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Transactional sex and associated factors among young women in a tertiary institution in Northern Ghana: evidence from a cross-sectional survey

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Abstract

Background Transactional sex has gained public health attention in recent times because of its contributions to sexually transmitted infections and unwanted pregnancy among young women in sub-Saharan Africa. However, empirical data on the extent of this practice are lacking in Ghana. This study provides baseline information on the prevalence of transactional sex practice and associated factors among young women in a tertiary institution in Northern Ghana.

Methods A quantitative cross-sectional survey was conducted among 340 sexually active young female students. Stratified and simple random sampling techniques were used to sample respondents. Data were collected online using a pretested questionnaire. The prevalence of transactional sex and other socio-demographic characteristics were analysed descriptively using frequencies and percentages. A logistic regression model was used to determine predictors of transactional sex and assess the links between transaction sex and other risky sexual behaviours.

Findings Respondents were aged 18–31 years, and mean age was 24.94 (SD = ± 4.87). The prevalence of ever engaging in transactional sex was 23.8%, and 16.8% reported engaging in transactional sex in the past 12 months prior to the study. Nearly 65% of those who reported engaging in transactional sex in the last 12 months have done so at least four times. The odds of engaging in transactional sex were lower among older respondents (AOR: 0.140, 95%, CI: 0.032–0.605, $p = 0.008$); but higher for early sexual debut (AOR: 2.745, 95%, CI: 1.068–7.060, $p = 0.036$), area of residence (i.e. being peri-urban) (AOR: 8.300, 95%, CI: 1.655–41.617, $p = 0.010$), insufficient family support (AOR: 5.903, 95%, CI: 1.515–23.006, $p = 0.011$), and frequently using at least two social media applications (AOR: 3.893, 95%, CI: 1.276–11.877, $p = 0.017$). Respondents who engaged in transactional sex reported higher odds of contracting STIs (AOR: 3.580, CI:1.059–12.099, p 0.040), and having an abortion (AOR: 2.616, CI: 1.037–6.598, p 0.042) in the last 12 months.

Conclusion Targeted comprehensive sexual and reproductive health and rights education interventions are needed on the campuses of institutions of higher learning to enable young women negotiate safe sex and sexual

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relationships. In addition, there is need to promote contraceptive use (especially those that offer dual protection) among young women on the campuses of tertiary institutions to minimise STIs infection and unwanted pregnancy. Economic empowerment programmes such cash transfers to identifiable impoverished female students, scholarships and grant opportunities and discounted fees would also be critical to preventing and/ or minimising the occurrence of transactional sex among young women.

Keywords Transactional sex, Risky sexual behaviour, Young women, STIs, Family support, Ghana

Introduction

Transactional sexual relationships refer to non-marital, non-commercial sexual relationships motivated by an implicit assumption that sex will be exchanged for material support or other benefits [1]. Transactional sex can range from a survival short-term relationship that young women regularly engage in to enable them to meet their daily needs and/or those of their family members, to a gift given in long-term relationships as a way of expressing affection but not for marriage [2]. Transactional sex has gained public health attention in recent times because of its links to sexually transmitted infections (STIs) including HIV infection among young females in sub-Saharan Africa [3, 4].

Several studies have posited that transactional sexual relationships are a common phenomenon in sub-Saharan Africa, occurring among young adults at different proportions [2, 5, 6, 7]. The range of estimates varies from 2.1% to a high of 72% in African countries [8, 9]. In 2023, a pooled prevalence of transactional sex among women from studies in Sub-Saharan Africa recorded 12.55% (9.59–15.52%) [10]. Among antenatal women in Soweto, South Africa, transactional sex practice in 2004 was 21.1% [8], while as high as 72% of young females in Montserrado County, Liberia, engaged in transactional sex in 2014 [11]. In Malawi, a 2020 longitudinal study among a cohort of adolescent girls and young women found that the prevalence of transactional sex practice at the beginning of the study (i.e. baseline) was 22%; prevalence after 6 months was 15%; and prevalence after 12 months was 20% [12].

