical considerations guiding the research, and participants’ selection. We trained them to select a prespecified number of students at a particular level and faculty of study. They were instructed to select every tenth student in the classroom and skip participants who refuse to participate. The ODK collect application ensured privacy and no identifying information was collected. Participants were approached and informed about the study purpose. To minimise social desirability bias and further ensure privacy, consenting students completed the survey using either their person mobile phones of the research assistants person device in private spaces earmarked for the study on campus. No personal identifying information was collected, and they were shown how to operate the ODK App for android and navigate the survey questions. The study was conducted between June and November 2018. We conducted training of research assistants and pilot testing of study instruments among 30 students using a different university before the study commenced. The response rate was 92% for the main study.

The University of Fort Hare ethical review body approved this study (Reference number: GON011). All participants gave written consent indicating that they voluntarily and willingly took part in the study and affirmed that they understood the study purpose, process and usage of findings. Anonymity and confidentiality of the information provided were ensured throughout the study. We followed all the IRB guideline for using human subjects in research.

Measures
Our dependent variable is the lifetime experience of unintended pregnancy, which we defined as becoming pregnant at a time a person is not prepared to become pregnant or intended to have children. We measured this by asking participants if they have ever been pregnant when they never wanted to get pregnant. We used a binary response of “yes” or “no” to categorise participants’ responses. We followed the question up by asking what action was taken when they found that they were pregnant. The actions were classified as terminated the pregnancy and carried the pregnancy to term.

Our main independent variable of interest is sexual violence. Sexual violence is defined in this study as any sexual act or attempts to obtain a sexual act by violence or coercion by any person irrespective of their relationship to the victim(37). We asked respondents if they have ever experienced sexual abuse, such as forced sex or rape and touching of genitals without proper consent. We favoured a narrow definition of sexual violence in this study in order to account for its link to unintended pregnancy. The responses were classified as yes or no.

We included three sets of covariates, individual level, behavioural and household, and family level covariates. The individual-level covariate includes age, religion and parity. Age was measured as a continuous variable by asking respondents to state their age at their last birthday. We later categorised the ages into late-adolescent girls (17-19 years) and young women (20-24 years). Religiosity was measured by asking participants to rate their level of religiosity out of ten. We classified those who rated themselves 8 to 10 as very religious, those who rated themselves from 5 to 7 as moderately religious, and 1 to 4 as not religious. Lastly, we asked respondents to state how many children they have ever had.

The behavioural factors include recreational drug use and relationship status. We asked participants to indicate if they ever used drugs such as dagga, codeine, cannabis, and/or tramadol for pleasure or to ease tension or stress. Also, we asked respondents if they are single or cohabiting. We classified their responses as yes or no. We included several family/household level factors, including family structure, family support, death of parents, communication of sexual encounters with parents, and parenting type. Family structure was classified as single-parent, polygamous, both parents, and foster family. Family support was used as a proxy to measure parents’ socioeconomic status.

We asked participants to rate the level of support they received from their family as adequate, moderate, insufficient, and no support. Also, we measured communication with parents regarding sexual encounters by asking respondents if they have ever discussed sex with any or both of their parents. Lastly, we measured parenting style by asking respondents to describe their parents as strict and not strict.

**Statistical analysis**

The analytical sample of the current paper begins with 510 adolescent and young girls who took part in the survey. From this number, we remove 59 respondents who refused to answer the questions on sexual behaviours, unintended pregnancy, sexual violence and HIV testing. These sets of participants exercised their right to refuse to answer any questions they feel uncomfortable answering and to drop out of the study at any time. We examined the characteristics of these sets of respondents and did not find any
significant difference between them and those included in our analysis. We, therefore, analysed data from 451 adolescent and young girls who returned with complete responses representing a response rate of 88.4% among female participants. We performed descriptive statistics of all variables included in this study. We present mean and standard deviation for age. To determine whether sexual violence was associated with a higher likelihood of unintended pregnancy, we fitted two logistic regression models. The first model was a baseline model with no covariates, which was used to estimate the unadjusted odds ratio of the association between the main independent variable and the dependent variables. The second model is a multivariable model, where we included all relevant covariates, including individual, behavioural and family and household level factors.

