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## **Effect of Tik-Tok and Leaflet Media in Increasing Adolescents' Knowledge and Attitude About Reproductive Health**

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### **Abstract**

**Introduction:** The lack of information about reproductive health obtained by adolescents can lead to the inability of adolescents to maintain their reproductive health. Media could be used to improve knowledge and attitudes. It is important to deliver health education using an attractive media to influence adolescents' understanding and attitude about reproductive health. This study employed a new media, Tik-Tok to improve adolescents' reproductive health knowledge and attitude. This study is aimed to compare the effectiveness of using Tik-Tok and leaflets on increasing adolescents' knowledge and attitudes in East Nusa Tenggara, Indonesia

**Methods:** This research was a *quasi-experimental study*, with a "*pretest-posttest group design*". The study was done on junior high school students in Semau Island. The subjects of this study were 78 students who were divided into two different group interventions, 39 students for Tiktok and 39 students for leaflet. Data analysis technique using marginal homogeneity test.

**Results:** There was a significant increase in knowledge and attitude among the students after receiving reproduction health education using Tik-Tok ( $p=0.0001$ ) and leaflet ( $p=0.0001$ ). The average increase score in knowledge was 6.05 in the Tik Tok group, while in the leaflet group was 5.7. The Tik-Tok group averaged increase in attitude score was 21.05 and the leaflet group was 17.9. These result showed that both media were useful to deliver reproductive health information for young students, but TikTok had a better results.

**Conclusion:** Schools need to work with the related sectors to improve comprehensive reproductive health education for students and also incorporated new media in delivering the health information.

**Keywords:** Reproductive Health, Adolescents, Knowledge, Attitude, TikTok

Article History: Received: 26<sup>th</sup> March 2023, revised: 14<sup>th</sup> April 2023, accepted: 21<sup>th</sup> April 2023

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### **Introduction**

The World Health Organization (WHO) has defined that the adolescent age is between 10-19 years.<sup>1</sup> The 2020 Indonesian population census results show that the adolescent population

reached a quarter of the total Indonesian population.<sup>2</sup> The adolescent phase is a "storm and stress period" because of the fundamental changes concerning adolescents' sexual attitudes

and behaviours that will impact their lives, especially their reproductive health.<sup>3</sup> In Indonesia Demographic and Health Survey, it was shown that the adolescents' knowledge about reproductive health are insufficient. Only 33% of female adolescents and 55% of male adolescents knew about the fertile female period. The percentage of adolescents in Indonesia who did not know about sexually transmitted diseases (STDs) were 68% in female adolescents, and 66% in male adolescents. The comprehensive knowledge of HIV-AIDS among Indonesian adolescents was only 12% among female adolescents and 10% among male adolescents.<sup>4</sup>

The lack of information about reproductive health obtained by adolescents can lead to the inability of adolescents to maintain their reproductive health.<sup>5</sup> Adolescent norms in today's society, whether in rural or urban areas, are more tolerant on sex before marriage.<sup>6</sup> This condition results in high rates of unintended teenage pregnancies due to promiscuous sexual behaviour and increased transmission of sexually transmitted diseases.<sup>7</sup> Indonesian Family Planning Association (PKBI) showed that around 31% of teenagers in NTT have had premarital sex and 39% of NTT teenagers gave birth at the age of 15-19 years old.<sup>8</sup> Based on Uitao Primary Health Care Center on Semau Island report, from February to September 2022, there were seven cases of undesired pregnancy in adolescence.<sup>9</sup>

Knowledge is a result of human sensory or known an object through the senses: eyes, nose, ears, taste, and touch.<sup>10</sup> Adolescents must have reproductive health information to obtain correct knowledge about the reproductive process and various factors around them and have responsible attitudes and behaviours regarding the maintenance and caring of reproductive cycle.<sup>11</sup> In addition, attitudes influence the individuals to prevent STDs, shaping perspectives, and determining the tendency of their behaviour toward other humans or themselves.<sup>12</sup> Attitude is related to a person's level of knowledge.<sup>10</sup> Therefore, it is essential to know the attitude of adolescents towards sexual behavior.<sup>13</sup>

