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# **Exploring Reproductive Health Knowledge and Practices of Female Students under 24 Years: A Study at the University of Dschang Main Cadmpus**

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#### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

#### **Article Information**

DOI: 10.9734/JAMPS/2024/v26i5686

#### **Open Peer Review History:**

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/114362>

**Original Research Article**

**Received: 16/01/2024**

**Accepted: 20/03/2024**

**Published: 02/04/2024**

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## **ABSTRACT**

**Context:** Reproductive health encompasses people's freedom and ability to procreate and have a sexual life that is not only safe but also satisfying. Identifying factors related to the under-utilization of reproductive health services among young girls could help reduce the incidence of reproductive health problems affecting them.

**Methods:** This was a cross sectional study carried out from January to July 2022 among the female students aged 24years and below of the University of Dschang's main campus. The

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sampling method was proportionate stratified sampling. Categorical and continuous variables were expressed as frequencies and means respectively. Multiple logistic regression was used to assess the relationship between dependent and independent variables.

**Results:** A total of 395 participants were recruited, with a mean age of 20.6 years and a reported high level of knowledge about reproductive health at 88.9%. Furthermore, 56.2% of the respondents were already sexually active, with the average age at first sex being 18.8 years. However, 30.6% of the participants had made use of reproductive health services. Being aged 21-22 years and being of a religion other than Christianity were some of the predictors of the participants' knowledge and practices towards reproductive health services.

**Conclusion:** This study highlights the low use of reproductive health services among female students and provides new grounds for implementing interventions that will not only improve their reproductive health status but will also be culturally appropriate.

**Keywords:** Knowledge; practice; reproductive health; female students; Dschang; health encompasses; health services; sexual behaviour.

## 1. INTRODUCTION

Reproductive health entails having a safe and satisfying sexual life coupled with the ability to reproduce as well as freedom to decide when and how to do so. The sexual behaviour during adolescence has long term consequences given that it tends to affect life into adulthood. Youths have a tendency to explore their sexual needs under the influence of social media and peers. Every year, about 3 million adolescents get infected with a sexually transmitted infection (STI) with more than 500,000 of them being infected with gonorrhoea. Thus, about one out every adolescent suffers from an STI in every country be it developed or underdeveloped. Also, 25% of Acquired Immunodeficiency Syndrome (AIDS) cases are young people who are likely to have contracted the disease during adolescence [1-4].

In the African society, social inequalities as well as taboos and stigma attached to reproductive health issues are factors which influence women's access to health care. These deprive them of the freedom and ability to make decisions towards health care. As such, they end up having insufficient knowledge concerning reproductive health matters and limited access to reproductive health care. It is estimated that half of the pregnancies among adolescents in developing countries are unwanted with more than half of them terminated in unsafe conditions [2,5].

Reproductive health services (RHS) should be delivered in a style and at a time that makes youths feel comfortable, found in locations providing suitable privacy and confidentiality with specially trained personnel. Sadly, such services

are hardly available in Cameroon, where the needs of the youthful population are clearly underestimated with numerous weaknesses observed. According to literature, voluntarily induced abortions are estimated to be greater within the young population with rural regions accounting for the greatest proportion of them. The prevalence of STIs is prominent among females aged 15-24years as compared to that among males of the same age [6-9].

Knowledge, attitude and practice (KAP) surveys are commonly used in the assessment of health seeking behaviour within a given population as they tend to bring out what is known, thought and done concerning the health issue of interest [10]. The few studies on reproductive health that exist in Cameroon take specific aspects like unwanted pregnancies, STIs or even modern contraceptives into consideration and as such give a limited view of the general reproductive health situation. Our study intended to pin down the knowledge gaps and practices existing among female students aged 24 years and below attending lectures at the University of Dschang, that may act as barriers to their access and use of reproductive health services.

## 2. METHODS

### 2.1 Study Design and Population

This was a cross sectional study carried out prospectively from January to July 2022 on the main campus of the University of Dschang, one of the eleven public universities in Cameroon. Only female students aged 24years and below, who attended lectures on campus at the time of the study and gave signed consent were included in this study.

