ORIGINAL RESEARCH ARTICLE

Facility readiness and availability of sexual and reproductive health services for female undergraduate students in tertiary institutions in Ondo State

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Abstract

Adolescent girls and young women (AGYW) in Nigeria have a high burden of sexual and reproductive health (SRH) problems. SRH burden may be higher among female undergraduates, given the peculiarity of campus environments that allow for more sexual freedoms. Studies on AGYW SRH issues in Nigeria have not sufficiently focused on female undergraduates and the campus setting of SRH service provision. Consequently, very little is known about the availability of SRH services in institution-based health facilities and the facilities' readiness to respond to SRH needs. This cross-sectional study assessed the availability of SRH services to 638 female undergraduates in six private and public tertiary institutions in Ondo State and the readiness of the institution-based facilities for service delivery across six SRH domains: sexuality education; family planning; safe motherhood; post-abortion care; sexually transmitted infections; and, sexual violence. Analysis was undertaken using SPSS. The findings show a low level of availability of SRH services to female undergraduates and poor readiness of institution-based health facilities centers regarding SRH service provision. Identified gaps in the readiness of institution-based health facilities need to be addressed to facilitate improved availability and accessibility of female undergraduates to comprehensive SRH services. *(Afr J Reprod Health 2026; 30 [3s]: 50-61).*

Keywords: Adolescent girls and young women; SRHS; Tertiary institutions' health facilities; health facility readiness; healthcare availability

Résumé

Les adolescentes et les jeunes femmes (AJF) au Nigéria supportent une lourde charge de problèmes de santé sexuelle et reproductive (SSR). Cette charge peut être plus élevée chez les étudiantes de premier cycle, compte tenu de la spécificité de l'environnement universitaire qui favorise une plus grande liberté sexuelle. Les études sur les problèmes de SSR des AJF au Nigéria ne se sont pas suffisamment concentrées sur les étudiantes et sur le cadre universitaire de prestation des services de SSR. Par conséquent, on dispose de très peu d'informations sur la disponibilité des services de SSR dans les structures sanitaires des établissements d'enseignement supérieur et sur leur état de préparation à répondre aux besoins en SSR. Cette étude transversale a évalué la disponibilité des services de SSR pour 638 étudiantes de premier cycle dans six établissements d'enseignement supérieur, privés et publics, de l'État d'Ondo, ainsi que l'état de préparation des structures sanitaires des établissements pour la prestation de services dans six domaines de la SSR : éducation à la sexualité ; planification familiale ; maternité sans risque ; soins après avortement ; infections sexuellement transmissibles ; et violences sexuelles. L'analyse des données a été effectuée à l'aide du logiciel SPSS. Les résultats révèlent un faible niveau de disponibilité des services de SSR pour les étudiantes et un état de préparation insuffisant des structures sanitaires des établissements en matière de prestation de services de SSR. Les lacunes identifiées dans l'état de préparation des structures sanitaires des établissements doivent être comblées afin d'améliorer la disponibilité et l'accessibilité des étudiantes à des services complets de SSR. *(Afr J Reprod Health 2026; 30 [3s]: 50-61).*

Mots-clés: Adolescentes et jeunes femmes ; SSR ; structures sanitaires des établissements d'enseignement supérieur ; préparation des établissements de santé ; disponibilité des services de santé

Introduction

Adolescent girls (age 10-19 years) are in the phase of life that is characterized by a series of physiological, psychological, and social changes associated with pubertal development and sexual maturation. As such, sexual and reproductive health risks increase in adolescence[1]. Some of the critical biological events taking place in adolescence, and which underlie the propensity to engage in risky behavior such as brain development and maturation, continue till mid-to-late twenties[2,3]. Thus, young adults are also at a high risk of negative SRH outcomes through engagement in risky behaviors. While parental oversight increases as girls approach the adolescent phase of life in Nigeria and similar sociocultural environments[4], the females have greater freedom of choice regarding social and sexual relationships as they approach young adulthood or the youth phase of life. Consequently, the rates of sexual exposure and risky sexual behavior increase as adolescent girls transit to young women.

