

Knowledge and Perception Regarding Sexual Health among College Students in Malappuram District, Kerala, India: A Cross-sectional Study

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ABSTRACT

Introduction: Good Sexual and Reproductive Health (SRH) encompasses complete physical, mental, and social well-being in all matters related to the reproductive system. Access to accurate information is crucial for maintaining SRH. Adequate knowledge and perception regarding sexual health play a vital role in reducing Sexually Transmitted Infections (STIs), teenage or unwanted pregnancies, and empowering individuals against sexual violence.

Aim: To evaluate the knowledge and perception of sexual health and associated factors among college students in Perinthalmanna, Malappuram District, Kerala.

Materials and Methods: A cross-sectional study was conducted among 540 students from January to April 2022 among 540 students attending MES Arts and Science College in Perinthalmanna, Malappuram District, Kerala, India. A semi-structured questionnaire was used to assess their demographic details, knowledge, and perception regarding sexual health. The Chi-square test and Independent t-test were employed, and multivariate logistic regression was performed to identify independent predictors, including the students' academic qualification, educational status of their mothers, and prior information on sexual health.

Results: The respondents were predominantly male (60.4%), with a mean age of 19.32±1.262 years. The majority (95.4%) were undergraduate students, while 4.6% were postgraduate students. Muslims accounted for the majority of respondents

(83%), followed by Hindus (14.6%). More than 90% of the participants were unmarried. Approximately 60% of the respondents' mothers and 51% of the fathers had a high school education. Out of 540 respondents, 487 (90.2%) reported having obtained information on sexual health. Friends (41.7%) were the most preferred sources of information. The mean score for respondents' knowledge was 3.79±1.3, and the mean score for perception was 31.26±4.5. Being a postgraduate student ($p=0.035$), having a higher educational status of the mother ($p=0.034$), and prior information on sexual health ($p<0.001$) were significantly associated with higher knowledge. Being a postgraduate student ($p=0.02$) and having a higher educational status of the mother ($p=0.03$) were significantly associated with higher perception. A total of 21% of the respondents stated that sex education should be provided according to age appropriateness. Gender-wise differences were observed in the respondents' opinions regarding the timing of sex education ($p=0.024$).

Conclusion: Good knowledge and positive perception levels were significantly associated with the academic qualification of the study subjects and the educational status of their mothers. However, the respondents' knowledge regarding fertilisation, pregnancy, and contraceptives was deficient. Therefore, implementing a comprehensive sexual and reproductive health education program in schools and colleges, along with behavioural change communication materials, is urgently needed.

Keywords: Contraception, Fertilisation, Menstruation, Sex education, Young adult

INTRODUCTION

Reproductive health encompasses complete physical, mental, and social well-being in all matters related to the reproductive system and its functions and processes. It includes the ability to have a satisfying and safe sex life and the freedom to choose if and when to reproduce [1]. Ensuring the Sexual and Reproductive Health (SRH) of adolescents and young adults is crucial and requires comprehensive sexuality education, prevention and treatment of Sexually Transmitted Infections (STIs), and access to family planning counselling. It also involves empowering young people to exercise their rights, such as delaying marriage and rejecting unwanted sexual advances [2].

The Sustainable Development Goal (SDG-3) for health aims to ensure healthy lives and promote well-being for all ages by 2030. Achieving SDG-3's target of universal access to SRH care services (target 3.7) is essential for overall health and well-being [1]. Age-appropriate sexuality education is recognised as an important intervention for reducing risks in young adolescents and promoting

positive SRH outcomes. Early adolescence is an optimal time to teach about gender and rights, as it allows for enhanced SRH understanding. School-based educational interventions have been implemented globally to enhance adolescent SRH outcomes, and United Nations Educational, Scientific and Cultural Organisation (UNESCO's) evaluation of comprehensive sexuality education has shown positive results in terms of reducing risky behaviours and improving health-seeking behaviours and knowledge [3].

The STIs pose a significant global burden, with more than one million new infections occurring daily. In 2020, World Health Organisation (WHO) estimated 374 million new infections of Chlamydia, Gonorrhoea, Syphilis, and Trichomoniasis. Genital herpes affects over 490 million individuals, and approximately 300 million women have Human Papillomavirus (HPV) infections [4]. In India, around 6% of the adult population experiences one or more STIs/Respiratory Tract Infections (RTIs), resulting in 30-35 million new cases annually [5]. A study in North Kerala revealed an increasing trend in total STIs, particularly syphilis, over a 20-year period [6]. Given the

rising prevalence of Human Immunodeficiency Virus (HIV), Acquired Immunodeficiency Virus (HIV), STIs, and teenage pregnancies, sex education is crucial for young people in India. It can also educate them about their sexual rights and empower them to protect themselves against violence, assault, and molestation [7].