## 2.2 Sampling and Sample Size

The sample size estimated using Fischer's formula was 385 participants and the sampling method was proportionate stratified sampling. The six faculties at the University of Dschang main campus made up our strata. We obtained the distribution of female students per faculty from the administrative authorities and proceeded to calculate the sample size for each faculty proportionally. Participants were selected from the faculties using simple random sampling until the desired sample size per faculty was attained.

## 2.3 Data Collection and Tools

Data collection was done after a pre-test among the female students of the University of Buea which enabled us to modify the questionnaire for the fluidity of the questions and the inclusion of all variables. In order to achieve this, we used a printed self-administered questionnaire divided into four parts: *sociodemographic factors, knowledge of reproductive health, practice in relation to RHS and use of RHS*. The investigator used the information sheet to make a brief presentation of the study to the participants. Signed consent was obtained before handing the questionnaire, which was translated to French when necessary for the participants' better understanding. Each questionnaire was checked for completeness immediately after collection from participants and adjustments were made where necessary.

## 2.4 Definition of Terms

### - History of sexual experience

Participants who had experienced sexual intercourse in their life were considered as having a history of sexual experience.

### - Knowledge of reproductive health services

Participants having a score superior to 50% of the correct answers concerning RH related questions were said as having a high knowledge level and those with an inferior score were said to lack knowledge.

### - Use of contraceptives

Participants who had used a contraceptive at any time before the study.

### - Use of RH service

Participants who had sought at least one of these services: contraception, STI, abortion, pregnancy.

## 2.5 Statistical Analysis

Only questionnaires from participants with complete data were considered for further analysis. The collected data was typed into a database created and cleaned using the Microsoft Excel software. The dependent variables for this study were: knowledge level and practices towards RHS (ever used contraceptive, ever sought RHS and ever tested for STI) while the explanatory variables were: age, study level, religion, marital status and living arrangement. The software used for analysis was Statistical Package for the Social Sciences (SPSS) version 25. Categorical and continuous variables were expressed as frequencies (percentages) and means (standard deviation) respectively. Multiple logistic regression was used to assess the relationship between dependent and independent variables.

## 2.6 Ethical Consideration

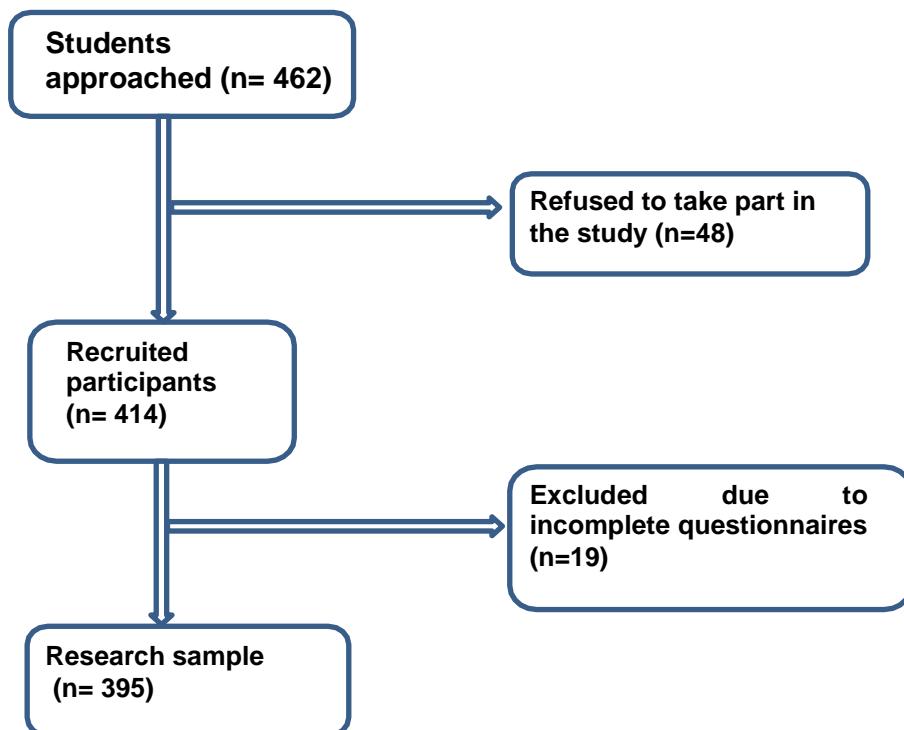
Administrative authorisation was obtained from the authorities of the University of Dschang main campus. Later on, approval to proceed with the study was given by the Regional Ethics Committee of the West Region. Each of the participants provided signed consent to take part in the study. No name or other identifying information was used for this study. The data was treated anonymously and confidentially.