As the 2018 Nigeria Demographic and Health Survey (NDHS) reports[5], for example, the percentage of females who had sexual intercourse with more than one sexual partner in the 12 months before the NDHS increased from 0.7% for adolescents aged 15-19 years to 1.9% for young adults aged 20-24 years. Similarly, the percentage who had intercourse in the 12 months before the NDHS with a person who was neither their husband nor someone they were living with almost doubled between adolescence and young adulthood (9.6% for age 15-19 years versus 16.3% for age 20-24 years). Overall and as a group, adolescent girls and young women in Nigeria (AGYW), aged 15 – 24 years, have high SRH burden due largely to a combination of high-risk sexual behaviors and low level of access and utilization of relevant health services.

Healthcare access is central to the performance of healthcare systems[6] and is broadly recognized in the literature as a multidimensional and complex concept with several definitions[6,7]. Among others, the Institute of Medicine defines access as "the timely use of personal health services to achieve the best health outcomes"[8] while Levesque and colleagues, based on a synthesis of published literature, defined access as "the opportunity to identify healthcare needs, to seek healthcare services, to reach, to obtain or use health care services, and to actually have a need for services fulfilled"[6]. The World Health Organization (WHO) considers access as a key feature of adolescent-friendly services (along with being "acceptable", "equitable", "appropriate", and "effective"), with a focus on adolescents being "able to obtain the health services that are available"[9]**.** Thus, the inability of AGYW to obtain needed SRH services, when and where they need them, of sufficient quality to be effective and without financial hardship reflects lack of access[10].

AGYW in tertiary education settings constitute a distinct group of young people, given their peculiarities, including the unique campus environment that offers considerable freedom from parental restriction and adult oversight as well as more liberal social norms and sexual behavioural patterns. The conglomeration of a large population of young people of sexually-active age group on the same campus also increases the opportunities for social and sexual relationships. Studies across sub-Saharan Africa have shown a high level of risky sexual behaviour among undergraduates[10]. The degree to which relevant SRH services are available to undergraduates within their campus environment may significantly moderate or influence their sexual behaviours. Knowledge of the protective effect of condoms, for example, may not translate to its use for safe sex in situations where condoms are not immediately available or easily obtainable. Thus, the availability of comprehensive SRH services in institution-based health centres would significantly contribute to positive SRH behaviour and outcomes among female undergraduates. As the Tanahashi framework classically indicates[11], the availability of services is dependent on healthcare resources and, is foundational to healthcare access, utilization and effectiveness. Thus, the readiness of health facilities in terms of the resources for service provision is critical to the availability, accessibility and utilization of SRH services by female undergraduates.

While several studies have been conducted regarding SRH behaviour among AGYW in Nigeria, only few studies have specifically examined the availability of SRH services to female

undergraduates. Importantly, most of the existing studies have drawn their study participants from only one or two campus settings and have covered limited SRH services[12-14], thereby limiting their potential for wide application and generalisation. Furthermore, studies examining the readiness of tertiary institutions-based health facilities in Nigeria, which serve as the primary providers of health services to the campus-based population, for comprehensive SRH services are scarce. There is a need to address this knowledge gap, and this study aims to contribute towards that. The findings from this study have the potential to facilitate evidence-based advocacy and inform relevant interventions in institution-based health facilities for more effective and comprehensive SRH services. Such improved SRH services have the potential to positively impact the sexual and reproductive health and wellbeing of AGYW and contribute towards achieving the goals of Nigeria's national policy on adolescent and young people's health[5] and the extant National Health Policy with its vision as "universal health coverage for all Nigerians"[15].

Methods

Study design, study setting and study population

The study was conducted in tertiary educational institutions in Ondo State, southwest Nigeria. Ondo State has a total of 11 tertiary institutions, consisting of four schools owned by the federal government, four schools owned by the state government), and three private schools. Seven of the tertiary institutions are based in the Ondo Central senatorial district, three in Ondo North, and one in Ondo South senatorial district (Table 1).

The study was descriptive, cross-sectional in design and involved quantitative data collection from female undergraduates who were engaged in either full-time or part-time studies in six universities and observational audits of the institution-based health facilities. Non-willingness to participate or give informed consent was an exclusion criterion. The study was approved by the University of Medical Sciences, Ondo, Health Research Ethics Committee (NHREC/TR/UNIMED-HREC-Ondo St/22/06/21).

Sample size

A sample size of 638 was obtained through the use of Cochran's formula for prevalence studies[16] and the following parameter: standard normal deviation of 1.96); proportion of adolescents who utilized SRHS based on a previous study in southwest Nigeria (51%)[17]; design effect of 1.5; and, non-response rate of 10%.