**Results**

**Descriptive findings**

The average age was 21.03 (SD: 1.61) years. As shown in Table 1, most respondents were aged 20-24 years (79.6%), single (97.8%), had no children (65.4%), never drank alcohol (66.5%).
Table 1: socio-demographic, behavioural and household characteristics of respondents

| Variable                  | Frequency | Percentages |
|---------------------------|-----------|-------------|
| **Age**                   |           |             |
| 17-19                     | 92        | 20.4        |
| 20-24                     | 359       | 79.6        |
| **Relationship status**   |           |             |
| Single                    | 441       | 97.8        |
| Cohabiting                | 10        | 2.2         |
| **Parity**                |           |             |
| None                      | 295       | 65.4        |
| One                       | 150       | 33.3        |
| Two                       | 5         | 1.1         |
| Three                     | 1         | 0.2         |
| **Family support**        |           |             |
| Adequate                  | 168       | 37.3        |
| Moderate                  | 202       | 44.8        |
| Insufficient support      | 78        | 17.3        |
| No support                | 3         | 0.7         |
| **Religiiosity rating**   |           |             |
| Not religious             | 139       | 32.0        |
| Moderately religious      | 197       | 45.4        |
| Very religious            | 98        | 22.6        |
| **Family structure**      |           |             |
| Two parents family        | 175       | 38.8        |
| Single parent family      | 196       | 43.5        |
| Living with grandparents  | 49        | 10.9        |
| Living with foster parents| 31        | 6.9         |
| Mother alive              | 377       | 83.6        |
| Father alive              | 282       | 62.5        |
| Variable                           | Count | Proportion |
|-----------------------------------|-------|------------|
| Live with dad                     | 190   | 42.1       |
| Live with mum                     | 340   | 75.4       |
| Talk sex to dad                   | 47    | 10.4       |
| Talk sex to mum                   | 278   | 61.6       |
| Strict father                     | 139   | 30.8       |
| Strict mother                     | 119   | 26.4       |
| Ever drank alcohol                | 300   | 66.5       |
| Current alcohol users             | 201   | 44.6       |
| Drank alcohol last week           | 108   | 23.9       |
| Ever used drugs                   | 138   | 30.6       |
| Currently use drugs               | 51    | 11.3       |
| Experienced sexual abuse last year| 114   | 25.3       |
| Childhood sexual abuse            | 80    | 17.7       |

As presented in Fig 1, 41.9% of all respondents had experienced an unintended pregnancy, and 25.9% of those unintended pregnancies ended in abortions. Unintended pregnancy was higher among young girls (47.1%), those who received no or insufficient support (58.0%), those who rated themselves not religious (54.7%), those who had ever consumed alcohol (48%), and survival of sexual violence (57.0%) compared to adolescent girls (21.7%), those who received adequate support (33.9%), those that rated themselves as very religious (30.6%), those who never drank alcohol (29.8%), and those never experienced sexual assault (36.8%) respectively (Table 2).
Table 2: Chi-square statistics showing factors associated with having had an unintended pregnancy

| Variables                        | Never had an unintended pregnancy | Ever had an unintended pregnancy | $P$-value |
|----------------------------------|-----------------------------------|---------------------------------|-----------|
| **Age**                          |                                   |                                 |           |
| 17-19                            | 72 (78.3)                         | 20 (21.7)                       | <0.001    |
| 20-24                            | 190 (52.9)                        | 169 (47.1)                      |           |
| **Family support**               |                                   |                                 |           |
| Adequate                         | 111 (66.1)                        | 57 (33.9)                       | 0.001     |
| Moderate                         | 117 (57.9)                        | 85 (42.1)                       |           |
| No or insufficient support       | 34 (42.0)                         | 47 (58.0)                       |           |
| **Family structure**             |                                   |                                 |           |
| Two parents family               | 106 (54.1)                        | 90 (45.9)                       | 0.304     |
| Single parent family             | 109 (62.3)                        | 66 (37.7)                       |           |
| Living with grand parents        | 31 (63.3)                         | 18 (36.7)                       |           |
| Living with foster parents       | 16 (51.6)                         | 15 (48.4)                       |           |
| **Religiosity rating**           |                                   |                                 |           |
| Not religious                    | 63 (45.3)                         | 76 (54.7)                       | <0.001    |
| Moderately religious             | 123 (62.4)                        | 74 (37.6)                       |           |
| Very religious                   | 68 (69.4)                         | 30 (30.6)                       |           |
| **Parity**                       |                                   |                                 |           |
| None                             | 248 (84.1)                        | 47 (15.9)                       | <0.001    |
| At least one                     | 14 (9.0)                          | 142 (91.0)                      |           |
| **Ever drank alcohol**           |                                   |                                 |           |
| Yes                              | 156 (52.0)                        | 144 (48.0)                      | <0.001    |
| No                               | 106 (70.2)                        | 45 (29.8)                       |           |
| **Ever used drugs for recreational purposes** | | | |
| Yes                              | 70 (50.7)                         | 68 (49.3)                       | 0.023     |
| No                               | 192 (61.3)                        | 121 (38.7)                      |           |
Survival of sexual abuse

