

ORIGINAL ARTICLE

E-MODULE OF TRIAD KESEHATAN REPRODUKSI REMAJA: IMPACT ON STUDENT'S KNOWLEDGE

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ABSTRACT

Sexual perversion including premarital sex, and unwanted pregnancy, is relatively high among adolescents. This problem is further exacerbated by their involvement in drug use. These two incidents can lead to sexually transmitted diseases such as Human Immunodeficiency Virus or Acquired Immunodeficiency Syndrome (HIV/AIDS) in adolescents. Therefore, this study aimed to identify the effectiveness of the TRIAD Kesehatan Reproduksi Remaja (KRR) E-Module on changes in students' knowledge about sexuality, drugs, and HIV/AIDS. It used a quasi-experimental approach with a nonequivalent pre-test-post-test control group design. The samples selected were 40 class VIII students from Private Junior High School in Bandung Regency, while the variables analyzed included students' knowledge about sexuality, drugs, and HIV/AIDS. Furthermore, the samples were grouped into an experimental and a control group. The experimental group was given information from the E-Module and the effect on students' knowledge was analyzed using t-test. The results showed the influence of the E-Module on three primary threats to adolescent reproductive health (TRIAD KRR E-Module) with $t=-5.973$ and $p=0.001$. Education using the TRIAD KRR E-Module increased students' knowledge to prevent various health problems arising from three primary threats to adolescent reproductive health. Therefore, the E-Module can be used as an alternative intervention to prevent risky behavior in adolescents, unsafe sexual problems, drugs, and HIV/AIDS.

Keywords: Drugs, E-Module, HIV/AIDS, Knowledge, Sexuality, Students

INTRODUCTION

Three fundamental threats to adolescent reproductive health or *Tiga Ancaman Dasar Kesehatan Reproduksi Remaja* (TRIAD KRR) which include sexuality, drugs, and HIV/AIDS cause significant problems. Indonesia Basic Health Survey in 2017 reported that 74% of adolescents aged 15-19 had early initiation of sexual intercourse. Besides, 10% were also reported to have engaged in sexual intercourse before marriage(1). The high incidence among adolescents has culminated in several unwanted pregnancies. According to the National Population and Family Planning Agency of Indonesia,(1) the incidence of unwanted pregnancy and abortion among adolescents is 19% and 20%, respectively.

The next problem among adolescents is drug abuse and HIV/AIDS infection according to Badan Narkotik Nasional which noted that drug abuse in Indonesia has increased(2). According to the Indonesia Basic Health Survey in 2017, only 6% of adolescents had not inhaled drugs or drunk alcohol(2). Muslihatun and Santi(3) also found that most of them or 60.81% had no anticipatory behavior toward drug abuse. Meanwhile, HIV/AIDS cases occurred in the age group 15-19 years reaching 1,434 points in 2018. In early 2019, there were also 261 new cases of HIV

appearing in groups of adolescents(4).

Lack of information on adolescents has become one of the causes of the TRIAD KRR(5) problem. Therefore, health providers must handle the threat to adolescent reproductive health properly. TRIAD KRR threats are driven by increasing adolescents' knowledge and understanding of these dangers. Nurhamsyah et al.(5) found that the provision of education to students can significantly improve their knowledge level. In other words, health education through modules will increase knowledge about TRIAD KRR.

Modules are a means of learning resources which can increase motivation and learning success. Meanwhile, E-Module is an interactive, web-based digital resource that can be used as a learning tool in line with technological developments in the era of the industrial revolution. It is highly needed considering the general lack of interest in reading among adolescents. According to Ditjend PMPTK(6), a suitable module has the following characteristics, exist independently, contains multimedia, meets broad needs, and do not need to be combined with other learning media. This is because E-Module can display images, animation, audio, and video.

Therefore, this study aims to identify the effectiveness of the TRIAD KRR E-Module application on changes in adolescents' knowledge about sexuality, drugs, and HIV/AIDS in a Junior High School in Bandung Regency. The results can become recommendations for policymakers in tackling problems in the adolescents' group. On a practical level, this study is helpful for practitioners and academics as alternative health promotion and prevention effort to address concerns of free sex, drugs, and HIV/AIDS among adolescents.

METHODS

This quantitative study was conducted with a quasi-experimental approach and a pre-test-post-test nonequivalent control group design. The pre-test and post-test were carried out in the experimental and control groups. In addition, this study received ethical clearance from the Research Ethics Committee, Universitas 'Aisyiyah Bandung (Ethical Approval Letter Number 62/KEP.02/STIKes-AB/III/2020).