Sampling technique

Selection of the study respondents was done using multistage sampling technique, with two out of three senatorial districts (Ondo Central and Ondo South) selected in the first stage using simple random sampling. Five of the seven institutions in Ondo Central senatorial district were selected using the simple random sampling approach along with the only tertiary institution in Ondo South districts in the second stage. Three female halls of residence in both campus and off-campus settings were selected from each institution in the third stage; and, respondents randomly selected from the halls of residence in the final stage. Overall, the six institutions selected consisted of three federal government-owned schools (two universities and a polytechnic), two state government-owned universities, and a private university. Three of the universities are specialised institutions, while the other three are conventional tertiary institutions.

Research instrument and data collection

Two research instruments were developed and used to collect data from individual respondents (female undergraduates) and to assess the institution-based health facility readiness for the provision of SRH services (SRHR). Data was collected over four months (November 2022 to February 2023) by trained research assistants through the use of the mobile app Kobo Toolbox.

For the female undergraduate students, data on the SRHS available to them in their institution-based health centers were collected using a pre-tested, structured, administered questionnaire with

Table 1: Distribution of tertiary educational institutions in Ondo State

	Tertiary Institution	Ownership	Type of Institution	Nature of institution
Ondo Central Senatorial District				
1	Federal University of Science and Technology Akure	Federal Government	University	Specialised
2	Federal Polytechnic Ile-Oluji	Federal Government	Polytechnic	Conventional
3	Adeyemi Federal University of Education, Ondo	Federal Government	University	Specialised
4	University of Medical Sciences, Ondo	State Government	University	Specialised
5	Elizade University Ilara-Mokin	Private	University	Conventional
6	Wesley University of Science and Technology Ondo	Private	University	Specialised
7	Federal College of Agriculture Akure	Federal	College	Specialised
Ondo South Senatorial District				
8	Olusegun Agagu University of Science and technology Okitipupa	State Government	University	Specialised
Ondo North Senatorial District				
9	Adekunle Ajasin University, Akungba Akoko	State Government	University	Conventional
10	Achievers University, Owo	Private	University	Conventional
11	Rufus Giwa Polytechnic Owo	State Government	Polytechnic	Conventional

core questions adapted from the work of Odo et al[18]. Study participants were required to select an option ("yes", "no", or "I don't know") concerning the availability of each type of SRHS specified in the questionnaire. The questions focused on six domains of SRHS: (a) sexuality education services; (b) contraceptive information and services; (c) safe motherhood services; (d) post-abortion care services; (e) prevention and management of sexually transmitted infections (STIs); and, (f) detection and management of rape and sexual violence survivors. Informed consent was obtained from each study participant before the data collection.

The readiness of each tertiary institutions' health center for SRHS provision was assessed using an observational checklist adopted from the work of Bukenya et al[19]. The use of the checklist involved assessing the presence or absence of specific SRH services, including the availability of relevant resources (health personnel, equipment, and commodities) and health activities in the context of adolescent/youth-friendly health services. The instrument had high internal consistency, with a Cronbach's alpha value of 0.92. The approval of the appropriate institutional/health facility authority was obtained before the facility readiness assessment was carried out.

Statistical analysis

Data analysis was undertaken using Statistical Product and Service Solutions (SPSS) version 23. The availability of SRHS to female undergraduate students as well as the findings regarding the readiness of institution-based facilities for SRH service provision are presented as percentages.

Results

The age range of the study participants was 15 to 32 years, with a mean age of 16.7±3.8 years. AGYW between the ages of 20 and 24 constituted about 56.9% of the study participants, with a lower proportion in the age group of 15-19 years (56.9% vs. 25.5%) as shown in Table 2. The majority of the respondents are single (92%), and of Christian affiliation (88%) and Yoruba ethnic group (84%). Almost four-fifths (78%) of the respondents were students in federal government-owned institutions, and about two-fifths (41%) were in their early years of studies (100 and 200 level). The majority of the students stayed in rented apartments outside the school (59%) while only a third (32%) stayed in hostels on school campuses during the school period.

Most respondents (69%) live with their parents when away from school. In terms of family setting, as Table 3 shows, most respondents were from monogamous setting (80%) and small-sized families of 1 to 3 children (64.3%). Most of the respondents have highly educated parents, with 73% of fathers and 63% of mothers having had tertiary or postgraduate education.

