


An Interactive Learning to Increase the Knowledge of Sexual and Reproductive Health Among University Students: A Pilot Study in West Java, Indonesia

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Background: Sexual and reproductive health (SRH) problems among university students are still common. One cause of the problem is the need for more SRH information. Undergraduate students are an essential group that must receive sexual and reproductive health education to overcome issues that occur. This study explored the effect of interactive learning in increasing SRH knowledge and related factors.

Methods: The study was conducted on several college students in West Java, Indonesia, from July to November 2024. We provided reproductive health training through interactive media created by the Directorate of Productive Age and Elderly Health, the Ministry of Health. We conducted a quasi-experimental one-group pretest and post-test design. The data was processed using SPSS version 29, and a 95% confidence interval was used to calculate the significance level. The Wilcoxon test was used in bivariate analysis to compare pre- and post-test knowledge scores. Multivariate linear regression was carried out to assess the independent variables that most influence changes in knowledge scores.

Results: Out of 180 undergraduate students participated in this study. Of the respondents, 88.3% were students from non-health faculty, and 11.7% were students from health faculty between the ages of 17 and 22. The knowledge scores after interactive learning increased, with mean±SD= 75.93±73.28 to 77.57±87.33. The results of the Wilcoxon test, with a significance value of $p < 0.05$, showed a significant difference in knowledge scores between before and after training through interactive learning. The linear regression test results found that the field of study was the most influential factor in knowledge score differences, with $p=0.045$.

Conclusion: Interactive learning increases the knowledge score among university students. The field of study was a significant factor influencing the knowledge scores. Universities are encouraged to provide sexual and reproductive health (SRH) information through interactive learning.

Keywords: reproductive health, knowledge, undergraduate student, health education

Introduction

Sexual and reproductive health (SRH) issues are still a significant problem in several countries. Adolescents are disproportionately exposed to SRH problems compared to other age groups. There are 46 million adolescents in Indonesia, including undergraduate students.¹ Undergraduate students in Indonesia are between the ages of 17 and 24. The SRH problem is known as the TRIAD KRR or the three main reproductive health problems among adolescents in Indonesia, including free sex that leads to unwanted pregnancy and abortion, sexually transmitted infections (STIs),

including HIV/AIDS, and the use of narcotics, alcohol, psychotropics, and other addictive substances (NAPZA).²⁻⁴ According to the 2017 Indonesian health demographic survey data, 31% of women between the ages of 20 and 24 were married before they were 18.² Over 100 million STIs, most of which are treatable, affect young people between the ages of 15 and 24 years.⁵ These illnesses help HIV spread and be transmitted.⁵ Adolescents account for nearly half of all new HIV infections.

Adolescents' knowledge of SRH information and services is still lacking. Likewise, information regarding healthy marriage preparation is still not optimal. Furthermore, many adolescents lack proper access to health care.^{2,3} As a result, the awareness of the importance of being healthy and prosperous about sexuality is still low, and adolescents are vulnerable to being victims of sexual abuse, violence, and other violent practices against children despite their desires for education, work, and reproductive life.⁶ SRH issues are still a problem that requires attention from various parties both in Indonesia and in the world. Regardless of the presence of sexual activity, the development of SRH education in adolescents is crucial for the development of social, emotional, and cognitive skills, as well as for increasing awareness of the value of having healthy and profitable sexuality.

The Indonesian government has provided adolescent health services. Posyandu Remaja, also known as the "Adolescent Integrated Health Post", is a community-based health initiative that aims to empower the community and make essential health services more accessible while enhancing adolescents' health and life skills.³ It is a component of the adolescent-friendly health services (AFHS) outreach program offered by the Puskesmas, or primary health centers. Posyandu Remaja's activities cover healthy life skills education, drugs, mental health, physical exercise, nutrition, early detection and prevention of noncommunicable illnesses, violence prevention, and reproductive health. According to Central Bureau of Statistics data from 2018, approximately 78% of adolescents are enrolled in junior high school, while 60% are in senior high school.³ This indicates that the School Health Program provided some health information to these adolescents. Not only for adolescents, the reproductive health education program also focuses on premarital couples.