The samples were grade VIII students from a Private Junior High School in Bandung Regency. They were selected because grade VIII students use the education curriculum 2013 (*Kurikulum Pendidikan 2013*) in Indonesia which is competency-based. This curriculum facilitates character education for students from elementary to intermediate levels(7). The E-Module used in this study also aims to strengthen students' essential competencies. Therefore, it can be concluded that the E-Module is in line with the objectives of the educational curriculum applicable at this school.

The samples were obtained using a purposive sampling technique, obtaining a total of 40 students, 15 males and 25 females. Students were in the age range of 13-14 years and grouped into the experimental and the control groups. The experimental group received information through the E-Module, while the control group did not received any intervention. Furthermore, data collection was conducted using an online questionnaire to determine the influence of the E-Module on adolescents' knowledge about sexuality, HIV/AIDS, and drug abuse.

The E-Module was given to students in the experimental group using an asynchronous learning approach to online learning. All students were asked to join social media groups or online chat forums. TRIAD KRR E-Module was given to students as a web-based file for easy access through the link provided. Besides, the E-Module can be installed on a computer or mobile device because it was made in the form of an e-pub

file, and the procedures guide material was delivered to students.

The variables in this study were students' knowledge about sexuality, drugs, and HIV/AIDS. Knowledge of TRIAD KRR is about health threats due to inappropriate sexuality, the use of illegal drugs, and the impact of HIV infection. These variables were measured using a questionnaire containing 30 items on true and false choices. Furthermore, the questionnaire was divided into three parts, each consisting of 10 questions about aspects of sexuality, HIV/AIDS, and drugs. The first part on sexuality knowledge consists of information about genitalia in males and females, sexually deviant behavior, the impact of sexual perversion, and how to prevent juvenile delinquency. The second part included necessary information about HIV/AIDS, disease progression, as well as transmission and prevention. Meanwhile, the third part contained preliminary information on drug dependence, the cause of drug abuse among adolescents, effects, and the prevention of risk behaviors.

The analysis was performed on students' knowledge of pre-test and post-test data. The data were obtained from the measurement results of the experimental and control groups. Analyzing students' characteristics was the initial step in establishing the characteristic sample. Furthermore, to examine prior knowledge of three fundamental threats to adolescent reproductive health, parametric statistics were performed using the t-test. The normality and data homogeneity tests were also carried out before testing the hypothesis.

RESULTS

All students in this study were members of the community who live in Bandung Regency, and most of which were females (62.5%) and 14 years old (57.5%). The score of knowledge about TRIAD KRR for the E-Module group is shown in Table 1. The results showed that knowledge about TRIAD KRR at the beginning of the measurement had an average score of 60.0. Meanwhile, at the end, the intermediate knowledge score was 78.2. This indicates an increase of 18.2 in the mean score of students' knowledge in the intervention group after being given information through the TRIAD KRR E-Module.

In the control group with no treatment, the average score at the start of the measurement was 62.3. Meanwhile, at the end of the treatment, it was 65.7 indicating only a slight increase as shown in Table 2. There was an increase in knowledge, specifically in the group which received information through the E-Module

Table 1: Pre-test and Post-test Scores of TRIAD KRR Knowledge (E-Module Group)

	Pre-test	Post-test
N	20	20
Mean	60.0	78.2
Median	58.3	78.3
Mode	56.7	80.0
Std. Deviation	11.3	7.0
Minimum	36.7	66.7
Maximum	80.0	93.3

Table 2: Pre-test and Post-test Scores of TRIAD KRR Knowledge (Control Group)

	Pre-test	Post-test
N	20	20
Mean	62,3	65.7
Median	60.0	68.3
Mode	60.0	70.0
Std. Deviation	12.6	9.9
Minimum	36.7	46.7
Maximum	83.3	80.0

In the control group with no treatment, the average score at the start of the measurement was 62.3. Meanwhile, at the end of the treatment, it was 65.7 indicating only a slight

increase as shown in Table 2. There was an increase in knowledge, specifically in the group which received information through the E-Module.

Table 3: Test of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test: E-Module Group	0.134	20	0.200	0.966	20	0.669
Posttest: E-Module Group	0.197	20	0.141	0.928	20	0.144
Pre-test: Control Group	0.174	20	0.116	0.944	20	0.288
Posttest: Control Group	0.169	20	0.136	0.946	20	0.307

Table 4: Test of Homogeneity

	F (Levene's Statistic)	Sig.
Pre-test (E-Module-Control Group)	0.679	0.415
Post-test (E-Module-Control Group)	0.879	0.098

Table 5: Test Result of Pre-test and Post-test Difference (E-Module Group and Control Group)

	Pre-test - Post-test Scores			
	Mean	Std. Deviation	t	Sig. (2-tailed)
E-Module Group	-18.115	13.562	-5.973	0.001
Control Group	-3.325	14.426	-1.031	0.316

Hypothesis testing using paired t-tests requires regular and homogeneous data. The pre-test and post-test data normality results in the E-Module and control group were all normal (*Sig.* > 0.05), as shown in Table 3. Meanwhile, the homogeneity test was used to determine the level of similarity variance between the pre-test and post-test data by comparing the value of *Sig.* on Levene's statistics. Data homogeneity results in the E-Module and the control group showed a

homogeneous variance (*Sig.* > 0.05), as shown in Table 4.