Though transactional sex appears a common phenomenon of sexual relationships in Sub-Saharan Africa, studies have associated it with negative outcomes such as increased risk for sexually transmitted infections, unplanned pregnancies, unsafe abortions; and physiological trauma [2, 6]. In a sample of 334 women of low socioeconomic status in Portland, Oregon, transactional sex practice was characterised by an increased combination of methamphetamine and opiate use, condomless sex, sexual violence, bacterial STI and hepatitis C infection [13]. A study in Cameroon also showed that female bar workers who engaged in transactional sex were likely to have sex under alcohol influence (aOR = 2.42; 95% CI, 1.18–4.96) and consume alcohol more frequently (aOR = 2.06; 95%CI, 1.04–4.10) compared to those who did not [14]. Among adult women in South Africa, transactional sex was linked to alcohol dependence, binge drinking and frequency of drinking in the past month [15]. Among Ugandan university students, transactional sex was significantly associated with sexual coercion in men (AOR = 10.90, CI 5.08–23.42) and women (AOR = 5.06, CI 2.72–9.40) [6]. In the context of institutions of higher learning in Africa, transactional sexual relationships are frequently intergenerational, leading to the violation of young girls' sexual and reproductive rights [5, 16]. These relationships also often perpetuate unequal power dynamics and fail to empower young girls to be able to negotiate safer sexual activity [5]. While the act of transactional sex per se does not automatically make it risky, transactional sex is problematic because it is often characterised by age-asymmetric relationships, partner violence and individual risky behaviours such as inconsistent condom use and multiple sexual partnerships [17, 18].

In the literature, several factors drive transactional sex. At the theoretical level, transactional sex has been explained in terms of women's vulnerability, poverty, lack of bargaining power and unequal gender relationships [5, 17, 18]. Others have suggested in the context of Africa that uncertainties that surround daily life may force women to develop several concurrent transactional sex partners as a form of 'social insurance' [19], which then provides them with resources to meet basic needs [19, 20]. Yet, others have suggested that transaction sex is part of a larger pattern of social interdependence in sub-Saharan Africa where women receive material goods while males gain outward displays of power and prestige [19, 21]. While there is consensus that transactional sex exposes women to risk of sexual violence, unprotected sex, early pregnancy, and HIV infection, several researchers have criticised the notion that women are primarily victims of transactional sex and men as the perpetrators [22, 23]. Rather, they suggest a need for a broader understanding of transactional sex as nested in complex sexual economies where women make choices to engage in transactional sex to meet a broad array of needs [22, 23].

In the empirical research literature, several studies have highlighted the determinants of transactional sex [22, 24, 25]. For instance, among antenatal women in rural Soweto, delayed first coitus and having post-secondary education reduced the likelihood of transactional sex

[26]. Among sexually active young people in Uganda, lower educational attainment (AOR = 3.25, CI 1.10–9.60) and experience of sexual coercion (AOR = 2.83, CI 1.07–7.47) were significantly associated with transactional sex. Also, multiple concurrent sexual relationships were significantly associated with transactional sex [27].

In Ghana, it is common for young women especially female students to establish sexual networks with local businessmen, politicians and uniformed men, usually older than them in return for money and gifts [7]. Similarly, female sex work is also very common especially in major cities [28]. However, because female sex work is illegal and law enforcement agencies regularly clamp down on sex workers, there are suggestions that transactional sex may open new avenues for building new sexual networks [29]. Nevertheless, the extent of this practice in the population is unclear. Thus far, only a few qualitative studies have been conducted in Ghana. For instance, Sagoe [30] documented variations in transactional sex practice and the impact it had on female trade apprentices in the Bono regional capital, Sunyani. Amo-Adjei et al. [7] also explored transactional sex practice among 40 female students at the University of Cape Coast. While these studies have provided useful insights, there is a dearth of prevalence studies on transactional sex in Ghana among young women. For instance, a study among 150 respondents at the Kwame Nkrumah University of Science and Technology reported on the level of awareness about transactional sex but failed to investigate actual practice [31]. The only exception is a recent cross-sectional survey among female adolescent refugees in Ghana where 71% were engaged in transactional sex in the 12 months leading up to the study [29]. However, given that this population is very distinct from the general Ghanaian population, one could expect significant differences. Another issue is that previous studies have not investigated the links between transactional sex and other risky sexual behaviours such as lack of condom use, multiple sexual partnership, and drunk sex. This knowledge gap not only hampers our understanding of the nature and magnitude of transactional sex practice among young women, but it could also limit our ability to develop risk-reduction interventions and promote responsible sexual behaviour. This study therefore aimed to provide baseline information on the prevalence of transactional sex practice and associated factors among young women in a tertiary institution in Northern Ghana.

Methods

Study design

A quantitative cross-sectional analytical survey was conducted. This design enabled quick but detailed data collection on the frequency, distribution and determinants of transactional sex at a single time point [32].