Previous literature highlights poor knowledge [8] and perception regarding sexual health among young adults [9,10]. However, some studies have shown good knowledge and perception in the adolescent age group [11,12]. Despite the need for SRH services for adolescents and young adults, there is a lack of understanding in many regions, including India. Adolescent-friendly clinics established under the Rashtriya Kishore SwasthyaKaryakram (RKSK) are mandated to provide counselling and support to adolescents, but these clinics have often been inaccessible or inactive, even before the Coronavirus Disease-2019 (COVID-19) pandemic [13]. There is a significant gap in studies examining the knowledge and perception of sexual health among young adults. Therefore, the present study aimed to evaluate the knowledge and perception of sexual health and associated factors among college students in Perinthalmanna, Malappuram District, Kerala.

MATERIALS AND METHODS

A cross-sectional study was conducted from January to April 2022 among 540 students attending MES Arts and Science College in Perinthalmanna, Malappuram District, Kerala, India. The study was conducted after obtaining Institutional Ethical Clearance from MES Medical College IEC/MES/49/2021.

Inclusion criteria: Undergraduate and postgraduate students aged 18 to 24 years attending the college were included in the study.

Exclusion criteria: Students who did not give consent or did not complete the questionnaires were excluded from the study.

Sample size calculation: The sample size was calculated using the formula $4pq/d^2$, where the prevalence (p) was 60.3% [14], the complement of the prevalence (q) was 39.7%, and the absolute error (d) was 5%. The minimum calculated sample size was 383, but a sample of 540 was taken to account for an 80% response rate.

Study Procedure

The study was presented to the college Principal with a request letter and the attached questionnaire to obtain permission. Hard copies of the questionnaire were distributed to the students during regular classes, ensuring privacy by spacing out the seats. Investigators were present in the classroom to supervise questionnaire collection and address any queries. The objectives of the study were explained to the students, and written informed consent was obtained, assuring them of anonymity and confidentiality.

Data was collected using a semi-structured self-administered questionnaire [14,15]. The questionnaire was pilot-tested for validation, and the Cronbach's alpha value for the questions was 0.67. It consisted of 14 questions on socio-demographic details of the students and their parents, eight questions to assess knowledge level, and 12 questions to assess perception towards sexual health. The estimated time for completing the questionnaire was 20 minutes. Knowledge was assessed using one open-ended question and seven scored items, with one point assigned for each correct answer and zero points for incorrect or "I don't know" answers (maximum score: seven, minimum score: zero). Perception was assessed using three questions on sex education and nine scored items on a five-point Likert scale, with scores ranging from strongly disagree (1) to strongly agree (5). The scoring was reversed for negatively phrased questions. Mean values were used as cut-off scores to assess good knowledge and positive perception. The mean score for knowledge was 3.79 ± 1.3 , and a score less than 3.8 was considered poor knowledge, while a score of 3.8

or higher indicated good knowledge. The mean score for perception was 31.2 ± 4.5 , and a score less than 31 indicated negative perception, while a score of 31 or higher indicated positive perception.

STATISTICAL ANALYSIS

Descriptive analyses with frequency distribution and mean (\pm SD) were performed for quantitative variables. Chi-square or Fischers-exact tests (depending on sample size) were used to assess the association of knowledge and perception with gender, marital status, educational status of the participants, and educational qualification of their parents. Multivariate logistic regression analyses were conducted to examine the characteristics of students with higher knowledge and perception scores. The independent t-test was used to compare means of quantitative variables. Data analysis was performed using IBM Statistical Package for Social Sciences (SPSS, Inc. Chicago, IL, USA) version 22.0, with a p-value less than 0.05 considered statistically significant.