Indonesia's premarital program is a comprehensive preparation to ensure physical and mental readiness for a healthy married life. The family preparation program supports life-cycle-based interventions for prospective brides and grooms to screen and manage health issues before marriage. The Ministry of Religious Affairs (MoRA) and the Ministry of Health (MoH), which focuses on reproductive health care, have worked together to implement this program.³ The goals of the reproductive health education component are to enhance future brides and grooms' understanding of reproductive health, prepare them for a healthy pregnancy, encourage healthy lifestyles and disease prevention, and provide couples with all the information they require for married life.³ Nevertheless, implementation continues to provide difficulties. First, there are issues with how different services are delivered at the district level. However, some offices do not send the bride and groom to PHCs. Second, this initiative has yet to contact those practicing religions other than Islam in Indonesia. Third, the facility's ability to screen for specific disorders, like HIV and thalassemia, may be impacted by financial issues. Another area for improvement is the quality of counseling at the PHC level; providing counseling takes work.³ To overcome barriers in health education for adolescents and premarital couples, sexual and reproductive health education should also be provided at universities.

According to the International Conference on Population and Development (ICPD), sexual and reproductive health are essential; therefore, everyone has the right to receive information about reproductive health.⁷ Universities are urged to promote student well-being by offering inclusive and supportive sexual and reproductive health (SRH) promotion and health services that meet the requirements of various student cohorts and by addressing student-identified access barriers.⁸ Feeling judged, humiliated, unsure of which services to seek, and the gender of the medical staff offering reproductive health treatments are the most frequent barriers that come up. These barriers have a significant impact on students, with embarrassment being the most common psychological barrier to SRH services. Students reported awkward interactions with doctors as well as shame and discomfort when using SRH services.⁸ Students identified cost and privacy as significant obstacles to purchasing sexual health goods on campus.⁹ With limited on-site SRH product availability, a student-led approach to SRH supply and resource delivery may rapidly reduce SRH disparities.⁹

The study by Solehati et al offers more proof that utilizing the media and the Internet and enlisting the help of peers, parents, and educators to enhance adolescent reproductive health to encourage positive behaviors among young people in West Java, Indonesia.¹⁰ Students participating in the e-learning course showed significantly better results than those

receiving traditional tutoring. An online course with interactivities and interaction can overcome many educational drawbacks of large enrolment classes and enhance students' learning.¹¹ The more sexual health resources available at an institution, the less likely students were to have engaged in unintended pregnancy and risky behavior.¹² Research has emphasized the significance of health centers in college and university environments in mitigating sexual health inequalities among student populations.¹²

Based on research conducted by Kene et al, four out of ten have low knowledge regarding sexual and reproductive health rights (SRHR). Students from the health faculty possess high knowledge related to SRHR.¹³ Health education in a university setting is an excellent and affordable way to help students adopt healthy lifestyles.¹⁴ To address reproductive health issues caused by lack of knowledge, we collaborate with the Directorate of Productive Age and Elderly Health, the Ministry of Health, which has educational media that contains information on sexual and reproductive health and healthy marriage preparation, to conduct interactive learning for undergraduate students at five universities in West Java. Extending these programs to undergraduate students can have a significant positive impact. This study aimed to analyze university students' knowledge of sexual and reproductive health in West Java, Indonesia, before and after participating in the training through interactive learning. It also explored the most influential factor in the knowledge score differences.

