Predictors of unplanned pregnancies among female students at South African Technical and Vocational Education and Training colleges: Findings from the 2014 Higher Education and Training HIV and AIDS survey

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Background. Unplanned pregnancies among college/tertiary female students pose a serious public health concern in South Africa (SA) and are associated with adverse health and social outcomes that impact negatively on educational progress and future career prospects.
Objectives. To examine the potential predictors of unplanned pregnancy among female students at Technical and Vocational Education and Training (TVET) colleges in SA.
Methods. This analysis used data drawn from the 2014 Higher Education and Training HIV and AIDS survey, which was a nationally representative survey of TVET college students in SA. Associations between unplanned pregnancy and the explanatory variables were assessed using bivariate analysis. Multivariate logistic regression analysis was used to identify the effect of several independent predictors of unplanned pregnancy.
Results. Of 1 002 female students who responded to the question on unplanned pregnancy, 74.6% reported having had an unplanned pregnancy. Predictors significantly associated with a reduced likelihood of unplanned pregnancy among female TVET students included living with a husband (odds ratio (OR) 0.28, 95% confidence interval (CI) 0.13 - 0.62; p=0.002), having two (OR 0.45, 95% CI 0.23 - 0.88; p=0.003) or three (OR 0.07, 95% CI 0.01 - 0.39; p=0.003) previous pregnancies, and not having had an abortion (OR 0.16, 95% CI 0.04 - 0.62; p=0.008).
Conclusions. The high level of unplanned pregnancies is indicative of the state of women's reproductive health services at SA TVET colleges. The findings suggest that certain groups of female students are at increased risk of unplanned pregnancy and would benefit from targeted family planning interventions tailored to their needs.

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In South Africa (SA), unplanned pregnancies among youth pose a serious public health concern, as they expose young women and their newborns to potential adverse health and social outcomes.[1,2] These include the likelihood of unsafe abortion, maternal depression and anxiety, premature birth and low birth weight.[1,3,4] Additionally, unplanned pregnancies are socially disruptive and impact negatively on educational progress and future career prospects.[5] Women with unintended pregnancies are likely to be less well educated and poorer than women without such pregnancies.[6]

Unplanned pregnancy occurs mainly as a result of contraceptive failure and inconsistent or non-use of contraceptives, including inconsistent use of condoms.[7-10] A number of factors have been associated with unplanned or unintended pregnancies among youth. These include socioeconomic, demographic and behavioural factors such as poor socioeconomic status, age, living arrangements, peer pressure, sexual coercion, sex socialisation, unprotected sex, ignorance, and negative attitudes towards contraception.[6,11,12]

While there is a plethora of literature about unplanned pregnancy and associated factors in general, in SA there is a dearth of data on the factors associated with unplanned pregnancy among students at institutes of higher education. More research is therefore needed to identify predictors of unplanned pregnancy among college students in SA. Improved knowledge on the factors associated with unplanned pregnancy is important for developing effective policy changes and targeted interventions to minimise the odds of experiencing unplanned pregnancy and the associated negative consequences.

Objectives

To investigate potential predictors of unplanned pregnancy among female students at Technical and Vocational Education and Training (TVET) colleges in SA.

Methods

Study design and sample

The study used data from the 2014 Higher Education and Training HIV and AIDS programme (HEAIDS) knowledge, attitudes and behaviour survey of HIV/AIDS, where all 50 SA TVET colleges were included in the sample in order to represent a range of locality types (rural and urban). The study used a multistage cluster sampling method to select a sample of campuses and classes within campuses. Only registered first-year students were included in the study. Individuals in sampled classes were free to opt out of the survey and only consenting individuals were included. Entire classes of students were sampled. A national sample of 4 500 TVET students was drawn, with an average of 500 per province and 90 per institution. A subsample of 500 students aged <18 years was included. These students were equally distributed across provinces.[13]

Study instruments and survey administration

A structured questionnaire was administered based on previous surveys and informed by a review of the literature. The questionnaires included questions on demographic characteristics, HIV and AIDS knowledge, attitudes and behaviours, and exposure to programmes

dealing with matters such as HIV counselling and testing and care, support and treatment for people living with HIV. Student questionnaires were administered by data collection facilitators to a group of first-year students in a classroom. The facilitator put the questions to the group by reading from the questionnaire and students ticked their answers on individual questionnaires without consulting other students.[13]

Measures

Dependent variable

The primary outcome variable was unplanned pregnancy, based on the question 'Have you ever been pregnant and if yes, was the pregnancy planned?' (yes = 1 and no = 0).