RESULTS

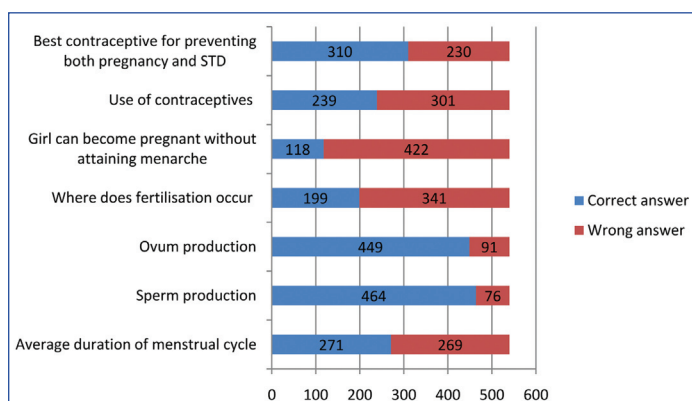
The respondents were predominantly male (60.4%), with a mean age of 19.32 ± 1.262 years. The majority (95.4%) were undergraduate students, while 4.6% were postgraduate students [Table/Fig-1]. Out of the 540 respondents, 487 (90.2%) reported having obtained information on sexual health. The most preferred sources of information were friends (41.7%), doctors (12.3%), and teachers (10.2%). About 24% reported receiving information from multiple sources, but 185 (37.9%) stated that their doubts remained unanswered. Approximately 29% gained knowledge on reproduction and sex, and 21 (4.3%) reported feeling embarrassed. The most

| Domain | Variables | n (%) |
|--------------------------|------------------|------------|
| Gender | Female | 214 (39.6) |
| | Male | 326 (60.4) |
| Class | Postgraduate | 25 (4.6) |
| | Undergraduate | 515 (95.4) |
| Religion | Christian | 9 (1.7) |
| | Hindu | 79 (14.6) |
| | Islam | 450 (83.3) |
| | Not answered | 2 (0.4) |
| Marital status | Married | 34 (6.3) |
| | Unmarried | 506 (93.7) |
| Number of family members | 1-5 | 373 (69.1) |
| | 6-10 | 166 (30.7) |
| | ≥ 11 | 1 (0.2) |
| Education of mother | Primary school | 5 (0.9) |
| | Middle school | 39 (7.2) |
| | High school | 323 (59.8) |
| | Higher secondary | 123 (22.8) |
| | Graduate | 32 (5.9) |
| | Postgraduate | 16 (3.0) |
| | Not answered | 2 (0.4) |
| Education of father | Illiterate | 1 (0.2) |
| | Primary school | 15 (2.8) |
| | Middle school | 46 (8.5) |
| | High school | 275 (50.9) |
| | Higher secondary | 125 (23.1) |
| | Graduate | 69 (12.8) |
| | Postgraduate | 7 (1.3) |
| | Not answered | 2 (0.4) |

[Table/Fig-1]: Types of implant used for internal distract socio-demographic characteristics of respondents (N=540).

common reasons for the need for sex education were to avoid sex crimes, avoid stigma, gain knowledge about safe sex, maintain a good family life, and prevent STIs.

In terms of knowledge, only 50% of the respondents knew the average duration of the menstrual cycle correctly. Most respondents knew that sperm is produced in the testes (86%) and ovum is produced in the ovary (83%). Only 37% knew that fertilisation occurs in the fallopian tube. The majority (78%) believed that a girl can become pregnant without attaining menarche. 88% of the respondents had heard of the term contraceptive, but only 44% knew the uses of contraceptives. 57% stated that condoms are the best contraceptive method to prevent both pregnancy and transmission of sexually transmitted diseases [Table/Fig-2].



[Table/Fig-2]: Knowledge of the respondents regarding sexual health (N=540).

There were significant differences in knowledge between genders. Females had higher knowledge regarding sperm production (90% vs 82.5%), ovum production (89% vs 79%), and the best contraceptive

| Variables | | Knowledge | | p-value | Perception | | p-value |
|--|------------------------|------------|------------|---------|----------------|----------------|---------|
| | | Good n (%) | Poor n (%) | | Positive n (%) | Negative n (%) | |
| Gender | Male | 198 (60.7) | 128 (39.3) | 0.66 | 167 (51.2) | 159 (48.8) | 0.720 |
| | Female | 126 (58.9) | 88 (41.1) | | 113 (52.8) | 101 (47.2) | |
| Academic class | Undergraduate | 303 (58.8) | 212 (41.2) | 0.012* | 259 (50.3) | 256 (49.7) | 0.001* |
| | Postgraduate | 21 (84) | 4 (16) | | 21 (84) | 4 (16) | |
| Marital status | Married | 19 (55.9) | 15 (44.1) | 0.613 | 16 (47.1) | 18 (52.9) | 0.563 |
| | Not married | 305 (60.3) | 201 (39.7) | | 264 (52.2) | 242 (47.8) | |
| Education of mother | Upto higher secondary | 287 (58.6) | 203 (41.4) | 0.027* | 247 (50.4) | 243 (49.6) | 0.031* |
| | Above higher secondary | 36 (75) | 12 (25) | | 32 (66.7) | 16 (33.3) | |
| Education of father | Upto higher secondary | 281 (60.8) | 181 (39.2) | 0.359 | 232 (50.2) | 230 (49.8) | 0.06 |
| | Above higher secondary | 42 (55.3) | 34 (44.7) | | 47 (61.8) | 29 (38.2) | |
| Obtained information on sexual health before | Yes | 306 (62.8) | 181 (37.2) | <0.001* | 251 (51.5) | 236 (48.5) | 0.66 |
| | No | 18 (34) | 35 (66) | | 29 (54.7) | 24 (45.3) | |