Table 2: Socio-demographic characteristics of study participants (female undergraduate students)

Variables		Freq (N=638)	Percentage (%)
Age	15-19	163	25.5
	20-24	363	56.9
	25 and above	112	17.6
Marital Status	Co-habiting	8	1.3
	Single	592	92.0
	Married	38	6.0
Current Level	100	128	20.1
	200	133	20.8
	300	185	29.0
	400	99	15.5
	500	79	12.4
	600	14	2.2
Religion	Christianity	561	87.9
	Islamic	72	11.3
	Others	5	0.8
Ethnicity	Yoruba	536	84.0
	Igbo	60	9.4
	Hausa	14	2.2
	others	28	4.4
Living arrangements while away from school	Living alone	101	15.8
	Living with one parent	46	7.2
	Living with both parents	438	68.7
	Staying with relatives	53	8.3
Ownership of Institution	Federal government owned	496	77.7
	Privately owned	26	4.1
	State Government owned	116	18.2
Type of Institution	Polytechnic	18	2.8
	University	620	97.2
Place of residence while in school	School hostel on campus	207	32.4
	School hostel off-campus	42	6.6
	Rented apartment off-campus	378	59.2
	Others	11	1.7

Table 4 presents the responses of the study participants in terms of the availability of SRHS to them regarding six SRHS domains: sexuality education services, contraceptive information and services, safe motherhood services, post-abortion care services, prevention and management of STIs, and detection and management of rape and sexual violence survivors. While the availability of services and related personnel, commodities, and activities vary considerably between various SRHS, the findings showed that less than half of the respondents indicated that any of the specified services was available to them. The availability of trained service providers ranged from 6.7% for provision of post-abortion care (PAC) to 30.9% for trained sexuality education provider.

Under sexuality education and services, the proportion of respondents who had the desired SRH education ranged from 21.3% for information on prevention of non-infectious conditions of reproductive health such as fistula and cancers to 42.9% for education on puberty and menstrual hygiene. Only 30.6% of respondents indicated availability of information on reproductive rights and policy, while 36.1% indicated the availability of information on the challenges associated with premarital and unsafe sex. Regarding contraceptive information and services, contraceptive information was available to only 16.8%, while the proportion who indicated the availability of contraceptive commodities ranged from 7.7% for intrauterine contraceptive device (IUCD)) to 12.1%

Table 3: Family characteristics of respondents

Variables	Freq (N=638)	Percentage (%)
Type of settlement lived in when away from school		
Rural	49	7.7
Semi urban	268	42.0
Urban	321	50.3
Father's level of education		
No formal education	24	3.8
Primary	15	2.4
Secondary	133	20.8
Tertiary (1st degree)	292	45.8
Tertiary (Postgraduate)	174	27.3
Mother's level of education		
No formal education	27	4.2
Primary	23	3.6
Secondary	186	29.2
Tertiary (1st degree)	271	42.5
Tertiary (Postgraduate)	131	20.5
Family type		
Monogamous	515	80.7
Polygamous	90	5.2
Others	33	14.1
Number of children in the family		
1-3	410	64.3
4-6	202	31.7
7 and above	26	4.0

for oral pills. Only 11.9% indicated the availability of condoms while 8.8% indicated the availability of emergency contraceptives. For the maternal components of safe motherhood services, only about a tenth of the respondents indicated the availability of antenatal services (12.4%), safe delivery services (13.5%), and postnatal care services (11.9%). Regarding post-abortion care, only 7.1% of the respondents indicated that manual vacuum aspiration was available to them. About a fifth of the respondents indicated that information on the prevention and management of STIs (19.9%) and HIV counselling and testing (20.1%) were available to them. Less than a quarter of respondents indicated the availability of relevant services to rape survivors: counselling (24.5%) and provision of emergency contraceptives (17.6%).

The findings from the facility readiness assessment of the institutional-based facilities in the six institutions, using an observation checklist, are presented in Table 5. Only one of the facilities (16.7%) had a separate designated space for SRHS provision, but none of the facilities had a separate waiting room for female undergraduates seeking SRHS. Only half of the facilities (3 facilities; 50%) had an examination room that provided visual and auditory privacy, but four facilities (66.7%) had counselling area that provided both visual and auditory privacy. In terms of health commodities, none of the health facilities had emergency contraceptive pills or provide emergency contraceptives for rape survivors, but four facilities (66.7) provide counselling for rape survivors. Also, only one facility had female condoms (16.7%), oral pills (16.7%), and IUD insertion materials (16.7%); while two facilities (33.3%) had male condoms and vaginal speculum (33.3%). Five facilities (83.3%) had pregnancy testing and HIV testing kits. Furthermore, none of the health facilities had clear written guidelines for the provision of SRHS, displayed educational posters on SRHS, or had print SRHR educational materials for clients to take away.