Furthermore, to determine the effectiveness of the E-Module in improving knowledge about TRIAD KRR among students, the paired t-test was used. Table 5 shows the t-test results of the pre-test and post-test data in the E-Module group with a *Sig.* = 0.001, which is <0.05. The results indicated a significant difference in the narcotic and psychotropic compounds are usually used in

medicine as anesthetics. However, there is several illegal drug abuse by adolescents currently. Misuse of these drugs leads to behavioral changes and addiction. Adolescents are very vulnerable to illicit drug abuse due to the anticipatory behavior that appears in them as well as their psychological and emotional conditions (3).

Therefore, various parties can prevent the dangers of TRIAD KRR by providing information or education to recognize and understand its problems. In this study, the E-Module for TRIAD KRR caused a change in students' knowledge. The t-test results in the pre-test and post-test data of the experimental group showed a *Sig.* = 0.001 (*Sig.* < 0.05), while that of the control group had *Sig.* = 0.316 (*Sig.* > 0.05).

DISCUSSION

Adolescence is a period of change from childhood to adulthood. According to the World Health Organization (WHO), it is between the ages of 10 and 19. Adolescents are divided into early (10-13 years), middle (14-17 years), and late adolescence (17-19 years). This stage of development is a sensitive period for the emergence of various changes physically with an increase in emotions, and social sensitivity(8). Changes in adolescence significantly affect the role and function of individuals in the ages. Therefore, these changes, when not handled properly can cause personality differences and health problems. The health problems included in the three primary threats to adolescents' reproductive health or TRIAD KRR are sexuality, HIV/AIDS, and drug abuse.

Sexuality and sexual perversion in adolescence are synonymous with premarital sexual behavior which is a severe problem because it can lead to sexually transmitted infections. Also, unsafe sexual behavior, both sexual intercourse before marriage and multiple sexual partners, potentially causes more severe diseases such as HIV/AIDS.

HIV/AIDS is the second danger of TRIAD KRR in adolescents and a disease that cannot be treated. Adolescence has a high vulnerability to HIV/AIDS infection with increased social mobility being a risk factor for transmission. It is strongly associated with high activity and curiosity in adolescents (9-11).

The third danger of TRIAD KRR in adolescents is involvement in illegal drug use. Drugs or narcotics, alcohol, psychotropics, and other addictive substances are a group of chemicals introduced into the human body and have an addictive effect on their users (12). In general,

The effectiveness of the E-Module on students' knowledge is reflected in the average score in

the experimental group, which indicated an increase of 18.2 after the final measurement. Meanwhile, the average score in the control group also showed a boost after the last measure, which is equivalent to 3.4. These results showed that the change in knowledge in the control is not as significant compared to the experimental group. Therefore, it can be concluded that providing information through the E-Module increased students' knowledge.

The results indicated that the E-Module was effective in increasing students' knowledge. This is also in line with Kismiyati(13) and Lindenmaier et al.(14), which found that the E-Module significantly affected academic competence and increased knowledge. The learning outcomes of students who use the E-Module are higher than students who undergo regular learning. According to a previous study, the learning process is considered successful when a person shows changes in their behavior after interacting with a stimulus or a given material(15).

The E-module is an independent learning media and has characteristics consistent with current technological developments. It allows students to learn with a Personalised Learning model. This model facilitates independent learning, hence, it can adapt to the abilities and needs of different students(16). Furthermore, the latest advancement in education related to information technology and computer-based learning has been widely applied lately. The introduction of interactive e-learning modules was well accepted by students and positively impacted their learning(17). Nurhayati(18) stated that students prefer media display, mobile, and interactive media to increase their motivation towards learning.

The E-Module used in this study is online-based, very interactive, displays images, videos, and sound. Its use is easy and can be accessed anywhere and any time. In general, E-Module has advantages and attractiveness for students compared to monotonous and motionless print modules. Learning using the E-Module produces changes with better outcomes. As expressed by Sukaryadi(19), an E-Module is an innovative form of a print module that combines multimedia information technology such as images, animation, audio and even video, thereby making it more attractive and interactive.