Tik-Tok application provides video content creation which accompanied by entertaining music; this application has spread in various countries, including Indonesia.<sup>14</sup> According to research conducted by Fatmah, during the first quarter (Q1) of 2018, TikTok application became the most downloaded application at 45.8 million times. This number beats other popular applications such as YouTube, WhatsApp, Facebook, and Instagram. There were about 10 million active users of Tik-Tok application in Indonesia. The majority of them are millennial children, school age, commonly known as Z generation.<sup>15</sup> Another way to change the behavior, is a printed media, such as leaflet. Leaflets are the media in the form of sheets of paper, which showing pictures and writing, usually containing important information.<sup>16</sup> Leaflet media is one of the media in health promotion to convey health information or messages through folded sheets containing sentences, images or a combination of pictures and sentences.<sup>10</sup>

The initial survey results at SMP Negeri 1 Semau through the interviews with the principal, teachers and students showed there were several cases of unwanted pregnancies among students at SMP Negeri 1 Semau. This situation, according to one of the teachers, occurred due to premarital sexual behaviour. Furthermore, the adolescent reproductive health education was also provided very minimal for the students. During the initial survey, when the students were asked to mention the reproductive organs in males and females, many of them could not answer correctly and only gave answer about menstruation and wet dreams. School children have an explorative ways in seeking information through electronic media.<sup>17</sup> This behavior also occurred among the children in the islands and tourism areas. This study aimed to determine the effect difference of Tik-Tok (social media) and leaflets (conventional media) in increasing adolescent's knowledge and attitudes in dryland and tourism areas at SMP Negeri 1 Semau, Kupang Regency, East Nusa Tenggara.

## Methods

This study used a quasi-experimental with a pretest-posttest group design. This study compared two different interventions in two groups at SMPN 1 Semau, Semau District in February 2023. The population was all of the 8<sup>th</sup> grade students of SMPN 1 Semau in 2022/2023 (78 students). Total sampling technique were used. The subjects then were randomly divided into two groups with 39 students in each group. Both groups received different treatments, Tik-Tok media and leaflets. The variables studied were the knowledge and attitude of adolescents. The assessment was done through questionnaires. Knowledge was categorized as good, if the students correctly answered the 76-100% of all questions; sufficient, if students correctly answered the 56-75% of all queries and

lack, if the students correctly answered <56% of all questions. For attitude variable, it was categorized as positive, if the students could answer 76-100% (or 31-40 of all questions); negative if students could answer <56% (or the scores <22). Data analysis used time series analysis with the marginal homogeneity test. This study has obtained ethical eligibility from the Health Research Ethics Commission of the Faculty of Public Health, Nusa Cendana University, with the number of 2022425-KEPK 2022.

## Results

### Respondent Characteristics

Table 1 shows the characteristics of the subjects. Table 1 shows that most respondents were in 8<sup>th</sup> grade class A (35%), most respondents were 14 years old (51%), and female (54%)

Table 1. Class age and gender of the subjects

Characteristics	Category	Frequency (total n=78)	Proportion (%)
Class	VIII A	27	35%
	VIII B	26	33%
	VIII C	25	32%
Age	13	28	36%
	14	40	51%
	15	10	13%
Gender	Male	36	46%
	Female	42	54%

Table 2 shows that the results of marginal homogeneity test show that there was a significant effect with a p-value (0.0001), which means that there were

substantial improvement of student knowledge and attitudes after receiving health education through Tik-Tok.

Table 2. Pretest and Posttest Results on Knowledge and Attitudes of Reproductive Health Using Tik-Tok Media

Category	Pretest		Posttest		P value
	n	%	n	%	
<b>Knowledge</b>					
High	4	10%	28	72%	0,0001
Sufficient	22	57%	10	26%	
Lack	13	33%	1	2%	
<b>Category Attitudes</b>					
Good	3	7%	30	77%	0,0001
Sufficient	26	67%	9	23%	
Lack	10	26%	0	0	

Table 3 shows that the results of the marginal homogeneity test which

showed the significant effect with a p-value (0.0001). This means that there

were substantial improvement on student knowledge and attitudes after health education through leaflet media.