Study setting

This study was conducted on three campuses of a large public university in the Northern region of Ghana. We choose these settings because they provided the largest, easily accessible population of young women, most of whom are sexually active but not married. Another reason for this choice is that previous studies in Ghana have been conducted in the Southern part of Ghana where sexual norms are quite relaxed partly because of matrilineal culture. The northern region is highly conservative, patriarchal and dominated by the Islamic region.

Study population

The study population comprised young women who were enrolled in various undergraduate and postgraduate programmes offered across three campuses of a public University in the region. Respondents were aged 18–31 years, and were sexually active i.e. have ever engaged in penetrative penile sex. We included only those who were willing to provide written informed consent. We excluded those who met the inclusion criteria above but were indisposed either due to ill health or travel at the time of the study.

Sample size and sampling methods

Based on a 24.6% prevalence of transactional sex practice reported by a study among female university students in Nigeria [33], we estimated a minimum sample size of 314 at a confidence level of 95%. However, given that the topic is very sensitive, we adjusted the sample size upward by 100% and approached 628 respondents. As we show below, just a little above the minimum sample size (i.e. 340) completed the survey out of the 628 eligible young women who were approached.

In terms of sampling methods, we used a combination of stratified and simple random sampling methods. To do this, we stratified the population into three strata, each stratum representing one of the three campuses. We then obtained the female admission registers from the Central Registry of the university for each campus, which had information on the date of birth of each female student, their admission year, index number, phone number, email address, and postal address. We screened these registers to exclude those aged less than 18 years. We then calculated a proportionate sample for each stratum depending on the number of females aged 18 and above. Thus, we divided the total number of eligible participants in a particular campus by the sum of the three campuses, multiplied by our estimated sample size of 628. This ensured that the campus with the largest female population had more representation in our study. Following from this, we

ordered the eligible participants by their index numbers for each campus according to when they were admitted, fed the data into R software, and used the random number generator function in R to randomly select the required sample for each campus. Following this we contacted each of the 628 selected young women via telephone or email to explain the purpose of the study and how they were selected. We asked one screening question during this initial contact, namely 'have you ever had penetrative penile sex'. Only 26 out of the 628 participants we approached said they have never had sex and were therefore dropped from the study. We then invited the remining 602 eligible participants to participate in the study. Each eligible participant was given three days to decide on their participation. After the three days, we recontacted each eligible participant. A total of 240 declined participation for various reasons including 'not interested', 'don't have time', and 'does not want to share information about my sexual life'. The remaining 362 eligible participants were sent informed consent forms and a link to the study questionnaire for self-completion.

Data collection methods and tools

The data were collected online using *KoboCollect*, *a* free Android data entry app. Data collection took place between 6th December 2023 and 24th January 2024. A structured, self-reported questionnaire was developed, pre-tested and used for data collection (see supplementary file 1). The questionnaire was structured into three sections. The first section included questions on the background characteristics and other covariates of the respondents such as age, marital status, ethnicity, and age of first sexual debut. The second section included validated questions recommended by STRIVE [34] on transactional sex practice for inclusion in the Demographic and Health Surveys (DHS) questionnaire for sub-Saharan Africa. The last section included questions on risky sexual behaviours and related health outcomes.

The questionnaire was uploaded to *KoboCollect*. Weblink to the questionnaire was then sent privately to each eligible respondent via WhatsApp or email to self-complete online. Weekly reminders were then sent to each participant to complete the survey. Using the KoboCellect platform for data collection had several advantages. It allowed the data to be collected, saved and transmitted automatically to a cloud server for later download by the research team. This helped minimise the potential for data loss which is common in the context of paper-based questionnaire. Similarly, the automatic saving of the data made it needless for a separate data entry phase commonly present when paper-based questionnaires are used.

Description of study variables

Outcome variable

The primary outcome variable was transactional sex in the last 12 months. While we measured transactional sex as 'ever' and 'within the last 12 months', we used transactional sex in the last 12 months as it gives a better reflection of current practice. Besides, our decision is in line with recommendations made by STRIVE [34] to the DHS for the measurement of transactional sex practice, namely a respondent having had sex or become sexually involved with someone (man) because they (man/men) provided them with or expected that they (man/men) would provide them with material support of any kind (e.g. money, gift, favours) in the last 12 months. The responses to this question were dichotomous where 'YES' indicated engagement in transactional sex and 'NO' indicated otherwise.

Independent variables

Several independent variables ($n = 45$), broadly grouped into demographic characteristics (e.g. age, level of education, ethnicity, frequency of listening to radio, frequency of watching television), and sexual behavioural characteristics (e.g. age at first sex, nature of first sexual experience, number of sexual partners, condom use, sex while drunk, abortion, pregnancy history, ever heard of contraceptives, knowledge of where to access contraceptives, exposure to STIs), were defined and measured.