Online-based learning media that follows technological developments also enable educators to apply the blended learning model and the flipped classroom method. This model can be used during the Covid-19 pandemic which has led to New Normal Life changes in the world of education. This incident made many educators compete to create attractive learning models and media. The results of these creations make

it easier for students to learn anywhere, any time, and eliminate boredom.

The E-Module is one of the media that can support the blended learning model and the flipped classroom method as well as a solution to learning patterns in the new normal life era. As stated by McLaughlin(20), this learning method has several benefits, such as exposing students to positive insights and new knowledge independently. In addition, students are more active, creative, independent and critical in dealing with specific problems(20).

Self-learning ability in students has an essential role in shaping their character to learn in life (lifelong learning). The E-Module is an effective and efficient learning media that contains interactive materials. Moreover, learning evaluation in the module is functional to measure the outcome of education and provide the results to students automatically. The E-Module not only forms the character of lifelong learning but is also a means of improving critical thinking skills to make students solve simple problems through independent learning with media.

Building 21st-century skills are one of the challenges in current education, including information and communication technology, literacy, problem-solving, critical thinking, practical communication, and collaboration skills. These skills are characteristic of a knowledge-based society in the current global era(21). Learning using e-learning media has proven to be beneficial and effective in increasing students' critical thinking ability (22). Besides, critical thinking skills for students are deemed necessary nowadays considering the demands of most jobs, namely workers who have independent problem-solving skills and can think critically.

E-learning is an effort to improve students' soft skills. It helps them to learn independently online, which requires communication skills to solve problems and can also be a discussion forum between students and teachers. According to Sinarwati(23), the implemented E-Module has proven effective in developing students' soft skills for extracting information from various sources quickly and efficiently thereby increasing initiative and creative attitudes. Also, online discussion forums show how they interact and refute their friends' opinions that do not match their understanding. Most students, approximately 70%, stated that the E-Module used can increase initiative, motivation to learn, communication skills, honesty, participation, and creativity (23).

Furthermore, the E-Module can help students understand a concept. The application in structured learning makes it easier for students

to explore learning concepts and absorb material more easily as well as independently. According to Yaumi,(24) effective learning has characteristics, namely the delivery of material that can achieve instructional goals, provide an exciting learning experience, and support a learning process which is easier for students to accept independently. The TRIAD KRR E-Module developed in this study generally has these characteristics. It is an interactive learning medium that provides an exciting and easy learning experience.

Several other studies also stated that the E-Module can indeed enhance change. The study by Khasawneh et al.(25) on the effectiveness of e-learning in the education of pediatric medical students found an increase in post-test and National Board of Medical Examiners (NBME) students. Approximately 70% of students expressed satisfaction and stated that using E-Module increased self-confidence in learning materials. Furthermore, Shinde et al. (26) regarding the impact of a visual dynamic E-Module on the knowledge of diabetic patients showed that patients perceived the electronic module as a visually attractive tool. The E-Module can strengthen the information received by patients, hence, it is an effective and efficient tool to increase knowledge about diabetes.

Susilawati et al.(27) added that the E-Module in supporting students' learning must be able to provide a unique attraction. Similarly, Putri et al.(28) stated that E-Module has different display characteristics, hence, it can provide a more curious experience for readers. This implies that the E-Module of TRIAD KRR can increase the curiosity of readers. It can help students understand the dangers of sexuality, HIV/AIDS, and drugs. This information will assist them in taking various precautions to avoid being involved in these activities.

Study limitation

There are limitations to this study, first, the purposive sampling technique was used but the samples were not randomized, hence, there might be a possibility of bias. However, the sample selection was determined according to the study's objectives and established criteria. Another limitation is the possibility that the control group can access the E-Module given to adolescents in the intervention group before the end of the study. This possibility was initially anticipated by restricting access to the E-Module provided. It was presented to the respondents only during the implementation of the intervention. Afterward, access to the E-Module was temporarily closed to prevent the other respondents from accessing the material content.

CONCLUSION

The TRIAD KRR E-Module significantly impacted students' knowledge of the three fundamental threats to adolescent reproductive health, including sexuality, HIV/AIDS, and drugs. Students who received information through the E-Module have better knowledge than others. This intervention is an effective learning medium in increasing students' ability to understand more comprehensive information. Moreover, the TRIAD KRR E-Module has an attractive appearance and combines various multimedia components such as images, animation, audio, and video. Based on the results, it can be recommended as an alternative learning strategy to increase student knowledge, specifically about the dangers of sexuality, HIV/AIDS, and drugs. For further studies, these results can be used as primary data to compare the effectiveness of E-Module with other digital/web media.

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Conflict of interest

The authors declared that there are no competing interests.

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