[Table/Fig-3]: Association of selected variables with level of knowledge and perception (N=540).

*Chi-square test p-value <0.05 statistically significant

| Items | Perception (n %) | | | | |
|---|------------------|------------|------------|------------|-------------------|
| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
| Masturbation is normal | 87 (16.1) | 197 (36.5) | 152 (28.1) | 63 (11.7) | 41 (7.6) |
| Sex before marriage is acceptable | 31 (5.7) | 138 (25.6) | 142 (26.3) | 110 (20.4) | 119 (22.0) |
| Abstaining from sexual contact is difficult for people of my age group | 24 (4.4) | 107 (19.8) | 257 (47.6) | 108 (20.0) | 44 (8.1) |
| I would be too embarrassed to buy/seek condoms or other contraceptives | 38 (7.0) | 157 (29.1) | 180 (33.3) | 115 (21.3) | 50 (9.3) |
| It is essential to ask for consent of the partner before initiating any sexual contact | 250 (46.3) | 191 (35.4) | 56 (10.4) | 36 (6.7) | 7 (1.3) |
| It is important to report any violence (Touching without consent, rape etc..) even if it is in a relationship | 334 (61.9) | 128 (23.7) | 34 (6.3) | 23 (4.3) | 21 (3.9) |
| Sexual inclination of individuals can vary | 104 (19.3) | 226 (41.9) | 134 (24.8) | 44 (8.1) | 32 (5.9) |
| Any sexual contact/relationship should be based on trust, love and mutual consent | 257 (47.6) | 180 (33.3) | 62 (11.5) | 29 (5.4) | 12 (2.2) |
| A woman should bleed during her first sexual contact | 49 (9.1) | 140 (25.9) | 219 (40.6) | 67 (12.4) | 65 (12.0) |

[Table/Fig-4]: Perception levels of the study participants regarding sexual health (N=540).

method (62.6% vs 49.5%). The mean score for respondents' knowledge was 3.79 ± 1.3 , with no significant difference between genders. Postgraduate students had higher knowledge scores compared to undergraduate students (4.5 ± 1.1 vs 3.76 ± 1.3). There was no significant difference in knowledge scores between married and unmarried respondents. Knowledge scores were significantly higher in respondents whose mothers had studied beyond higher secondary class [Table/Fig-3]. In terms of perception, the mean score for respondents' perception was 31.26 ± 4.5 , with no significant difference between genders. Postgraduate students had higher perception scores compared to undergraduate students. There was no significant difference in perception scores between married and unmarried respondents. Perception scores were significantly higher in respondents whose mothers had studied beyond higher secondary class [Table/Fig-3].

The majority of the study subjects (94.3%) opined that sex education is essential. More than half (53%) believed that sex education should be imparted before the age of 18 years. Doctors/healthcare providers were considered the best persons to impart sex education by 27.2% of the study participants [Table/Fig-4]. Multivariate logistic regression revealed that knowledge on sexual health was associated with increasing academic qualification of the study subjects, higher educational status of the mother, and previous information on sexual health. Perception on sexual health was associated with increasing academic qualification of the study subjects and higher educational status of the mother [Table/Fig-5].

Overall, the study found that there is a need for comprehensive sex education among college students. The findings highlight the gaps in knowledge and the importance of providing accurate information to promote positive sexual health behaviours.

| Variables | Knowledge on sexual health | | | Perception on sexual health | | |
|--|----------------------------|-------------|----------|-----------------------------|-------------|----------|
| | AOR | 95% CI | p-value* | AOR | 95% CI | p-value* |
| Undergraduate vs Postgraduate | 3.217 | 1.083-9.554 | 0.035 | 4.702 | 1.58-13.99 | 0.02 |
| Education of mother up to higher secondary vs more than higher secondary | 2.107 | 1.056-4.202 | 0.034 | 1.838 | 0.973-3.469 | 0.032 |
| Information on sexual health | 0.318 | 0.174-0.581 | <0.001 | - | - | - |

[Table/Fig-5]: Characteristics of respondents associated with high knowledge and perception.