Data processing and analysis

All data files were downloaded and exported into Stata software for cleaning, coding and possible recoding and analysis. Data cleaning was done by identifying outliers/anomalies and checking for consistency among and across variables. Frequency distributions and cross tabulations were specifically run to aid the data cleaning process. Where there was skewness in the distribution of the data for any variable, the medians with interquartile ranges were used.

Basic descriptive statistics (frequencies and percentages) were used to present information on participants' characteristics as well as the prevalence of transactional sex. This was followed by using chi square tests of independence and Fishers' exact test (in cases where cell observations for any variable were less than five) to show statistical differences or association between the independent variables and transactional sex. Finally, two hierarchical models from binary logistic regression were used to show how the independent variables predict transactional sex and the results were presented as adjusted odd ratios. For the chi-square test and binary logistic regression analyses, confidence level was set at 95% and p-value of less than 0.05 was taken as demonstrating statistical significance. All statistical analysis was conducted using

STATA MP/17.0 (Stata Corp, College Station, Texas, USA).

Results

Characteristics of study respondents

A total of 362 eligible participants received the survey questionnaire. However, only 346 completed the questionnaire. Out of the 346, six questionnaires were incomplete and unusable. Therefore, the analysis involved 340 respondents.

Table 1 shows socio-demographic characteristics of the 340 respondents. Respondents were aged 18–31 years, and the mean age was 24.94 (SD = ± 4.87). Most of the respondents were single (92.1%). Over two-thirds (69.1%) of the respondents belonged to the Mole-Dagbani ethnic group. As regards the source of funding for their education, majority (60.0%) reported parents/relatives as their main source. However, 30.0% reported self-funding their education. Financial support from family to pay daily expenses ranged from No Support (14.1%) to Adequate support (34.4%).

Table 2 shows sexual and behavioural characteristics and outcomes of the respondents. Age of sexual debut ranged from 12 years to 23 years. However, 16.4% of the respondents had sex before the legal age of sexual consent (i.e. 16). As high as 33.8% however reported that their first sexual experience was non-consensual i.e. forced or rape. An over whelming majority (80.6%) have had at least four sexual partners in their lifetime, whilst about 48% reported having at least four sexual partners in the last 12 months. Also, 35% reported at least one STI infection in the last 12 months, whilst 23.2% had an abortion in the last 12 months before the survey.

Overall, 23.8% reported ever engaging in transactional sex. Among this population, 16.8% said they engaged in transactional sex in the past 12 months, and majority of those who engaged in transactional sex in the last 12 months reported at least four encounters.

Factors influencing engagement in transactional sex

To identify factors that are statistically associated with transactional sex, chi square and fisher's exact test analyses were performed on a total of 45 independent variables. Only six variables showed statistical association and were therefore further examined using logistic regression analysis. The results are shown in Table 3. As illustrated in Table 3, the final model (Model II) is a full model with demographic characteristics and sexual behavioural characteristics. It was found that the odds of engaging in transactional sex among female students aged 20–24 were significantly lower (aOR: 0.140, 95%, CI: 0.032–0.605, $p = 0.008$) compared to those aged 18–19 (reference age category). However, the odds of engaging in transactional sex among respondents whose age of sexual debut was < 18 (i.e. 12–17) years is almost three times (aOR: 2.745, 95%, CI: 1.068–7.060, $p = 0.036$) those whose age of sexual debut was 18 years or higher (reference category). Similarly, the odds of engaging in transactional sex among those whose area of residence when not in school is Peri-urban is over eight times higher (aOR: 8.300, 95%, CI: 1.655–41.617, $p = 0.010$) than those who reside in rural areas (reference category). Also, the odds of engaging in transactional sex among those who reported receiving 'Insufficient financial support from family to pay daily expenses' is almost six times higher (aOR: 5.903, 95%, CI: 1.515–23.006, p = 0.011) compared to those receiving 'Adequate support' (reference category). Furthermore, the odds of engaging in transactional sex among those who frequently used two social media applications is almost four times higher (aOR: 3.893, 95%, CI: 1.276–11.877, p = 0.017) compared to those who frequently use only one social media application.