Table 3. Pretest and Posttest Results on Knowledge and Attitudes of Reproductive Health Using Leaflet Media

Category	Pretest		Posttest		P value
	n	%	n	%	
<b>Knowledge</b>					
High	2	5%	25	65%	0,0001
Enough	23	59%	12	30%	
Less	14	36%	2	5%	
<b>Attitudes</b>					
High	2	5%	28	72%	0,0001
Enough	26	67%	10	26%	
Less	11	28%	1	2%	

Table 4 shows the average increase in knowledge scores in the Tik-Tok group was 6.05 and in the leaflet group was 5.7. The average increase in

the attitude scores in the Tik-Tok group was 21.05 and in the leaflet group was 17.9.

Table 4. The increase scores in Knowledge and Attitudes between Tik-Tok and Leaflet Group

Variable	Average
<b>Knowledge:</b>	
Tik-Tok group	
Pre-test	11.15
Post-test	17.2
Difference	<b>6.05</b>
Leaflet group	
Pre-test	10.2
Post-test	15.9
Difference	<b>5.7</b>
<b>Attitudes:</b>	
Tik-Tok group	
Pre-test	44.15
Post-test	65.2
Difference	<b>21.05</b>
Leaflet group	
Pre-test	44.75
Post-test	62.65
Difference	<b>17.9</b>

## Discussion

### Knowledge

According to Notoatmodjo, knowledge is the result of knowing after sensing of a certain object.<sup>10</sup> The knowledge gained by the subjects was the result of their sensing of images, audiovisuals, and information in the Tik-Tok video. Knowledge can be improved through health education provided by health practitioners in a regular and planned manner. Giving health education through Tik-Tok media and leaflets can

increase knowledge in a positive direction.<sup>18</sup>

The results of this study also showed that Tik-Tok learning media was found to increase the knowledge from 57% to 74%. The leaflet effect on increasing knowledge about reproductive health was from 59% to 65%. This effect was significant with a p-value of 0.0001, which means that Tik-Tok learning media has an impact on increasing the

knowledge of students 8<sup>th</sup> grade SMP Negeri 1 Semau about reproductive health. This was due to students' interest in Tik-Tok videos so the students could learn while watching interactive Tik-Tok videos with interesting audio visuals. The knowledge gained by the subjects was the result of respondents' sensing of images, audiovisuals, and information in the Tik-Tok video. The increase in subjects' knowledge in the leaflet intervention group was the result of respondents' sensing the images and information on the leaflet sheets and listening to their friends read the information.

The results of this study were supported by the previous research in Ngargoyosa District, Karanganyar Regency, on pregnancy preparation of women of childbearing age which found that health education using Tik-Tok videos affected knowledge about pregnancy readiness ( $p$ -value = 0.0001).<sup>19</sup> This study was also supported by research conducted by Bond & Ramos on 116 African-American women aged 18 to 61 years. The animated video had increased the knowledge about prohibition of alcohol and drug use ( $p=0.004$ ), prohibition of unprotected sex ( $p=0.03$ ), and prohibition of sexual violence starting at age 18 ( $p=0.004$ ).<sup>20</sup>

These results was supported by previous research conducted in junior high school students in Tangerang City, which found an influence of leaflet media ( $p$ -value = 0.0001) on increasing the knowledge of adolescent girls in vulva hygiene during menstruation.<sup>21</sup> The same thing was also found by Kinanti et al. (2022) on 10<sup>th</sup> grade students at Ad Diinul Qayyim high school students, which showed that counselling using leaflet media increase adolescent girls' attitudes about stunting ( $p$ -value = 0.0001).<sup>22</sup>

#### *Difference between Tik-Tok and leaflets*

Another finding was Tik-Tok had a better effect than the leaflet learning media on increasing students knowledge. This can be seen from the results of the averaged increase in the Tik-Tok group was 6.05, but the leaflet group had an averaged increase of 5.7. This result showed that Tik-Tok media was more effective in increasing knowledge than

leaflets. In this study, it was found that Tik-Tok media was fun and can stimulate more individual senses in the process of receiving information. These results are confirmed by Dale's statement in Kuswana (2011) which stated that the more senses that are used to receive something, the more and clearer the understanding or knowledge obtained.<sup>23</sup> These results are supported by research conducted by Gupta and his colleagues on the student population, which showed that audio-visual media was more acceptable for acquiring knowledge, compared to printed materials, leaflets, and flyers.<sup>24</sup>