Table 4: SRHS available to respondents at tertiary institutions' health centers

Type of SRH services	SRH services availability for respondent's use at the school health centre (N=638)					
	Yes		No		Don't know	
	Freq	(%)	Freq	(%)	Freq	(%)
SEXUALITY EDUCATION SERVICES						
Trained sexuality education provider	197	30.9	136	21.3	305	47.8
Education on puberty and menstrual hygiene practices	274	42..9	120	18.8	244	38.2
Education on healthy association	266	41.7	120	18.8	252	39.5
Education on Human biology	254	39.8	123	19.3	261	40.9
Education on the dangers of premarital and unsafe sex	230	36.1	126	19.7	282	44.2
Education on skills to overcome sexual desire	202	31.8	142	22.3	293	45.9
Information on reproductive rights and policy	194	30.4	1412	22.1	303	47.5
Information on harmful traditional practices like female circumcision	164	25.7	147	23	327	51.3
Information on prevention of non-infectious conditions of reproductive health such as fistula and cancers	136	21.3	170	26.6	332	52
FAMILY PLANNING INFORMATION AND SERVICES						
Trained family planning provider	94	14.7	195	30.6	349	54.7
Family planning information	107	16.8	187	29.3	344	53.9
Oral pills	77	12.1	200	31.3	361	56.5
Condoms	76	11.9	211	33.1	351	55
Emergency contraceptives	56	8.8	214	33.5	368	57.7
Injectable contraceptives	53	8.3	232	36.4	353	55.3
Intrauterine contraceptive device (IUCD)	49	7.7	230	36.1	359	57.7
SAFE MOTHERHOOD SERVICES						
Trained midwife	87	13.6	214	33.5	337	52.8
Safe delivery services	86	13.5	240	37.6	312	48.9
Immunization services	84	13.2	230	36.1	324	50.8
Growth monitoring services	80	12.5	224	35.1	334	52.4
Antenatal services	79	12.4	238	37.3	321	50.3
Information on infant feeding practices	79	12.4	228	35.7	331	51.9
Postnatal services	76	11.9	239	37.5	323	50.6
POST ABORTION CARE (PAC) SERVICES						
Trained PAC provider	43	6.7	245	38.4	350	54.9
Emergency health care, in cases of bleeding and shock	68	10.7	226	35.4	344	53.9
Manual vacuum aspiration (evacuation) of retained product of conception	45	7.1	255	40	338	53
PREVENTION AND MANAGEMENT OF STIS AND HIV AND AIDS SERVICES						
Trained HIV and AIDS services provider	104	16.3	194	30.4	340	53.3
Voluntary counseling and testing	128	20.1	177	27.7	333	52.2
Information on prevention and management of STIs, HIV and AIDS	127	19.9	170	26.6	341	53.4
Antiretroviral therapy	57	8.9	216	33.9	365	57.2
DETECTION AND TREATMENT OF RAPE AND SEXUAL VIOLENCE SURVIVOR						
Counselling for rape survivors	156	24.5	153	24	329	1.6
Provision of emergency contraceptive for rape survivors	112	17.6	169	26.5	357	51.6