*Multivariate logistic regression analysis; p-value <0.05 statistically significant; AOR: Adjusted odds ratio

DISCUSSION

The present study found that 60% of the respondents had a good level of knowledge on sexual and reproductive health (SRH). This is higher than a similar study conducted in Malaysia, where only 14.24% of participants demonstrated good knowledge [9]. Another study in Italy found that 48% of adolescents had sufficient SRH knowledge [16]. However, knowledge gaps were identified in the present study, particularly regarding pregnancy, the site of fertilisation, and the use of contraceptives. This is consistent with findings from the previous literature [3,16].

Gender-based differences in knowledge were not significant in the present study. This is in contrast to a study by Tiang KP et al., which found that males had better knowledge compared to females, although the difference was not significant [9]. Another study found that girls had lower knowledge about reproductive and sexual health compared to boys [15]. However, a study by Siva VK et al., showed that females had significantly higher levels of knowledge in reproductive and sexual health [17].

Friends, doctors, and teachers were the preferred sources of sex education in the present study, which is consistent with previous studies [14,18]. However, the reliance on friends as a source of information may contribute to the spread of false information and misunderstandings about sexual health. The majority of study participants believed that sex education is essential, which is consistent with previous studies [12,19]. However, there were some differences in opinions between males and females [17].

This study found positive level of perception in 52% of the respondents with a mean value of 31.35 ± 4.5 . More than 94% of the study subjects opined that sex education is essential. This finding was similar to that of previous studies. A study done in Haryana found 93.5% of study subjects were in favour of sex education. Boys 374 (97.1%) were more likely to favour sex education as compared to girls 321 (89.7%). But unlike the present study, it was found to be statistically significant [12]. In a study done by Benzaken T et al., 87% of the participants believed it important to have sex education as part of the school curriculum [19]. There was significant difference between males and females in their opinion of inclusion of sex education in curriculum in a study by Siva VK et al., [17].

About 53% of the study respondents agreed that masturbation is normal. A similar finding was noted in a study done by Kushwah SS and Mittal A [20]. In contrast, in a study done by Iqbal M in Kashmir, only 30% of the respondents agreed that masturbation is a normal phenomenon [21]. In the same study, 65% responded that girls can become pregnant after reaching the age of menarche. In the present study, 78% believed that a girl can become pregnant without attaining menarche.

The study found that postgraduate students and respondents with mothers who had higher educational status had higher knowledge and perception scores. This may be due to the association between parents' knowledge of sexuality education and their educational status [22]. Previous studies have also shown that early exposure to SRH education is associated with higher knowledge scores [16].

A study done among older adolescent girls in Bangladesh found no significant association between educational status of parents and SRH related knowledge and attitude [23]. Literature measuring the direct effect of parents' educational status on the SRH knowledge and perception of children is lacking. An important reason might

be that parents as a source of information for sexual health is less preferred [12,17].

Overall, the study highlights the need for comprehensive sex education among college students. The findings suggest that there are knowledge gaps that need to be addressed, particularly regarding pregnancy and contraceptive use. The study also emphasises the importance of providing accurate information to promote positive sexual health behaviours.

Limitation(s)

There are some limitations to consider. The study may have been affected by social desirability bias, as participants may have provided answers they believed were socially acceptable. Additionally, the study was unable to examine the potential association between parents' socio-economic status and SRH knowledge and perception due to limited information on this factor.

CONCLUSION(S)

The present survey among young adults has revealed a higher level of knowledge in sexual health. However, there are knowledge gaps regarding fertilisation, pregnancy, and contraceptives. Good knowledge and positive perception levels were significantly associated with the academic qualification of the study participants and the educational status of their mothers. Therefore, there is an urgent need for comprehensive sexual and reproductive health education programmes, which should be incorporated into the school and college curriculum, along with behavioural change communication materials. The present study was conducted among young adults, a cohort that faces significant risks related to reproductive and sexual health during the transition from adolescence to adulthood. In the debate surrounding the inclusion of sex education in the school curriculum in India, concerns have been raised about potential negative effects and the impact on cultural values. However, this research effectively dispels these concerns and demonstrates that young people who receive sex education have significantly greater knowledge of sexual and reproductive health compared to their peers who do not receive sex education.

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