Association between transactional sex and other risky sexual behaviours and outcomes

Table 4 presents the crude and adjusted odd ratios from the logistic regression analysis investigating the relationship between engaging in transactional sex in the past 12 months and two other risky sexual behaviours and two health outcomes. The results show that respondents who reported having engaged in transactional sex have over three times higher odds of contracting STIs in the last 12 months (aOR: 3.580, CI:1.059–12.099, p 0.040) and two and half times higher odds of having an abortion in the last 12 months (aOR: 2.616, CI: 1.037–6.598, p 0.042) compared to those who did not engage in transactional sex. However, while both condom use during last sex and drunk sex during the last 12 months showed statistical association at the crude level, the association disappeared in both cases after other covariates were controlled for in the adjusted model.

Discussions

This study is one of the few to have simultaneously estimated the prevalence of transactional sex and examined its predictors as well as association with other risky sexual behaviours and outcomes. The study reported a relatively high prevalence (23.8%) of ever engaging in transactional sex practice. The prevalence of transactional sex in the last 12 months prior to the study was equally relatively high (16.8%), with nearly 65% of those who reported engaging in transactional sex in the last 12 months indicating at least four encounters.

Given the highly conservative, patriarchal and Moslem dominated nature of our study context, we are very surprised that the overall prevalence reported in this study is consistent with studies from other contexts that may not be very conservative [5, 33, 35]. For instance, a

Table 1 Socio-demographic characteristics of respondents ($n = 340$)

Variable	Frequency (*n*)	Percentage (%)
Age (Mean = 24.94; SD ± 4.87)		
< 20	29	8.5
20–24	175	51.5
25–29	74	21.8
30+	62	18.2
Religious Affiliation		
Christian	107	31.4
Muslim	223	65.6
Traditional	4	1.3
None	6	1.7
Marital Status		
Single	313	92.1
Married	24	7.0
Divorce/separated	3	0.9
Number of living children		
None	284	83.5
1	35	10.3
2–3	17	5.0
4+	4	1.2
Father's educational level		
Below JHS	119	35.0
JHS to SHS	93	27.4
Tertiary	128	37.6
Mother's educational level		
Below JHS	299	88.0
JHS to SHS	30	8.8
Tertiary	11	3.2
Area of residence when not in School		
Urban	162	47.6
Rural	163	48.0
Peri-urban	15	4.4
Ethnicity		
Mole-Dagbani	235	69.1
Akan	44	12.9
Gurma	42	12.4
Ga-Adangbe	5	1.5
Ewe	3	0.9
Others	11	3.2
Source of funding for education		
Self-funding	102	30.0
Parents/Relatives	204	60.0
Bursary/Scholarship	3	0.9
Loan	31	9.1
Financial support from family to pay daily expenses		
No Support	48	14.1
Little Support	56	16.5
Moderate Support	119	35.0
Adequate Support	117	34.4
Number of media applications frequently used (i.e. at least once a day)		
1	142	41.8
2	68	20
3	130	38.2
Covered by National Health Insurance Scheme		

Table 1 (continued)

Variable	Frequency (*n*)	Percentage (%)
Yes	294	86.6
No	46	13.4

cross-sectional survey conducted at two Universities in North Central Nigeria showed that 23.7% of males and 24% of females reported ever engaging in transactional sex [33]. The prevalence of transactional sex in the last 12 months (16.8%) in this study is however lower when compared with a study in Obafemi Awolowo University in Nigeria where female students reported a 23.85% prevalence of 'transactional sex in the past 12 months [5]. Outside of the higher education context, our findings bear parallels with other studies in other African countries. For instance, in Soweto, South Africa, 21.1% of women attending antenatal clinics reported ever engaging in transactional sex [26]. Similarly, commercial farm workers (women) in South Africa, who have ever practised transactional sex were found to be 19% [32]. Again, in Tanzania, 26% of unmarried adolescent girls and young women reported ever engaging in transactional sex [24]. Together with previous findings, the foregoing discussion reiterates transactional sex as a problematic growing sexual and reproductive health and rights issue that must be addressed.

As regards the factors influencing transactional sex practice, we found that age, age of sexual debut, area of residence, family support, and frequent social media exposure were significant predictors. From this study, the odds of engaging in transactional sex decreased as the participant age increased though inconsistently. This is contrary to a study among students in a Nigerian University where ageing increases the odds of participants engaging in transactional sex [5]. Similarly, ageing was associated with higher odds of engaging in transactional sex among adolescent girls and young women in rural Tanzania [24]. However, a similar study in Madagascar reported no association between participants' age and transactional sex [25]. It is not clear why older respondents in our study reported lower odds of engaging in transaction sex. We think that it could be related to the fact that older respondents are more likely to be married or employed and therefore are relatively financially stable. Another explanation could be that older respondents may have built a large social network of friends and support systems over time, which they access for sustenance rather than engage in transactional sex as a survival strategy. Whatever the explanation, our study suggests that ageing is protective of transactional sex, and therefore interventional programmes toward eliminating transactional sex should be targeted at adolescents and younger women.