Independent variables

Explanatory variables included demographic variables such as age (<18 years, 18 - 24 years, ≥25 years), race (black African, white, coloured, Indian/Asian), marital status (not married, married), current living status (in relationship but not living together, living with boyfriend/girlfriend/partner, living with friends/peers/fellow students, living with husband, living alone), and source of income (parents/family members, bursary, part-time work, boyfriend/girlfriend/partner, husband/wife, child support and grant).

Behaviour-related questions included number of pregnancies in the respondent's lifetime (one, two, three, more than three), belief that the partner has other sexual partners (agree, disagree), number of current sexual partners (one/more than one), often engage in transactional sex (agree, disagree), often tricked or pressurised into having sex (agree, disagree), ever had an abortion (yes/no), and consistent condom use with non-regular sexual partner in the past 12 months (every time, almost every time, sometimes, never).

Statistical analysis

Descriptive statistics were used to summarise the demographic and behavioural profile of the study sample. The χ^2 test was used to compare unplanned pregnancies by demographic and behavioural profile. Bivariate logistic regression models were used to assess the relationship between unplanned pregnancies and selected potential predictors. All statistically significant variables were entered into a multivariate logistic regression model to select predictors of unplanned pregnancies. Odds ratios (ORs) with 95% confidence intervals (CIs) with $p<0.05$ were considered statistically significant. All analysis was carried out in Stata version 13.0 (StataCorp, USA).

Results

Descriptive statistics

Table 1 describes the study sample and the prevalence of unplanned pregnancy by sociodemographic profile. The majority of the students were 18 - 24 years old (77.6%), black African (88.6%) and in a relationship but not living together (46.5%), and their source of income was mainly parents/family members (75.7%). Of the 2 877 female students, 1 002 responded to the question on unplanned pregnancy,

Table 1. Sociodemographic profile and prevalence of unplanned pregnancy among female Technical and Vocational Education and Training students

Variables	Study sample (*N*=2 877)*, *n* (%)	Unplanned pregnancy (*N*=1 002)†		
		Total*	*n* (%)	*p*-value
Age (years)				
<18	290 (10.1)	54	42 (77.8)	<0.001
18 - 24	2 233 (77.6)	696	553 (79.5)	
≥25	354 (12.3)	252	154 (61.1)	
Total	2 877	1 002		
Race				
Black African	2 548 (88.6)	895	665 (73.2)	0.002
White	144 (5.0)	55	47 (85.5)	
Coloured	157 (5.5)	48	45 (93.8)	
Indian/Asian	27 (0.9)	4	2 (50.0)	
Total	2 876	1 002		
Current living arrangement				
In a relationship but not living together	539 (46.5)	241	176 (73.0)	<0.001
Living with boyfriend/girlfriend/partner	62 (5.3)	36	24 (66.7)	
Living with friends/peers/fellow students	254 (21.9)	64	53 (82.8)	
Living with husband	85 (7.3)	65	27 (41.5)	
Living alone	220 (19.0)	78	54 (69.2)	
Total	1 160	484		
Source of income				
Parents/family members	2 044 (75.7)	581	549 (79.0)	<0.001
Bursary	293 (10.9)	111	83 (74.8)	
Work part-time	75 (2.78)	37	33 (89.2)	
Boyfriend/girlfriend/partner	97 (3.6)	68	40 (58.8)	
Husband/wife	48 (1.8)	43	17 (39.5)	
Child support	63 (2.3)	48	38 (79.2)	
Grant	80 (3.0)	36	25 (69.4)	
Total	2 700	924		

*Not all section totals are the same as the overall total owing to non-response and missing data.
†Of students who responded to the question on unplanned pregnancy. Not all sub-totals are the same as the overall total owing to non-response and missing data.

and 74.6% reported having an unplanned pregnancy. The proportion of reported unplanned pregnancy was significantly higher ($p<0.05$) among students 18 - 24 years old (79.5%), coloured students (93.8%), students living with friends/peers/fellow students (82.8%), and those whose source of income was part-time work (89.2%).

Table 2 describes the study sample and prevalence of unplanned pregnancy by behavioural profile. The majority of students reported having one pregnancy (78.8%) and one current sexual partner (87.3%), believed that their partner did not have other sexual partners (56.6%), did not engage in transactional sex (94.6%), were not tricked or pressurised into having sex (90.32%), had never had an abortion (89.1%), and had used a condom every time they had sex with their non-regular sexual partner in the past 12 months (69.3%). The proportion of reported unplanned pregnancies was significantly higher ($p<0.05$) among students who reported having one pregnancy in their lifetime (77.5%), students with more than one current sexual partner (81.8%), students who believed that their partners had other sexual partners (77.9%), students who reported often being tricked or pressurised into having sex (87.8%), students who had ever had an abortion (86.9%), and those who reported condom use every time they had sex with their non-regular sexual partner in the past 12 months (83.2%).