Table 5: Observation checklist for facility readiness in the provision of SRHS

PARAMETERS OF READINESS	Yes		No	
	Freq	(%)	Freq	(%)
LOCATION OF FACILITY				
Location of facility far (>5km) from students' residential area	1	16.7	5	83.3
FACILITY ENVIRONMENT				
Both young men and young women welcomed and served, either for their own needs or as partners	5	83.3	1	16.7
Counselling area that provides both visual and auditory privacy	4	66.7	2	33.3
Examination room that provides visual and auditory privacy	3	50.0	3	50.0
Having a separate space to provide SRHS	1	6.7	5	83.3
Having a separate waiting room for female undergraduate seeking SRHS	0	0.0	6	100.0
ADEQUATE COMMODITIES AND EQUIPMENT SUPPLY SUFFICIENT TO PROVIDE SRHS				
Skilled SRHS provider	1	16.7	5	83.3
Pregnancy testing strip	5	83.3	1	16.7
HIV/AIDS testing kit/strip	5	83.3	1	16.7
Male condoms	2	33.3	4	66.7
Manual vacuum aspiration kit	2	33.3	4	66.7
Vaginal Speculums	2	33.3	4	66.7
Female condoms	1	16.7	5	83.3
IUD insertion material	1	16.7	5	83.3
Angle poised lamp	1	16.7	5	83.3
Oral contraceptive pills	1	16.7	5	83.3
Emergency contraceptive pills	0	0.0	6	100.0
SERVICES OFFERED				
Pregnancy testing	5	83.3	1	16.7
Counselling for rape survivors	4	66.7	2	33.3
Counselling services: on sexuality, safer sex, pregnancy prevention, and STI and HIV prevention provided (including dual protection)	1	16.7	5	83.3
Provision of emergency contraceptives for rape survivors	0	0.0	6	100.0
Clear written guidelines for providing SRHS	0	0.0	6	100.0
Display of educational posters	0	0.0	6	100.0
Availability of print materials for clients to take away	0	0.0	6	100.0

Discussion

The availability of sexual and reproductive health services is important for addressing SRH challenges among AGYW and promoting healthy sexuality and optimal sexual and reproductive health and wellbeing. This study assessed facility readiness of institution-based health facilities and availability of SRHS to female undergraduate students who are mostly AGYW (age 15-24 years) in tertiary institutions in Ondo State, south-west Nigeria. Uniquely, this study covered six tertiary institutions in Ondo State (both private and public) and explored six SRH domains: (a) sexuality education services; (b) contraceptive information and services; (c) safe motherhood services; (d) post-abortion care services; (e) prevention and management of sexually transmitted infections (STIs); and, (f) detection and management of rape and sexual violence survivors. Overall, the result of the study shows low levels of availability of SRHS to female undergraduates and inadequate readiness of the institution-based facilities to respond to the SRH needs of the female undergraduates.

Sexual education services provide the foundation for health literacy and is critical to informing and shaping appropriate SRH behavior. In this study, most of the female undergraduates reported low level of health education across various SRH issues; only about a third (36.1%) reported availability of counselling on unsafe/safe sexual practices. Similarly, only one facility

(16.7%) was found in the facility readiness assessment to offer counselling services on sexuality, safer sex, pregnancy prevention, and STI and HIV prevention. This percentage compares poorly with the finding in other settings. For example, studies in Uganda and Kenya have reported much higher figures of 62.5% and 68% respectively[19,20].

Unplanned pregnancies, from unprotected sex, is associated with a high level of abortion in Nigeria. Approximately 56% of unplanned pregnancies in Nigeria results in abortion[21], mostly unsafe abortion consequent upon the restrictive abortion laws in the country. AGYW have disproportionately high burden of unplanned pregnancies and unsafe abortion in Nigeria[22]; the provision of quality contraceptive information and services is critical to addressing these challenges[21]. However, our findings show low level of availability of contraceptive information and services to female undergraduates and most institution-based facilities lack relevant contraceptive commodities. Specifically, none of the facilities had emergency contraceptives and only one facility out of six had female condoms and two facilities had male condoms. One major explanation for this finding is the social and community norms against premarital sex in the Nigerian environment, along with myths and negative nuances about contraceptive use by unmarried adolescents and young people[7,16]. These findings, overall, imply a very low level of preparedness and readiness to effectively respond to the contraceptive needs of their predominantly young populations, and are in tandem with previous report of a high level of unmet contraceptive needs among AGYW in Nigeria[23-25]. The poor availability of male and female condoms also has negative implications for the prevention of HIV and other sexually transmitted infections.

Also, despite the high risk of abortion among undergraduates, our findings show that not more than a tenth of female undergraduates were of the opinion that trained PAC provider, emergency health care in cases of post-abortion bleeding and shock, or manual vacuum aspiration are available to them. Abortion is still a highly controversial subject in Nigeria and there are considerable religious, cultural and moral nuances regarding abortion. The bias regarding abortion, unfortunately, extends to PAC despite the legality of PAC as against the restrictive nature of country's abortion law. In general, studies on PAC have reported low level of availability in Nigeria[26-28], and it is therefore not surprising that very low level of abortion-related services would be found in campus environment in Nigeria.