Materials and Methods

Study Design and Settings

The Healthy Campus Program held by the Ministry of Health is a systematic and comprehensive effort to realize higher education as an institution that integrates health and health promotion efforts. One of the programs of the Healthy Campus is sexual and reproductive health. This pilot study was conducted by a research team from Padjadjaran University in collaboration with the Directorate of Productive Age and Elderly Health, the Ministry of Health. The research method used is a quasi-experimental one-group pretest-posttest to evaluate the effect of interactive learning on students' university knowledge. The Declaration of Helsinki's principles were adhered to when conducting the study. The Universitas Padjadjaran's Ethical Committee authorized the study under approval number 60/UN6.KEP/EC/2024. The study required permission from the primary health care facilities, the head of the Sumedang Health Office, and the subdistrict and village levels. After being briefed on the study's methodology, participants were asked to sign a written informed consent form. The intervention is done through interactive learning on the website https://belajarkesga.kemkes.go.id/ulp_course/kesehatan-reproduksi-bagi-mahasiswa/. Interactive learning is a pedagogical approach that requires student participation with an interesting method of delivering material assisted by digital media. The research was conducted in several universities, three in Jatinangor, one in Pangandaran, and one in Garut. Five universities participating in this research are located in West Java Province, and they agreed to participate. The study was conducted from July to November 2024.

Sampling Procedure

We conducted socializations in several universities regarding sexual and reproductive health training using interactive learning media. After the socialization, we offered university students the opportunity to participate in this study. The sampling technique was a purposive sample. The inclusion criteria were students aged 17–24 years who were not taking exams, unmarried, able to use interactive learning media, and the exclusion criteria were married postgraduate students. Students who agree will be given a pretest through a questionnaire created by the researcher. We chose respondents aged 17–24 years, because the minimum age for university students in Indonesia is 17 years. After completing the pretest questionnaire, students register and enroll as training participants on the provided page. We use the Slovin formula to determine the minimum sample size. The population of undergraduate students from 5 universities is about 40.500 (N). Using a margin of error (*e*) of 0.1, the minimum sample size is 99.8 or around 100. To anticipate respondents who drop out, we took the number of respondents more than 100.

$$n = \frac{N}{1 + (N \times e^2)} = \frac{40500}{1 + (40500 \times 0.1^2)} = 99.8 \approx 100$$

After completing the training, students will be given a post-test.

Data Collection and Variables

The research questionnaire included sociodemographics and knowledge of reproductive health according to the contents of the training module. While the knowledge scores on sexual and reproductive health were an outcome variable, sociodemographic factors such as field of study, gender, living with, parents' education and occupation, exposure to sexual and reproductive information, and semester level were independent variables. Students from several universities gathered to take a pretest. Then, they were given sexual and reproductive health training through interactive learning. The trainer was a reproductive health expert from the Midwifery Program at Universitas Padjadjaran and a working team from the Directorate of Productive Age and Elderly Health, the Ministry of Health. After two days of training, they would take a posttest.

Reproductive health training through interactive learning consists of 5 modules containing 1) healthy relationships and self-awareness (question number 1–9); 2) nutrition, how to overcome stress and healthy behavior (question number 10–19); 3) menstruation and sexually transmitted infections (STIs) (question number 20–29); 4) finding passion and life mission, how to manage finances, wedding preparations (question number 30–35); 5) becoming a quality content influencer (question number 36–37). The knowledge scale consisted of 37 items that addressed selected issues related to reproductive health. Response items were scored in a 2-point response format (true and false). Responses were scored 1 for a correct response or 0 for an incorrect response. The total score ranged from 0 to 37. The knowledge score is the total correct score divided by the number of questions (37 items) multiplied by 100. As a result, university students who scored above the mean score were considered knowledgeable.

Data Processing and Analysis

Data were entered and exported to SPSS 29 for statistical analysis. In the initial analysis stage, we tested the normality of the data. Descriptive results are presented in the form of tables. The Wilcoxon test was used in bivariate analysis to compare pre- and post-test knowledge scores. Variables with p-values less than 0.25 in bivariate analysis, were moved to a multi-variable linear regression model to consider confounding effects. Multivariate linear regression was carried out to assess the independent variables that most influence changes in mean knowledge differences (utilizing the stepwise backward approach). Variables in the final model with a p-value <0.05 were considered the most influential predictors of statistically significant knowledge scores. The confidence interval used was 95%.