Bivariate models

Table 3 shows that the likelihood of unplanned pregnancy was significantly reduced among students aged ≥25 years (OR 0.45, 95% CI 0.23 - 0.89; $p=0.023$), those living with a husband (OR 0.26, 95% CI 0.15 - 0.46; $p<0.001$) and those whose source of income was a boyfriend/partner (OR 0.38, 95% CI 0.23 - 0.64; $p<0.001$) or husband (OR 0.17, 95% CI 0.09 - 0.33; $p<0.001$). The likelihood of unplanned pregnancy was significantly increased among white (OR 2.15, 95% CI 1.00 - 4.62; $p=0.049$) and coloured students (OR 5.50, 95% CI 1.69 - 17.85; $p=0.005$) compared with black Africans.

Furthermore, the likelihood of unplanned pregnancy was significantly reduced among students who reported two (OR 0.55, 95% CI 0.38 - 0.78; $p=0.001$) or three (OR 0.17, 95% CI 0.08 - 0.41; $p<0.001$) previous pregnancies in their lifetime, those who did not believe that their partners had other sexual partners (OR 0.71, 95% CI 0.50 - 1.01; $p=0.054$), those who reported not often being tricked or pressurised into having sex (OR 0.36, 95% CI 0.19 - 0.67; $p=0.001$),

Table 2. Behavioural profile and prevalence of unplanned pregnancy among female Technical and Vocational Education and Training students

Variables	Study sample (*N*=2 877)*, *n* (%)	Unplanned pregnancy (*N*=1 002)†, *n* (%)		
		Total*	*n* (%)	*p*-value
Number of pregnancies in lifetime				
1	773 (78.8)	763	591 (77.5)	<0.001
2	170 (17.3)	167	109 (65.3)	
3	25 (2.6)	24	9 (37.5)	
>3	13 (1.3)	13	10 (76.9)	
Total	981	967		
Number of current sexual partners				
1	1 834 (87.3)	761	551 (72.4)	0.036
>1	266 (12.7)	110	90 (81.8)	
Total	2 100	871		
Believe partner has other sexual partners				
Agree	803 (43.4)	307	239 (77.9)	0.054
Disagree	1 047 (56.6)	403	288 (71.5)	
Total	1 850	710		
Often engage in transactional sex				
Agree	126 (5.4)	50	38 (76.0)	0.786
Disagree	2 195 (94.6)	789	586 (74.3)	
Total	2 321	839		
Often tricked or pressurised into having sex				
Agree	225 (9.7)	98	86 (87.8)	0.001
Disagree	2 104 (90.3)	745	537 (72.1)	
Total	2 329	843		
Ever had an abortion				
Yes	111 (10.9)	107	93 (86.9)	0.002
No	904 (89.1)	876	641 (73.2)	
Total	1 015	983		
Condom use with non-regular sex partner in the past 12 months				
Every time	464 (69.3)	173	144 (83.2)	0.024
Almost every time	136 (20.3)	53	35 (66.0)	
Never	70 (10.5)	28	21 (75.0)	
Total	670	254		

*Not all section totals are the same as the overall total owing to non-response and missing data.
†Of students who responded to the question on unplanned pregnancy. Not all sub-totals are the same as the overall total owing to non-response and missing data.

Table 3. Bivariate models of the association between unplanned pregnancies and selected demographic factors