From our study, transaction sex seems to increase with increasing urbanization, albeit respondents who resided in peri-urban were the most likely to practice transactional sex. A similar study in Madagascar reported no significant association between area of residence and transactional sex practice [25]. Peri-urban areas represent transition zones between rural and urban areas. This transition usually comes with several exposures to different lifestyles. When some of these exposures are not properly controlled, they could plunge the vulnerable especially young females into undesirable lifestyles including transactional sex.

From our study, early sexual debut (i.e. 13–17 years) increases the likelihood of engaging in transactional sex. This result is congruent with findings from a Liberian study where early sexual debut increased the odds of engaging in transactional sex [11]. In another study in Rural Soweto, delayed first coitus among antenatal women decreases their odds of engaging in Transactional sex [35]. Again, students of Obafemi Awolowo University in Nigeria who had their first intercourse at age 18 or later were less likely to experience transactional sex compared to those who had first intercourse at younger ages [5]. The finding from this study therefore suggests that being sexually active at a younger age is a risk factor for transactional sex. Being sexually active at a younger age could also increase the risk of teenage pregnancy, early childbearing and STI infection due to ignorance or lack of sex education. Therefore, comprehensive sexuality education for both in-school and out of school adolescent girls could be critical to helping them make informed sexual and reproductive health decisions.

Furthermore, we found that perceived insufficient family support generally increases the likelihood of engaging in transactional sex compared with those receiving adequate family support. This finding is similar to a previous study where the odds of receiving money, gifts or favour for sex were lower in individuals who receive adequate support from their parents compared to those who receive no or insufficient support [33]. These findings suggest that young women with limited financial support and economic opportunities may use transactional sex both as a coping mechanism and to elevate their status in youth cultures that prioritise sexual success and conspicuous consumption [2, 6].

A novel fining from our study is that frequent use of at least two social media applications increases the likelihood of engaging in transactional sex though not consistent. With advancements in technology, there is no doubt

Table 2 Sexual behavioural characteristics of respondents

Variable	Frequency (*n*)	Percentage (%)
Age at first sex		
12–15 years	56	16.4
16–19 years	194	57.0
20–23	90	26.6
Nature of first sexual experience		
Consensual	225	66.2
Non-consensual (Forced/Rape)	115	33.8
Whom you had your first sex with		
Boyfriend	264	77.6
Husband/Partner	12	3.6
Casual Random Partner	60	17.6
Stepdad	4	1.2
Number of sexual partners ever had		
1	29	8.5
2–3	37	10.9
4+	274	80.6
Number of sexual partners in last 12 months		
1	57	16.8
2–3	120	35.3
4+	163	47.9
Ever had sex while drunk		
Yes	83	24.4
No	257	75.6
Ever received sex education		
Yes	215	63.2
No	125	36.8
Had unwanted pregnancy in the last 12 months		
Yes	87	25.6
No	253	74.4
Had abortion in the last 12 months		
Yes	79	23.2
No	261	76.8
Ever heard of contraceptives		
Yes	284	83.5
No	56	16.5
Knows where to access contraceptives (*n* = 284)		
Yes	214	75.4
No	70	24.6
Modern contraceptive (condom) use during last sex (*n* = 284)		
Yes	45	15.8
No	239	84.2
Had STI infection in the last 12 months		
Yes	119	35.0
No	221	65.0
Ever smoked any substance in the last 12months		
Yes	42	12.4
No	298	87.6
Ever had sex transactional sex		
Yes	81	**23.8**
No	259	76.2
Had transactional sex in the last 12 months (*n* = 81)		
Yes	57	**16.8**
No	24	83.2

Table 2 (continued)

Variable	Frequency (*n*)	Percentage (%)
Number of transactional sex encounters in the last 12 months (*n* = 57)		
1	6	10.5
2–3	14	24.6
4+	37	64.9

Table 3 Multivariable hierarchical logistic regression results by predictors of transaction sex