## 3. RESULTS

### 3.1 General Characteristics of Study Participants

Out of 462 students approached for this study, 48 refused to take part in the study. As such, 414 participants were recruited but only 395 of them met the inclusion for the study and formed the sample size (Fig. 1).

Most of the participants, 132 (33.4%) were 21-22 years old with the mean age being 20.6 (SD 1.9) and an age range of 17-24years. The Faculty of Sciences had the greatest proportion of students, 114 (28.9%) who took part in the study and Level 1 students who registered a total of 144 (36.5%) students were represented the most. Christianity was the most practiced religion with 328 (83%) participants, followed by Islam with 31 (7.8%) participants. Based on marital status, 357(90.4%) were single and 25 (6.3%) were cohabiting (unmarried but lived with their partners). Table 1 gives further details on the participants' sociodemographic characteristics.



**Fig. 1. Flow Chart Showing the Study's Recruitment Process**

### **3.2 Sexual History and Knowledge of Reproductive Health among the Study Participants**

The sexual history of the participants as described by Table 2 showed that 222 (56.2%) of them were already sexually active, the mean age at first sex being 18.8 years and age at first sex ranging from 12-23years Having more than two lifetime sexual partners was peculiar to 68 (30.6%) participants. Also, 48 (21.6%) of those that were sexually active reported they had already been pregnant.

Out of the 395 respondents, 342 (86.6) had heard of RH with their main source of information being their lecturers or teachers. The overall RH knowledge was above average with 351 (88.9%) of the study participants having a high knowledge level (i.e. answered more than 50% of the knowledge questions correctly). Poor STI knowledge was common to 88 (22.3%) participants while 154 (39.0%) had poor knowledge of condom use.

### **3.3 Use of Reproductive Health Services**

As far as seeking RHS was concerned, 121 (30.6%) respondents asserted they had already sought RHS with the most frequent consultation

motive being gynaecological examination. A total of 149 (37.7%) respondents had already been tested for an STI and the majority revealed that it was during a voluntary consultation. In addition, only 40 of the participants who revealed they already had an STI had sought for treatment with private clinics being the preferred treatment site.

Furthermore, a total of 175 (44.3%) participants revealed they had already made use of a contraceptive method with 145 (65.3%) students reporting they had used it during the first sexual act while use in subsequent sexual acts was reported by 127 (57.2%) students. The preferred source of contraceptive among participants was the pharmacy; 120(49.4%) and condom was the most used contraceptive both during first and subsequent sexual acts (Table 3).

### **3.4 Factors Associated to the Knowledge and the Practices towards Reproductive Health Services**

As visible from Table 4, logistic regression was performed in order to identify the factors associated with knowledge of reproductive health and practices towards reproductive health services among the participants. The components of practices towards RHS considered for this study were "ever used

*contraceptive method*", "ever tested for STI" and "ever sought STI treatment". The variables in Table 4 were.

After adjusting for confounding factors using multivariate analysis, being aged 21-22 years ( $OR=3.95$ ,  $p=0.02$ ) was significantly associated (having a  $p$ -value $<0.05$  and a confidence interval, C.I., that does not contain 1 as a value) to the knowledge among the participants. Furthermore, having a high knowledge level of reproductive health, being aged 21-23 years and being of a religion other than Christianity were the variables that demonstrated statistically significant association to the components of the practices towards reproductive health services.

## 4. DISCUSSION

This study enabled us to answer the research questions which aimed at assessing the knowledge of reproductive health and practices related to RHS among the female students aged 24 years and below.