Variables	OR	95% CI	*p*-value
Age (years)			
<18	Ref		
18 - 24	1.10	0.57 - 2.15	0.770
≥25	0.45	0.23 - 0.89	0.023
Race group			
Black African	Ref		
White	2.15	1.00 - 4.62	0.049
Coloured	5.50	1.69 - 17.85	0.005
Indian/Asian	0.37	0.05 - 2.62	0.317
Current living arrangement			
In relationship but not living together	Ref		
Living with boyfriend/girlfriend/partner	0.74	0.35 - 1.56	0.428
Living with friends/peers/fellow students	1.78	0.88 - 3.62	0.111
Living with a husband	0.26	0.15 - 0.46	<0.001
Living alone	0.83	0.48 - 1.45	0.516
Source of income			
Parents/family members	Ref		
Bursary	0.79	0.49 - 1.26	0.323
Work part-time	2.19	0.76 - 6.31	0.145
Boyfriend/girlfriend/partner	0.38	0.23 - 0.64	<0.001
Husband/wife	0.17	0.09 - 0.33	<0.001
Child support	1.01	0.49 - 2.08	0.978
Grant	0.60	0.29 - 1.26	0.180
Number of pregnancies in lifetime			
1	Ref		
2	0.55	0.38 - 0.78	0.001
3	0.17	0.08 - 0.41	<0.001
>3	0.97	0.26 - 3.56	0.964
Believe partner has other sexual partners			
Agree	Ref		
Disagree	0.71	0.50 - 1.01	0.054
Often engage in transactional sex			
Agree	Ref		
Disagree	0.91	0.47 - 1.78	0.786
Often tricked or pressurised into having sex			
Agree	Ref		
Disagree	0.36	0.19 - 0.67	0.001
Ever had an abortion			
Yes	Ref		
No	0.41	0.23 - 0.73	0.003
Condom use with non-regular sex partner in the past 12 months			
Never	Ref		
Every time	0.39	0.20 - 0.78	0.008
Almost every time	0.60	0.24 - 1.55	0.295

OR = odds ratio; CI = confidence interval.

those who reported never having had an abortion (OR 0.36, 95% CI 0.19 - 0.67; *p*=0.001), and those who had used a condom every time they had sex with their non-regular sex partner in the past 12 months (OR 0.39, 95% CI 0.20 - 0.78; *p*=0.008).

Multivariate model

Fig. 1 shows that predictors significantly associated with a reduced likelihood of unplanned pregnancy among female TVET students included living with a husband (OR 0.28, 95% CI 0.13 - 0.62; *p*=0.002) compared with being in a relationship but not living together, having two (OR 0.45, 95% CI 0.23 - 0.88; *p*=0.003) or three (OR 0.07, 95% CI 0.01 - 0.39; *p*=0.003) previous pregnancies compared with one pregnancy in a lifetime, and not having had an abortion (OR 0.16, 95% CI 0.04 - 0.62; *p*=0.008).

Discussion

The present study aimed to examine the potential predictors of unplanned pregnancies among female TVET students in SA. Overall,

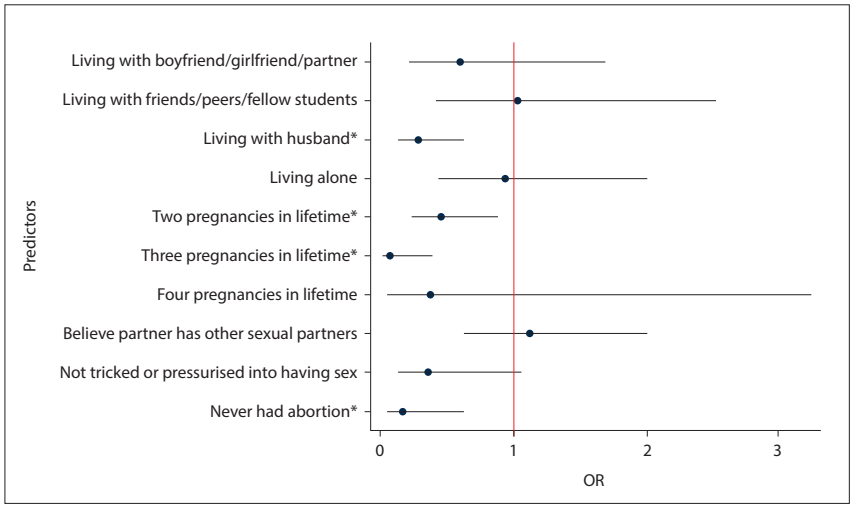

*Fig. 1. Predictors of unplanned pregnancies among female Technical and Vocational Education and Training students. x = 1 is a line of effect or no effect: OR = 1 – exposure does not affect odds of outcome; OR >1 – exposure associated with higher odds of outcome; OR <1 – exposure associated with lower odds of outcome. (OR = odds ratio; *Significant at* p<*0.05.)*

the study showed that the prevalence of unplanned pregnancy was high (74.6%) among these students. This finding suggests that attending a higher education institution does not necessarily translate to improved knowledge and use of contraceptives, knowledge of sexual health and practising safer sexual health.[14] Given that TVET learners include students from 15 years of age upwards, it is, however, in line with World Health Organization[15] findings that most unplanned pregnancies are among adolescents. Although the prevalence of unplanned pregnancy varied according to selected demographic and behavioural characteristics of the students, the high rates represent unmet needs for reproductive health among students and indicate a high demand for family planning programmes at TVET colleges. It is therefore also important to identify factors associated with unplanned pregnancy in order to design and plan programmes and services for the students most likely to experience this problem. Calvert *et al.*[16] doubt the effectiveness of interventions that seek to improve knowledge, but believe that measures to avoid unplanned pregnancies should include those that encourage school-going girls to continue with schooling.