Variable	Model I		Model II	
	aOR (95% CI)	*p*-value	aOR (95% CI)	*p*-value
Age (years)				
18–19	1 (Ref)		1 (Ref)	
20–24	0.288 (0.119–0.695)	**0.006****	0.140 (0.032–0.605)	**0.008****
25–29	0.230 (0.080–0.665)	**0.007****	0.406 (0.100- 1.655)	0.209
30–34	0.661 (0.255–1.715)	0.395	0.556 (0.150–2.066)	0.381
Age of sexual debut				
18–24 Years	1 (Ref)		1 (Ref)	
12–17 Years	0.132 (0.070–0.248)	**0.000*****	2.745 (1.068–7.060)	**0.036***
Father's Educational level				
Below JHS	1 (Ref)		1 (Ref)	
JHS to SHS	0.263 (0.122–0.568)	**0.001****	1.477 (0.519–4.205)	0.465
Tertiary	0.745 (0.384–1.446)	0.384	2.800 (0.917–8.551)	0.071
Area of Residence				
Rural	1 (Ref)		1 (Ref)	
Peri-urban	8.280 (2.709–5.311)	**0.000*****	8.300 (1.655–41.617)	**0.010****
Urban	0.913 (0.495–1.687)	0.772	1.386 (0.602–3.192)	0.443
Financial support from family to pay daily expenses				
Adequate support	1 (Ref)		1 (Ref)	
Moderate Support	1.390 (0.610–3.167)	0.433	2.093 (0.743- 5.900)	0.162
Little support	3.525 (1.496–8.310)	**0.004****	5.903 (1.515–23.006)	**0.011***
No Support	4.818 (2.032–11.426)	**0.000*****	3.192 (0.944–10.799)	0.062
No. of Social Media Apps frequently use				
1	1 (Ref)		1 (Ref)	
2	5.181 (2.376–11.298)	**0.000*****	3.893 (1.276–11.877)	**0.017***
3+	2.329 (1.107–4.897)	**0.026***	1.957 (0.751–5.101)	0.170

Exponentiated coefficients; 95% confidence intervals in brackets; aOR adjusted Odds Ratios CI; Confidence Interval. $^{*}p \leq 0.05$, $^{**}p \leq 0.01$, $^{***}p \leq 0.001$

Model I adjusted for demographic characteristics only

Model II adjusted for demographic and sexual behavioural characteristics

that people are more networked and interact more than before. In particular, social media platforms like Facebook, Instagram, Twitter and even WhatsApp as well as dating applications are used not just for finding sexual partners but also for distributing sexually explicit context. This new trend has the potential to lead many users of these applications to risky sexual behaviours including transactional sex. Therefore, there is need for some education on responsible use of these social media flatforms. Also, there is need for some content regulation to ensure that children and young girls are not exposed to harmful sexual content.

Finally, our study also showed that transaction sex is linked with other risky sexual behaviours and adverse sexual and reproductive health outcomes. This is not surprising as transactional sex has been associated with risky sexual behaviours including low condom use, having sex while drunk, multiple sexual partnership as well as negative outcomes such as unintended pregnancies, unsafe abortions and STIs [24]. Whilst the findings from this study showed no statistically significant association between transactional sex in the past 12 months and three risky sexual behaviours measured (i.e. condom use during last sex, drunk sex, and multiple sexual

Table 4 Association between transactional sex and other risky sexual behaviours

Variable	cOR (95% CI)	*p*-value	aOR (95% CI)	*p*-value
Transactional Sex in the past 12months'	**Modern Contraceptive (condom) use during last sex**			
No	1 (ref)		1 (ref)	
Yes	1.868 (1.050–3.323)	**0.034**	1.809 (0.762–4.292)	0.179
Transactional Sex in the past 12 months	**Had sex while drunk in the last 12 months**			
No	1 (ref)		1 (ref)	
Yes	1.52 (0.950–1.521)	**0.049**	1.326 (0.562–7.220)	0.390
Transactional Sex in the past 12 months	**Had STI during the last 12 months**			
No	1 (ref)		1 (ref)	
Yes	1.649 (0.820–3.316)	0.161	3.580 (1.059–12.099)	**0.040**
Transactional Sex in the past 12 months	**Abortion in the last 12 months**			
No	1 (ref)		1 (ref)	
Yes	3.900 (2.158–7.048)	**0.000**	2.616 (1.037–6.598)	**0.042**

A Logistic model controlling for background characteristics, cOR = Crude Odd Ratio, aOR = Adjusted Odd Ratio, p-value = significant at 0.05, TS = Transactional Sex, CI = Confident Interval

partnership), the results indicate that those who engaged in transactional sex reported lower condom use during last sex, and higher likelihood of having drunk sex and multiple sexual partners. In terms of adverse outcomes, this study clearly showed that those who reported engaging in transactional sex were more likely to contract STIs in the last 12 months compared with those who did not engage in transactional sex. This finding is consistent with a recent study in Portland, Oregon, where transactional sex was characterised by increased condomless sex, sexual violence, bacterial STIs and hepatitis C [13]. Again, the study showed that female students who engaged in transactional sex in the last 12 months were significantly more likely to have had an abortion in the last 12 months compared to those who did not. Similar findings have been reported by other studies in African Countries [2, 6].