### 4.1 Sexual History and Knowledge of Reproductive Health

In this study, 56.2% of the respondents were already sexually active with the mean age at first-sex being 18.8 years. This corresponds to a study in Central Ethiopia in which 53% of the participants were sexually active with the

**Table 1. Sociodemographic characteristics of the participants**

Variable	Frequency, n=395	Percentage	C.I. at 95%
<b>Age</b>			
21-22 years	132	33.4	29.0 – 38.2
19-20 years	122	30.9	26.5 – 35.6
17-18 years	73	18.5	15.0 – 22.6
23-24 years	68	17.2	13.8 – 21.3
<b>Faculty</b>			
Sciences	114	28.9	24.6 – 33.5
Economical and Management Sciences	85	21.5	17.8 – 25.8
Letters and Human Sciences	78	19.7	16.1 – 24.0
Legal and Political Sciences	69	17.5	14.0 – 21.5
Medicine and Pharmaceutical Sciences	25	6.3	4.3 – 9.2
Agronomy and Agricultural Sciences	24	6.1	4.1 – 8.9
<b>Study Level</b>			
Level 1	144	36.5	31.9 – 41.3
Level 2	123	31.1	26.8 – 35.9
Level 3	64	16.2	12.9 – 20.2
Level 4	36	9.1	6.7 – 12.4
Level 5 and above	28	7.1	5.0 – 10.1
<b>Religion</b>			
Christian	328	83.0	79.0 - 86.4
Muslim	31	7.8	5.6 – 10.9
None	27	6.8	12.9 – 20.2
Other	9	2.4	1.2 – 4.3
<b>Marital Status</b>			
Single	357	90.4	87.1 – 92.9
Cohabiting	25	6.3	4.3 – 9.2
Married	12	3.0	1.8 – 5.2
Divorced	1	0.3	0.04 – 1.4
<b>Living arrangement</b>			
Family	187	47.3	43.7 – 53.5
Alone	168	42.5	37.8 – 47.5
Partner	25	6.4	3.3 – 7.7
Friend(s)	9	2.3	1.2 – 4.3
Other	6	1.5	0.7 – 3.3

C.I.=Confidence Interval

**Table 2. Sexual history and knowledge of reproductive health among the participants**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>	<b>C.I. at 95%</b>
<b>Ever had sex</b>			
Yes	222	56.2	51.3 – 61.0
No	173	43.8	39.0 – 48.7
<b>Age at first act</b>			
16-19 years	135	60.8	64.1 – 67.3
20-23 years	78	35.1	28.9 - 41.8
12-15 years	9	4.1	1.9 – 7.6
<b>Number of lifetime sexual partners</b>			
More than two	154	69.4	62.9 – 75.4
Two or less	68	30.6	24.6 - 37.2
<b>Ever been pregnant</b>			
Yes	48	21.6	16.4 – 27.6
No	174	78.4	72.4 – 83.6
<b>Ever heard of RH</b>			
Yes	342	86.6	82.9 - 89.6
No	53	13.4	10.4 – 17.1
<b>General knowledge</b>			
Good (>50%)	351	88.9	85.4 – 91.6
Poor (< 50%)	44	11.1	8.4 – 14.6
<b>Contraceptive knowledge</b>			
Good (> 50%)	306	77.5	73.9 – 81.3
Poor (<50%)	89	22.5	18.7 – 26.9
<b>Condom knowledge</b>			
Good (>50%)	241	61.0	56.1 – 65.6
Poor (<50%)	154	39.0	34.3 – 43.9
<b>STI knowledge</b>			
Good (> 50%)	307	77.7	73.1 – 81.6
Poor (< 50%)	88	22.3	18.5 – 26.

C.I.=Confidence Interval RH=Reproductive Health STI=Sexual Transmitted Infection

average age at first sex being 17.3 years but differs from a study in Tanzania which showed that 70.8% of the participants were sexually active with an average age at first sex of 20 years. Another study by Yode and Legrand demonstrated that 70.7% in Burkina Faso, 54.8% in Malawi and 54% in Uganda, had their first sexual intercourse between the ages of 14 and 17 years [11-13]. Age distribution and sample size differences could help to explain the variations between these studies. Risky sexual behaviour is commonly associated to early age of first intercourse given the fact that most people tend to engage into multiple sexual relationships, poor use of condoms and extramarital sex with a high risk of STIs [14].