#### *Attitude*

Attitude is a person's reaction or response to certain stimuli or objects, which involves viewpoints and related emotional factors (happiness, dissatisfaction, disagreement, good or bad)<sup>10</sup>. According to Rosenberg's theory, known as the Affective Cognitive Consistency theory, change or form attitudes can be done through the cognitive and affective components. Through the mental part, namely by providing knowledge, opinions, attitudes or other things, the material will change the affective component, and ultimately attitudes will change. The affective component is to give something to feelings or emotions so that by changing feelings, the cognitive aspect will also change, which will change the attitude.<sup>25</sup>

In line with this finding, the researchers found the subjects' enthusiasm was very good with the emergence of various questions at the end of the session. The questions that arose stemmed from the subjects experiences and ignorance about the material provided. After being given the answers, the subjects adopted it as an idea or perception and then used as a reference to behave more positively. This was indicated by the change in attitude as seen from the results of the post-test evaluation.

Results shows that Tik-Tok learning media improved subjects' attitudes from 67% to 77% and the leaflet increased the attitude from 67% to 72%. The statistical analysis also shown that the effect was significant with a  $p$ -value 0.000.

Tik-Tok app can be used as an effective learning media. Firstly, the Tik-Tok app meets learners' learning needs. Secondly, the Tik-Tok application attracts learners because of its novelty, and has many features that can be implemented into learning. And finally, the Tik-Tok application is equivalent to the development of maturity and experience and the characteristics of learners who were the millennial generation, attached and close to the digital world, especially gadgets. So the Tik-Tok application can be implemented as a medium in learning adolescent reproductive health. In this study, leaflets can be used as a health education tool because targets can adjust and learn independently, can re-read at leisure and the knowledge can be disseminated to their immediate environment such as friends and family. In addition, leaflets can present more detailed knowledge that cannot be conveyed directly and with the leaflet the target of counseling does not need to record the information conveyed.

Result of this study was supported by previous research conducted by Herlinadiyaningsih at MA Darul Ulum Palangkaraya, which stated that the effect of video media on attitudes about menstrual hygiene ( $p=0.0001$ ).<sup>25</sup> Previous research conducted by Maulianti in Cimahi city also supports the results of this study. That study found the effect of leaflet media in attitude of preventing hypertension among the adolescents ( $p = 0.0001$ ).<sup>27</sup>

#### *Difference between Tik-Tok and leaflets*

Another finding is that there was a better effect of Tik-Tok compared to leaflet media on improving the attitudes of students in reproductive health. The average increase score in Tik-Tok group was 21.05, while in the leaflet group was 17.9. New media like Tik-Tok has slightly advantage in attract adolescents attention as this media is using video and follow the trend among young people.

This research is supported by research conducted by Romantika et al on 122 mothers of pre-school age children, who was given a two-dimensional animated video compared to leaflet. The results found that there was a significant difference in knowledge ( $p=0.004$ ) and

attitude ( $p=0.04$ ) in the video group compared to the leaflet group. This proves that health education using video improves mothers' knowledge and attitude about behavioral problems of preschool-age children.<sup>28</sup>

## **Conclusion**

Tiktok and leaflet media could increase knowledge and attitudes about reproductive health among the students at 8<sup>th</sup> grade students at SMPN 1 Semau. The effect of Tiktok was better than leaflet media in increasing knowledge and attitude about reproduction health on 8<sup>th</sup> grade students at SMP Negeri 1 Semau.

## **Ethics approval**

This study has received ethical approval eligibility from the Health Research Ethics Commission of the Faculty of Public Health, Nusa Cendana University, with number: 2022425-KEPK, the Year 2022

## **Availability of data and materials**

Available

## **Acknowledgment**

The researcher wants to thank the principal of SMP Negeri 1 Semau and all respondents in this study, and the two supervisors who have taken the time to guide researchers until this research can be completed properly.

## **Funding**

This research was financed by the authors of this study, not from outside parties

## **Author Contribution**

GYH collected and analyzed data on reproductive health with two different intervention media, Tik-Tok and leaflet, to see the improvement of adolescents' knowledge and attitude related to reproductive health. All three authors contributed equally to the writing of this manuscript. The authors have read and agreed on the final manuscript.

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