Results

Students from five universities were invited to participate in this study. Of the five universities, 257 agreed to participate. However, 77 did not complete the data and questionnaires. The final sample consisted of 180 students who completed the pretest and posttest. Of the respondents, 88.3% were students from non-health faculty, and 11.7% were students from health faculty between the ages of 17 and 22, with median (minimum-maximum) = 19 (17–22). Demographic and descriptive analysis of the study variables is summarized in Table 1.

Table 1 Socio-Demographic Characteristics of Study Participants (n=180)

Variable	Value	
	Frequency	Percentage (%)
Age median (min-max)	19 (17–22)	
Field of study		
Health	21	11.7
Non-Health	159	88.3

(Continued)

Table 1 (Continued).

Variable	Value	
	Frequency	Percentage (%)
Gender		
Male	35	19.4
Female	145	80.6
Living with/in		
Parents	42	23.3
Sister/Brother/Other	12	6.7
Dormitory	48	26.7
Apartment	78	43.3
Father's education		
Elementary school	26	14.4
Junior High School	20	11.1
Senior High School	89	49.4
Diploma	9	5.0
Undergraduate	34	18.9
Postgraduate	2	1.1
Mother's education		
Elementary school	25	13.9
Junior High School	33	18.3
Senior High School	85	47.2
Diploma	16	8.9
Undergraduate	19	10.6
Postgraduate	2	1.1
Father's occupation		
Civil Servants	18	10.0
Private Employees	25	13.9
Self-Employed	72	40.0
Laborers	25	13.9
Farmers	12	6.7
Not Working	15	8.3
Other (Died)	3	1.7
Fisherman	1	0.6
Retired	9	5.0
Mother's occupation		
Civil Servants	21	11.7
Teachers	2	1.1
Self-Employed	17	9.4
Laborers	2	1.1
Farmers	4	2.2
Other (Died)	3	1.7
Housewife	130	72.7
Retired	1	0.6
Sexual and reproductive health information exposure		
Yes	84	46.7
No	96	53.3

(Continued)

Table 1 (Continued).

Variable	Value	
	Frequency	Percentage (%)
Semester level		
Semester 1 th	74	41.1
Semester 3 rd	39	21.7
Semester 5 th	49	27.2
Semester 7 th	18	10.0

The level of knowledge after interactive learning increased, as shown in Table 2, with mean±SD value = 75.93±73.28, which increased to 77.57±87.33. The average value of pretest knowledge ≥ 75.93 and the average value of posttest knowledge ≥ 77.57 (Table 2), means having good knowledge (knowledgeable).

Table 3 shows the questionnaire consisted of 5 modules, namely: module 1, “Healthy relationships and Self-awareness”, were questions number 1–9; Module 2, “Healthy nutrition; a way to overcome stress and healthy behavior”, questions number 10–19; Module 3 “Menstruation and sexually transmitted infections (STIs)” questions number 20–29; module 4 “Passion and life mission; managing finances; wedding preparations” questions number 30–35; and module 5 “Becoming a quality content influencer” questions number 36–37. The results of the pretest and posttest scores for each module are presented in Table 3. The most significant difference in knowledge between the pretest and posttest results was in modules 1 and 4, with a p-value = 0.000. The pretest results in module 1 with a mean \pm SD value = 78.9±13.39 increased to 82.87±13.81. The same increase was seen in module 4, with a mean value = 76.05±16.16 to 81.57±17.33, shown in Table 3.