| Yes  | 49 (43.0) | 65 (57.0) | <0.001 |
|------|-----------|-----------|--------|
| No   | 213 (63.2) | 124 (36.8) |        |

Strict father

| Yes  | 81 (68.1) | 38 (31.9) | 0.007 |
|------|-----------|-----------|-------|
| No   | 181 (54.5) | 151 (45.5) |       |

Strict mother

| Yes  | 91 (65.5) | 48 (34.5) | 0.021 |
|------|-----------|-----------|-------|
| No   | 171 (54.8) | 141 (45.2) |       |

Sex talk with father

| Yes  | 35 (74.5) | 12 (25.5) | 0.011 |
|------|-----------|-----------|-------|
| No   | 227 (56.2) | 177 (43.8) |       |

Sex talk with mother

| Yes  | 153 (55.0) | 125 (45.0) | 0.058 |
|------|-----------|-----------|-------|
| No   | 109 (63.0) | 64 (37.0)  |       |

**Multivariable findings**

As shown in Model 1, sexual violence was associated with higher odds of having an unintended pregnancy (Table 3). In Model 2, we included individual, behavioural and family and household level covariates. Results of this model show that when adolescent and young adults reported having experienced sexual violence, they are more likely to have also had an unintended pregnancy. The evidence in Models 1 and 2 provide clear and consistent support for our argument that sexual violence is associated with increased odds of having an unintended pregnancy among adolescents and young girls.
Table 3. Logistic regression models of the association between sexual violence and unintended pregnancy

| Variables                              | Unadjusted model       | Adjusted model       |
|----------------------------------------|------------------------|----------------------|
| Survival of sexual abuse               |                        |                      |
| Yes                                    | 2.28 (1.48-3.51)***    | 1.76 (1.07-2.90)*    |
| No                                     | 1                      | 1                    |
| Age                                    |                        |                      |
| 20-24                                  | 3.27 (1.82-5.90)***    |                      |
| 17-19                                  | 1                      |                      |
| Family support                         |                        |                      |
| Adequate                               | 0.61 (0.32-1.17)       |                      |
| Moderate                               | 0.68 (0.37-1.25)       |                      |
| No or insufficient support             | 1                      |                      |
| Family structure                       |                        |                      |
| Two parents family                     | 0.90 (0.35-2.32)       |                      |
| Single parent family                   | 0.87 (0.32-2.35)       |                      |
| Living with grand parents              | 0.73 (0.26-2.04)       |                      |
| Living with foster parents             | 1                      |                      |
| Religiosity rating                     |                        |                      |
| Poor                                   | 1.76 (0.96-3.24)       |                      |
| Average                                | 1.09 (0.62-1.90)       |                      |
| Good                                   | 1                      |                      |
| Ever drank alcohol                     |                        |                      |
| Yes                                    | 1.69 (1.04-2.74)*      |                      |
| No                                     | 1                      |                      |
| Ever used drugs for recreational purposes |                    |                      |
| Yes                                    | 0.95 (0.59-1.56)       |                      |
| No                                     | 1                      |                      |
| Strict father                          |                        |                      |
Yes | 0.65 (0.38-1.12)
No  | 1
Strict mother
Yes | 0.66 (0.42-1.05)
No  | 1
Sex talk with father
Yes | 0.65 (0.31-1.38)
No  | 1
Sex talk with mother
Yes | 1.23 (0.73-2.06)
No  |

Discussion Of Findings

This study examines the relationship between sexual violence and unintended pregnancies among adolescents and young girls in South Africa. We found a high rate of unintended pregnancy among adolescent and young women in our study setting, with a quarter of all unintended pregnancies resulting in abortions. According to the South Africa Demographic and Health Survey, close to 30% of adolescent aged 15-19 years have begun childbearing(17). There is a possibility that most of the pregnancies among adolescent and young women are unplanned, given the findings of our study. Underuse of contraceptives has been attributed to the high rate of unintended pregnancy among adolescent and young women in SSA(18). Addressing unintended pregnancy among adolescent and young women in South Africa will require increasing access to contraceptive information and services.