Our findings show that only between 11.9% and 13.5% of female undergraduate indicated that key pregnancy-related services of antenatal care, safe service delivery, and postnatal care were available to them. While it can be argued that most AGYW in tertiary institutions would not need such services as they are unmarried and unlikely to plan for pregnancies, it must be recognized that some female students are married and unmarried AGYW may also get pregnant – planned or unplanned. The primary health care (PHC) concepts implies that individual health needs should be met where they live and work, which in the case of female undergraduates refers to the campus environment with the institution-based facility as their PHC service provider. The nearness of the institution-based facilities to the students' residential areas makes them the likely first point of call if any student develop pregnancy-related emergencies. Thus, the institution-based centres need to be well prepared to meet pregnancy-related needs of female undergraduates and other campus population, which is not presently the case from the findings of this study.

The last component of the essential reproductive health services package that we assessed in this study was the detection and management of rape and sexual violence. As true for other SRH areas, our findings show low level of availability of services and poor state of facility readiness for female undergraduates who experience rape or other forms of sexual violence. While 24.5% of female undergraduates indicated that counselling was available for rape and sexual violence survivors and 17.6% of them indicated the availability of emergency contraceptives for survivors, the facility readiness assessment showed that none of the facilities had emergency contraceptive for sexual violence survivors. Four of the six facilities (83.3%), however were providing counselling to rape and sexual violence survivors.

This low level of availability of survivor-centered services reflects another major gap in the provision of essential SRHS services to female undergraduates as the literature suggests an increasing rate of sexual violence in Nigeria.

On the whole, the findings from this study show an unacceptable low level of availability of SRH services in tertiary educational institutions and inadequate readiness of the institution-based facility despite the campus demographic of predominantly adolescents and young people. One major reason that may explain this finding is possibly the belief that young people who are unmarried should not be engaging in sexual activities and the provision of SRH services may be seen as going against this social norm and inadvertently promoting sexual activities among young people. These nuances need to be challenged and revised on the basis of reproductive rights of AGYW, the essential tenets and goals of primary health care, and the national agenda for adolescent/youth-friendly health services and universal health care. Another factor that may be at play is the limited number of health personnel in the institution-based health facilities, many of which also have significant resources constraints in terms of space and materials, which would limit their potential for more comprehensive SRH services.

Study limitations

This study assessed availability of SRHS from the perspective of female undergraduates and using self-reported methods. As true for studies involving self-reports, the validity of the reports is difficult to ascertain and the possibility of social desirability bias exist. Many of the respondents may also not have used the facilities and thus their knowledge of actual availability may be deficient, particularly given the incongruence between the reports of the respondents and the findings from the more objective facility readiness assessment. The family background of the respondents with about three-quarters of fathers and three-fifths of mothers having had university-level education is not typical of the average Nigerian family. Given the focus of the study as the availability of SRHS to them from institution-based health facilities, their background is unlikely to have significantly affected the findings. However, if their sociodemographic status based on their parental background affect their likelihood to seek care from private facilities, which may offer more comfort and privacy compared to the institution-owned facilities, the respondents' knowledge of services available in institution-owned facilities are likely to be poor and more of guesswork, The fact that the six institution are based in the same state in Nigeria with its high level of geo-political and sociocultural diversities may limit the application of the findings to female undergraduate in other geographic settings.

The quantitative nature of this study has not allowed for the interrogation of reasons that may explain the findings. Using a mixed methods approach involving both quantitative and qualitative methods would have enabled the study to better understand the context of SRH services in the institutional setting and factors that may be related to the findings. Despite these limitations, this study offers significant insight into state of SRHS provision in tertiary institutions' health centers and address the knowledge gap that currently exist in research literature in this regard. With the approach of exploring various domains of SRHS and their elements, which has so far been rare among published studies on adolescent/youth-related SRH services in Nigeria, this study also makes an important contribution to the knowledge of SRHS issues among undergraduates and adolescent/youth sexual and reproductive health in Nigeria.

Conclusion

This study concludes that availability of SRHS to female undergraduate students is significantly low and the readiness of majority of tertiary institutions' health centers to provide SRHS is also low. The findings from the study underscore areas where critical intervention may be necessary vis-a-vis the provision of SRH services in the context of institution-based health centers with the potential to contribute to improved SRH status of undergraduates in Nigeria and promote optimal SRH among this critical young population.

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Conflict of interests

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Authors contribution

Mercy K. Aladegboye and Adesegun O. Fatusi conceptualized and designed the study, Mercy K. Aladegboye collected and analyzed data, Mercy K. Aladegboye and Adesegun O. Fatusi prepared the manuscript

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