In the linear regression analysis model (Table 4), we entered the variables with p-values less than 0.25 in bivariate analysis: semester level, age, the field of study, living with, and father’s occupation as independent variables that would

Table 2 Wilcoxon Test Analyses of Pretest and Posttest Knowledge Scores (Total Sample, n=180)

Variable	Pretest		Posttest		p-value
	Median (Min-Max)	Mean±SD	Median (Min-Max)	Mean±SD	
Knowledge	76(41–92)	75.93±73.28	78(46–95)	77.57±87.33	0.002

Table 3 Wilcoxon Test Analyses of Pretest and Posttest Knowledge Scores in Each Module (n=180)

Module	Modules Item	Pretest		Posttest		p-value
		Median (Min-Max)	Mean±SD	Median (Min-Max)	Mean±SD	
1	Healthy relationships and self-awareness	78 (44–100)	78.9±13.39	89 (44–100)	82.87±13.81	0.000
2	Healthy nutrition; a way to overcome stress and healthy behavior	90 (40–100)	84.4±11.44	80 (40–100)	82.94±11.99	0.115
3	Menstruation and sexually transmitted infections (STIs)	60 (30–100)	61.16±12.47	60 (30–90)	61.61±11.91	0.822
4	Passion and life mission; managing finances; wedding preparations	83 (33–100)	76.05±16.16	83 (33–100)	81.57±17.33	0.000
5	Becoming a quality content influencer	100 (0–100)	94.4±17.44	100 (0–100)	96.11±15.36	0.221

Table 4 Linear Regression Model on Predictor of Knowledge Score Difference

Characteristics	Knowledge Scores Differences		
	B	SE	p-value
Age	0.071	0.900	0.937
Semester level	0.519	0.301	0.086
Field of study	-3.923	1.947	0.045
Living with/in	0.359	0.532	0.500
Father's occupation	-0.200	0.302	0.509

influence knowledge scores. Multivariate analyses revealed (Table 4) that the factor significantly associated with knowledge scores after health education through interactive learning was a field of study, with $p=0.045$.

Discussion

In this study, the university students were between 17 and 22 years old (Table 1). This age is included in adolescence, a transition period from childhood to adulthood, and at risk with sexual and reproductive health problems; university students are included in this group. In several studies, sexual and reproductive health knowledge among university students is still lacking.^{13,15} Several factors cause a lack of knowledge about sexual and reproductive health among university students, including place of residence, field of study, availability of reproductive health programs on campus, and student participation in information about sexual and reproductive health.¹³ Various programs to improve the quality of reproductive health have been launched. However, these programs focus more on junior and high school levels, and the curriculum includes reproductive health education.¹⁶

Gender differences in knowledge scores were negligible.¹⁵ Interestingly, in our study, the number of female students who attended training and participated in this research was greater than that of male students, as seen in Table 1. In line with the study conducted by Mundie et al, female students more actively respond to the reason for attending a health service regarding a particular set of SRH issues.⁸ We included residence as sociodemographic data because previous research has shown that place of residence affects adolescent knowledge.¹⁷ Unfortunately, in this study, place of residence did not differentiate students' SRH knowledge.

In a study by Basar et al, the mother's education and occupation did not affect differences in adolescent knowledge. However, the father's knowledge and education did affect differences in adolescent knowledge.¹⁸ In contrast to our research, parents' education level, both fathers and mothers, did not influence differences in university students' knowledge regarding SRH. Parents are one of the sources of information to improve sexual and reproductive health knowledge and marriage preparation information.¹⁹ However, other studies have shown that students have other sources of information to consult besides their parents. So, neither the occupation nor the parents' education level affects university students' knowledge scores.

We found that the number of students who did not receive SRH information is more significant. In line with this, we analyzed that there were differences between students from health and non-health faculty because the curriculum of students from non-health did not contain SRH material. In addition, college students were more likely to receive reproductive health services at primary care facilities. The students in this study mostly came from semester 1 because they did not have many courses and had more time than students in other semesters. Still, some semesters 3, 5, and 7 students participated in this study, indicating that first-year and advanced students are interested in studying sexual and reproductive health.