That transactional sex increases the chances of engaging in risky sexual behaviours is not surprising. As noted earlier, most of these sexual encounters are framed by age and power asymmetries, gender-based violence and vulnerability. In these contexts, the financial rewards associated with transactional sex could influence young women to compromise on safer sexual practices, hence increasing their risk of contracting STIs. This is more likely in the context of this study where a large proportion of respondents said they were self-financing their education and that the financial support they received from family to cater for their daily expenses was either not existent or very little. Our findings here suggest a need for both public education on the dangers of transactional sex and economic empowerment opportunities for young girls including deliberate conditional cash transfers to identifiable impoverished households to support young women through higher education, scholarships and grant opportunities for young women, and discounted fees for young women pursuing higher education.

Whilst this study has added new knowledge on transactional sex practice among young women in a tertiary institution in Ghana, the study has limitations. First, the study was carried out in a university context. While the context provided access to suitable and easily accessible respondents, findings may not be applicable to non-university context where pressure to pay fees and cater to other life essentials maybe relatively less. Second, the use of cross-sectional study design did not allow for causal inferences. Third, this study considered transactional sex practice from only young women's perspective and did not also explore detailed reasons underlying the practice. Future studies could therefore include males as well as use qualitative research methods to deepen understanding of the intersectional factors that drive transactional sex. These limitations notwithstanding, the findings reported in this study offer useful starting points for policy, research and programmatic interventions.

Conclusion

This study has provided baseline data on the magnitude of transactional sex among young women in a Ghanaian university context. In particular, the study has added empirical data on the linkages between transactional sex and risky sexual behavours and adverse sexual and reproductive health outcomes. Together, the findings offer useful pointers for initiating targeted remedial interventions. To this end, we recommend that Ghanaian Institutions of Higher Learning liaise with the Ghana Health Service and University-based Health Services to organise periodic comprehensive sexuality education to young students that will offer accurate and comprehensive information while building skills for negotiating safer sexual behaviours. The government of Ghana should institute deliberate interventions that are aimed at the economic empowerment of young females even as they go through their higher education. This could include deliberate cash transfers to identifiable impoverished households to

support young women through higher education; scholarships and grant opportunities for young women; and discounted fees for young women pursuing higher education. Early sexual debut increases the odds of transactional sex practice. This probably means the practice is even more prevalent in second-cycle institutions. School authorities and the Government through the Ministry of Gender, Children and Social Protection should roll out more comprehensive sexuality education programmes to inform young people about the dangers of early sex and the risk for STIs infections while encouraging safer sexual practices. Transactional sex practice increases the probability of participants contracting STIs and having abortions. This association between transactional sex and STIs therefore lends support to the evidence that transactional sex practice creates a fertile ground for the transmission of HIV infections. It is recommended that the University Health Services should incorporate School-based STI (HIV) prevention Programmes into their routine outreach activities to educate students on appropriate sexual behaviours. Finally, further qualitative studies that will describe the nature, forms and drivers of transactional sexual relationships among young women are needed.

Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
AOR	Adjusted Odd Ratio
CI	Confidence Interval
DHS	Demographic and Health Survey
HIV	Human Immunodeficiency Virus
JHS	Junior High School
NGOs	Non-Governmental Organizations
OR	Odd Ratio
SD	Standard Deviation
SSA	Sub-Saharan Africa
SSS	Senior High School
STIs	Sexually Transmitted Infections
STRIVE	Strengthening Resilience to Violent Extremism
UNAIDS	Joint United Nations Programme on HIV/AIDS

Supplementary Information

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Supplementary Material 1

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Author contributions
Study conception and design was by Authors PK and JKG. Recruitment and Data collection was done by Author PK. Data analysis and interpretation was done by Authors PK AND JKG, Manuscript drafting was by author PK. All Authors reviewed the results and approved the final version of the manuscript.

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Data availability
No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate
The protocol for this study was reviewed and approved by the Navrongo Health Research Centre Institutional Review Board with ethical approval ID: NHRCIB553. Administrative approval was obtained from the Management of University in which this study was conducted. The study was conducted in accordance with the terms of the Helsinki Declaration. Informed consent was obtained form every participant prior to completing the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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