Out of the 395 recruited participants in this study, 88.9% were considered as having a good knowledge of reproductive health. This differs from 54.9% of knowledgeable participants in a study by Tlaye et al in 2018 and 59.6% in a study by Ayalew et al in 2019 [15,16]. The disparity in

knowledge levels between these studies and our research work could be explained by the difference in time periods, study areas and sampling methods. The low level of knowledge in certain regions of the world has been commonly associated with the highly respected and strong conservative background that limits access to issues considered as taboo, reproductive health issues in this case [17,18].

#### 4.2 Use of Reproductive Health Services

With regards to the reproductive health seeking behaviour in this study, 30.6% of the respondents had already sought reproductive health services and gynaecological exam was the consultation motive with the highest frequency. This is similar to a study by Yemaneh et al in which 24.5% of the participants had used reproductive health services and the most reported consultation motive was voluntary consultation and testing (VCT) and is different from a study by Wirsiy et al, where 61% of the participants had used at

least one of the existing reproductive health services [1,5]. Also, 34.8% of those affected by reproductive health issues in the present study had gone to private clinics for treatment. Conversely, a study by Bwambale et al revealed that 68.4% of the participants had gone to public health facilities to access reproductive health services [19]. The difference between these studies could be explained by the study populations involved and the availability of reproductive health services. It would be helpful that policies enabling open and liberal access to reproductive health services among youths be implemented in order to reduce the incidence of reproductive health issues.

Adhesion to contraceptive use is essential for the assessment of existing family planning programmes. In this study, 44.3% of the respondents had already made use of a contraceptive method with condom being the most commonly used among the contraceptive methods identified. This prevalence is higher than that obtained in a study carried out in Cameroon in 2018, in which 18.3% of the women had used contraceptives and the most commonly cited was the male condom [8]. A similar result was obtained in a study in Mali, where 17.1% of

the participants had already made use of contraceptives[20]. According to the 2018 Demographic Health Survey (DHS) in Cameroon, 19% of the women aged 15- 49 years made use of at least one contraceptive method at the time of the study with a higher prevalence of contraceptive use observed among single participants [21]. The differences between these studies could be explained by the variation in sample sizes, cultural contexts and study areas meanwhile several barriers such as fear of the side effects, concerns about confidentiality and cost could help to explain the low contraceptive use commonly observed.

#### **4.3 Factors Associated to the Knowledge and Practices towards Reproductive Health Services**

The knowledge and practices towards reproductive health services among the female university students aged 15-24 years of the main campus of the University of Dschang were influenced by several different factors. As a matter of fact, being aged 21-22 years was significantly associated to the knowledge of reproductive health among the participants in our

**Table 3. Use of reproductive health services among the respondents**

Variable	Frequency	Percentage	C.I. at 95%
<b>Ever sought RHS</b>			
Yes	121	30.6	26.3 – 35.4
No	274	69.4	64.6 - 73.7
<b>Ever tested for STI</b>			
Yes	149	37.7	33.1 – 42.6
No	246	62.3	57.4 – 66.9
<b>Ever sought STI Treatment</b>			
Yes	40	11.3	32.4 – 53.2
No	355	88.7	46.8 – 67.6
<b>Ever used contraceptive method</b>			
Yes	175	44.3	39.5 – 49.2
No	220	55.7	50.7 – 60.5
<b>Use of contraceptive method during first act</b>			
Yes	145	65.3	58.7 – 71.6
No	77	34.7	28.4 – 41.3
<b>Use of contraceptive method during subsequent act</b>			
Yes	127	57.2	50.4 – 63.8
No	95	42.8	36.2 – 49.6
<b>*Source of contraceptive</b>			
Pharmacy	120	49.4	42.1 – 56.9
Hospital or Clinic	50	20.6	19.3 – 31.2
Shop	49	20.2	18.8 – 31.2
Other	24	9.8	7.9 – 17.4