Our result, consistent with previous studies(38-41), demonstrates clear, consistent and robust evidence supporting our proposition that adolescent and young women with lived experiences of sexual violence are more likely to report unintended pregnancies. The pathway through which sexual violence could lead to unintended pregnancy is through non-use of contraceptive, underreporting of incidences of sexual violence and lack of requisite care to address the potential impacts of sexual violence, including unintended pregnancy. It is clear from extant studies that most victims of sexual violence do not officially report the incidence or even mention it to other people(42-46). Lack of reporting of sexual violence incidences may mean survivors will not receive the necessary care needed. Also, it is well established that most perpetrators of sexual violence are close to the survivors, with friends and boyfriends being the most likely culprits, making the incidence more frequent and the consequences severe(42-46). For example, the prevalence of forced sexual initiation ranges from 4 to 31%(28). Young girls are also at a disadvantage because they have low knowledge of after sex contraception(47, 48), implying that if they fail to report or seek care, their risk of unintended pregnancy increases. Pregnancy due to rape is among
the reasons women induce abortion\(^{(49, 50)}\). While rape is one of the conditions abortion is lawfully permitted in most SSA countries, abortion services are not easily accessible in most SSA countries\(^{(51)}\), and rape is difficult to prove when cases are not reported initially. In our study context, however, safe and legal abortion is available, but societal stigma precludes women from accessing abortion services\(^{(52-55)}\).

Given that early-unintended pregnancies worsen the socioeconomic outcomes of young women\(^{(13-16)}\), there is a need for research that examines how sexual violence against women could worsen gender inequalities and female poverty. Aside from providing access to contraceptive information and services, there is a need for holistic efforts to expand young people's knowledge and awareness around female sexual and reproductive health rights. Furthermore, it is vital that sex education, which highlights the damaging effects of sexual violence, discourages hegemonic masculinity, and encourages responsible sexual decision making be included in schools' curriculums, and be made an integral part of religious/community body events - to ensure that out of school children are not left out. Parents, caregivers, and guardians should additionally assume the responsibilities of teaching these important lessons at home. As social pressure or fear of stigma may mean that sexual violence cases are underreported, it is crucial that responsible authorities launch appropriate investigations when cases of sexual assaults are reported, and ensure justice served accordingly in addition to providing judgment-free victim support, which will encourage other victims to speak up.

Our study is not without limitations. The use of cross-sectional data means causal inference could not be drawn between sexual violence and unintended pregnancy. Also, underreporting of unintended pregnancy and sexual violence could not be ruled out given the sensitive nature of the topic. However, the use of ODK collect for android offers privacy for participants, thereby limiting the effect of social desirability bias. Lastly, our focus on university students may not adequately portray a real-world situation for the target age bracket, and thus limits our study's generalizability. University students are generally more educated compared with the general population of adolescent and young women. Nevertheless, our study provides needed evidence on the link between sexual violence and unintended, which could provide the basis for future studies and intervention to tackle sexual violence and unintended pregnancy among adolescents and young women in South Africa and beyond.

**Conclusions**

Addressing unintended pregnancies among young girls in South Africa requires interventions that not only increase access to contraceptive information and services but also reduce sexual violence and cater for survivors. Future studies should examine the link between sexual violence and unintended pregnancy among out of school girls as well as the potential link between exposure to sexual violence and gender inequality and female poverty.

**List Of Abbreviations**
Declarations

Ethics approval and consent to participate - The University of Fort Hare ethical review body approved this study (Reference number: GON011). All participants gave written consent indicating that they voluntarily and willingly took part in the study and affirmed that they understood the study purpose, process and usage of findings. Anonymity and confidentiality of the information provided were ensured throughout the study. We followed all the IRB guideline for using human subjects in research.

Consent to publication: Not applicable

Availability of data and materials – The data analysed will be made available by the corresponding author upon request.

Competing interests – The first author is an associate editor at BMC Public Health. The second author has no competing interests to declare

Authors contribution – AIA conceptualised the study, managed the data collection, and perform the statistical analysis. HCE and AIA contributed to drafting the manuscript. All authors revised and approved the final draft.

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**Figures**
Figure 1

Unintended pregnancy and related abortion among adolescent and young women

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