The bivariate analysis showed that the odds of experiencing unplanned pregnancy were lower among female students aged ≥25 years. Similarly, Wellings *et al.*[17] found that pregnancies in women aged ≤19 were mostly unplanned, in contrast to the frequency of unplanned pregnancy among adolescents in stable relationships such as a marriage or union,[15] students living with a husband, and those whose source of income was a boyfriend/partner or husband.[15] While in our study the odds of unplanned pregnancy were higher among white and coloured students than black African students, the odds of unplanned pregnancy were also lower among students who had had more than one pregnancy in their lifetime, those who did not believe their partners had other sexual partners, those who reported not being tricked or pressurised into having sex, those who reported never having had an abortion, and those who had consistently used a condom with their non-regular sexual partner in the past 12 months. These models indicate potential risk factors associated with unplanned pregnancy that could be targeted to decrease the risk of unplanned pregnancy among female students at TVET colleges.

The multivariate analysis supported some of these findings, but the direction and magnitude of the association was only maintained for a few predictors. Reduced likelihood of unplanned pregnancy among female TVET students remained significantly associated with living with a husband, having had two or three pregnancies in a lifetime and not having had an abortion. These findings suggest that students living with a husband are less likely to experience unplanned pregnancy because they are in a marriage, which is often a monogamous relationship in which regular sexual activity occurs but couples generally use more reliable forms of contraception, and having a child generally requires the mutually agreed decision not to employ contraceptive methods.[18]

The findings also suggest that young single female students may have different family planning needs to students with husbands,[1,16,19] and require assistance to understand the importance of making appropriate family planning decisions because they are at college and may not be prepared for childbearing and associated responsibilities.[19] This underscores the need to empower young women with appropriate knowledge and skills on birth control mechanisms in order to reduce unplanned pregnancies. Wellings *et al.*[17] found a strong association between unplanned pregnancy and health-related factors such as receipt of sex education from sources other than school, which suggests that empowerment of young women is effective when received from establishments such as TVET colleges. Furthermore, Oringanje *et al.*[20] emphasise that a 'combination of educational and contraceptive-promoting interventions appears to reduce unintended pregnancy among adolescents'. The finding of an inverse association between unplanned pregnancies and an increasing number of lifetime pregnancies may be related to the explanation by Sonfield *et al.*,[21] who state: 'To accomplish the goal of having two children, a woman will spend close to three years pregnant, postpartum or attempting to become pregnant, and about three decades – more than three-quarters of her reproductive life – trying to avoid an unintended pregnancy.'

Furthermore, the finding that students with more than one pregnancy in their lifetime were less likely to have unplanned pregnancies probably indicates that having had a pregnancy raises awareness and the ability to obtain appropriate contraceptive methods in order to avoid unwanted pregnancy. This suggests that past reported pregnancy can be used in awareness campaigns promoting and encouraging family planning. There is also evidence that some women who experience unplanned pregnancies respond by resorting to abortion.[14] Abortion is legal in SA, although socially condemned among many communities.[22] This is probably reflected in the finding of an inverse relationship between unplanned pregnancy and abortion in the present study.

Study limitations

The results of the present study should be interpreted with caution owing to some limitations. These include the fact that all data were collected through self-report measures, increasing the possibility of recall and social desirability bias. The cross-sectional design of the study is also limiting, as it does not allow causality to be

inferred. There is also a possibility of residual confounding owing to unmeasured and unknown confounding factors. Despite these limitations, the study has identified unplanned pregnancy as an important public health priority for reproductive health programmes at TVET colleges in SA. In addition, these findings can be generalised countrywide among the study population, given that the sample was nationally representative.

Conclusions

The identified high level of unplanned pregnancies is indicative of the state of women's reproductive health at SA TVET colleges. Unplanned pregnancies mainly occur as a result of contraceptive failure and inconsistent or non-use of contraceptives,[18,23] suggesting that consistent and correct use of effective contraceptives can lead to prevention of unplanned pregnancies.[16] The current findings suggest that young single female students with particular characteristics were at increased risk of unplanned pregnancies and would benefit from targeted family planning services tailored to their needs. Such efforts should prioritise the goal of improving the consistency of contraceptive use by eliminating barriers to access and use and developing ways to encourage and facilitate more consistent use of available methods in order to reduce unplanned pregnancies.

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Conflicts of interest. None.

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