This study revealed that students' knowledge scores of SRH increased after being given training through interactive learning (Table 2). Students who do not receive proper health education on SRH are at risk of contributing to several sexual and reproductive health problems. Students in higher education have had less access to SRH services. In line with our study, Olson et al found that sexual and reproductive health service gaps persist among undergraduate student groups despite increased efforts at the policy level to provide health service coverage for individuals and at the institutional level

to improve access to available services.⁹ Other research shows that adolescents face multiple barriers, requiring high-impact and complex interventions, programs, and policies that address barriers to provide appropriate attention to improving access to reproductive health services for adolescents.²⁰ In the digital era of 5.0, university students have a wider range of learning requirements; they freely select the time and place of their studies. Online platforms offer individualized content; students can choose materials for skill training and preview, review essential and challenging concepts, and overcome time and location limitations.²¹

Tables 3 in this study show the differences between pretest and posttest knowledge in each module. We found significant differences in knowledge in the pretest and posttest of module 1 (Healthy relationships and self-awareness) and module 4 (Passion and life mission; managing finances; wedding preparations), although knowledge in other modules also increased. There was a significant improvement in module 1 because the topic often occurs to students. Besides that, students are more interested in the material in module 1, such as toxic relationships, oversharing on social media, red flag friends, etc. Module 4 contains material on passion and life mission, cash flow, emergency funds, insurance, and investments that attract students' attention. Students who have dating relationships are exposed to any violence in dating relationships. This is in line with a study conducted by Basaran et al, which states that students who are in a relationship are vulnerable to violence.²²

Based on our study (Table 4), the field of study influences the difference in knowledge scores between health and non-health students the most. Students from health faculties have more experience in receiving health information because sexual and reproductive health materials are included in the courses they receive. Therefore, students from health faculties have better knowledge than students from non-health faculties; they are also aware that information about sexual and reproductive health is their right. This aligns with research conducted in Ethiopia by Kene et al, which explains that health students have better knowledge about Sexual and Reproductive Health Rights because health students are taking a course on sexual and reproductive health.¹³ This is also possible due to the availability of sexual and reproductive health service facilities in their faculty.²³ The curriculum of health science programs included information about reproductive health and family planning in particular. It is essential to improve the curriculum by including more lectures or teaching on reproductive health, and promoting conversations with parents and others could increase awareness of sexual and reproductive health rights.^{15,23–25} University students are in a unique stage of knowledge acquisition and personality development, making sexual and reproductive health education a perfect and affordable way to encourage a healthy lifestyle.²⁶ Therefore, it is essential to provide accessible sexual and reproductive health services to university students.^{8,18} A partnership between the Ministry of Health and the Ministry of Education would assist in breaking down obstacles to discussing sexual and reproductive health problems and establishing strong foundations for future reproductive health.¹⁵

This study found that sexual and reproductive health education through interactive learning is beneficial in increasing students' knowledge in several universities, as seen from the increase in the average value of respondents. The most influential differences in knowledge are the student's field of study. Students from non-health faculties have been shown to receive less sexual and reproductive health education. This is different from health students, who often receive sexual and reproductive health information in the courses they take. Collaboration between various parties and support from universities is needed to provide sexual and reproductive health education, especially for students from non-health faculties. Further research is required to analyze the need to provide reproductive health services at the university level.

The weakness of this study is that we have a small number of respondents. Many students do not consider health education about sexual and reproductive health and information about marriage preparation important. The strength of this study is the collaboration with the Ministry of Health in providing media through interactive learning, which is very useful for students; this is becoming the implication of the need for reproductive health services and healthy marriage preparation in the university environment.

Conclusion

Interactive learning increases the knowledge score among university students. The field of study was the significant factor that influenced the knowledge scores. Collaboration between various parties is needed to provide reproductive health services at universities because students from non-health faculties have limited opportunities to access sexual and reproductive health information, including healthy marriage preparation.

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Disclosure

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