\*Different sample size given that participants could choose more than one source.  
C.I.=Confidence Interval RHS=Reproductive Health Services STI=Sexual Transmitted Infection

**Table 4. Predictors of knowledge level and practices towards RHS among the study participants**

<b>Variables</b>	<b>OR</b>	<b>P-value</b>	<b>CI at 95%</b>
<b>Knowledge</b>			
Being aged 21-22yrs	3.95	0.02	1.29-12.04*
Being aged 23-24yrs	1.73	0.36	0.54-5.58
Being a Level 3 student	2.22	0.18	0.70-7.05
<b>STI testing</b>			
Being aged 19-20yrs	1.73	0.11	0.88-3.40
Being aged 21-22yrs	1.56	0.23	0.75-3.21
Being aged 23-24yrs	2.07	0.07	0.93-4.61
Being a Level 5 student and above	1.44	0.44	0.58-3.56
Having no religious belief	2.28	0.05	1.02-5.09
Being of a religion other than Christianity or Islam	5.24	0.04	1.04-26.29*
Having a good RH knowledge	2.54	0.02	1.13-5.72*
<b>Contraceptive use</b>			
Being aged 21-22yrs	11.52	0.0	5.11-25.94*
Being aged 23-24yrs	22.42	0.0	8.88-56.61*
Being a Level 2 student	1.21	0.51	0.68-2.16
Being a Level 3 student	1.03	0.93	0.51-2.07
Being a Level 5 student and above	0.52	0.18	0.20-1.35
Being Muslim	0.24	0.01	0.08-0.68*
Cohabiting with partner	2.73	0.04	1.04-7.18*
Being married	0.77	0.67	0.23-2.58
Having a good RH knowledge level	2.39	0.04	1.03-5.53*
<b>Seeking RHS</b>			
Being aged 21-22yrs	2.82	0.003	1.41-5.63*
Cohabiting with partner	1.76	0.18	0.77-4.05
Being married	3.17	0.06	0.97-10.33
Living alone	1.72	0.02	1.08-2.73*

\*Statistically significant at p=0.05

C.I.=Confidence Interval RHS=Reproductive Health Services STI=Sexual Transmitted Infection

research. Knowledge of reproductive health also influenced contraceptive use and STI testing among the participants. Likewise, a study among adolescents in Lao People's Democratic Republic (PDR) revealed that age, educational attainment, sex, religion, employment status, and district of residence in addition to the fact that the knowledge level of the participants influenced their use of contraceptives [22].

Factors that were statistically significant to the practices towards reproductive health services among the participants in our study were being aged 21-22years, being of a religion other than Christianity or Islam, being aged 23-24years, being a Muslim, cohabiting with one's partner, having a good knowledge of RH and living alone. On the other hand, a study by Dida et al showed that sexual status, knowing any type of modern contraceptive and discussion on reproductive health issues with health professionals were determinant factors of reproductive health service utilization among the respondents [23].

Another study by Tilahun et al identified age of participants, ever heard of sexual and reproductive health services and ever visited health facilities for any other types of services as significantly associated to the use of sexual and reproductive health services among the study participants [14]. Definition of key terms, procedure for the recruitment of participants and components of the study population could help to explain the disparities observed between the studies.

## 5. CONCLUSION

The use of reproductive health services among female students of the University of Dschang main campus was low despite the numerous sources of information available to them and the high knowledge level most of them demonstrated. This study therefore questions the effectiveness of existing interventions and provides baseline information for an array of actions in the development and implementation

of culturally appropriate interventions for the improvement of the reproductive health status of female students.

## 6. LIMITATIONS OF THE STUDY

The limitations faced by this research work were:

- Sexuality, the topic of interest, is commonly seen as taboo. This made it difficult for students to be completely open or willing to take part in the study;
- The self-administered questionnaire exposed the study to information bias given that it was easier for participants to give socially acceptable responses.

## CONSENT

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

## ACKNOWLEDGEMENTS

The authors will like to thank the authorities of the University of Dschang and the study participants for their cooperation during the study.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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