The Effect of Android Studio Application to Increase Adolescent Nutrition Knowledge

Duwi Sulistiani✉, Sri Ratna Rahayu, Ari Yuniastuti

Universitas Negeri Semarang, Indonesia

Article Info	Abstract
	The number of Corona Virus patients in various parts of the world, including Indonesia, increases every day because the spread is relatively fast and difficult to detect. Optimal body defense is needed to prevent COVID-19. One of them is eating a balanced nutritious diet. The purpose of this study was to see the effect of the android studio application on adolescent knowledge about nutrition in preventing COVID-19—the research method used pre-experimental using One Group Pretest-Posttest Design. The population in this study were grade XI IPA SMA Negeri 12 Semarang students. The sampling technique used purposive sampling. The results of the statistical analysis with the Wilcoxon test found that the p-value was $0.000 \leq 0.05$. So it can be concluded that there is a significant influence before and after the intervention using the android studio application media. Therefore, this study proposes a technology based on the Android Studio application that can be used anywhere and anytime

INTRODUCTION

COVID-19 (Corona Virus Disease 2019) becomes endemic in various parts of the world, including Indonesia. The number of patients increases every day because the spread is relatively fast. This virus spreads quickly to other regions in China and several countries, including Indonesia (Nielsen & Bronwer, 2020). The covid-19 problem has been experienced by almost all countries, with 827,419 exposed to the coronavirus and 40,777 deaths (World Health Organization, 2020).

According to (KEMENKES RI, 2020), almost all countries have experienced the Covid-19 problem, with 827,419 exposed to the coronavirus and 40,777 deaths. In Indonesia, 114 cases were positive, bringing 1,528 cases, six sufferers, and 14 deaths. There are 32 provinces affected by the coronavirus, including Central Java Province (Central Java Health Office, 2020).

Central Java Province has 92 positive Covid-19 cases, 77 cases treated, 8 recovered cases, seven deaths, ODP (people under surveillance), 9,434 cases, and 406 PDP (patients under surveillance). The prevalence of having the highest cases of Covid-19 spread or included in the red zone where ODP 700, PDP 54, and Positive 6 is Semarang City (Central Java COVID-19 Case Statistics, 2020).

COVID-19 attacks all ages, and the majority affects young adults/ adolescents (Tian et al., 2020). Adolescents need to be selective about the foods that they choose. Good eating habits can determine the high and low quality of the food that they consumed. Balanced nutrition is needed to obtain optimal development and growth during adolescence (Ministry of Health, 2019).

Balanced nutritional intake can be obtained from the quality and nutritious food such as food consumed following nutritional needs, not excessive and not less. Everyone has different nutritional needs, depending on age and activity. Adolescent nutritional status is very important to support their growth and development. Good nutritional status occurs when the body gets enough nutrients that are used efficiently, such as adequate energy, sufficient carbohydrates, proteins, and fats. It allows physical growth, brain development, workability, and optimal Health (Proverawati, A and Kusuma, 2011; Sahara et al., 2019) states that adolescents need more energy and protein, they also need more iron. Its needs in adolescents increases due to rapid growth.

Inadequate nutritional intake of adolescents is because they skip meals (especially breakfast). After all, they are busy but look very happy to eat junk food. Junk food is called so because it does not contain calcium, iron, riboflavin, folic acid, vitamin A and vitamin C, while the content of saturated fat, cholesterol, and sodium is high (Al-Yateem & Rossiter, 2017; Ng et al., 2011). Adolescence can minimize the spread of covid by strengthening endurance. Adequate nutritional consumption is very important for the immune system, which will protect us from diseases caused by viruses and prevent other diseases (Ausrianti et al., 2020). A strong immune system will help prevent the transmission of other viruses, including Covid-19 (Tumiwa et al., 2020).

The explanation above states that one of the prevention is by maintaining endurance, eating nutritious foods, and maintaining personal hygiene (Zeng et al., 2020).

Judging from several relevant previous studies, according to (Coutinho et al., 2016) shows that there have been efforts to improve the balance of energy and nutritional intakes in adolescents, such as carbohydrates, protein, fat, vegetables, and fruit. Lack of nutrition can cause susceptibility to disease (Deutz et al., 2014).

Therefore, adolescents need to take nutrition education. Medical doctors and doctors need to hold counseling or professional consultations to help adolescents calculate nutritional adequacy (Sari, 2018). One way or method that health experts can use to increase adolescent knowledge about nutrition to prevent Covid-19 is promoting health nutrition (Notoatmodjo Soekidjo, 2014). According to the results of previous research, android-based education can provide development knowledge.

If patients and families are often exposed to education or understand the meaning of information that is important to them, this will impact changing their lifestyle and self-confidence to maintain better Health (Relawati et al., 2018).

Nutritional knowledge plays an important role in determining the degree of public health, especially for adolescents. Various nutritional and health problems can occur due to the lack of knowledge about balanced nutrition (Annisa Khaerani, Laras Sitoayu, Vitria Melani, Nazhif Gifari, 2020).

The Succession of health promotion about nutrition to prevent Covid-19 is inseparable from the important role of media. Various media have been developed in the world of education, especially the android application media in conveying messages that aim to see the effect of the android application on adolescent knowledge about nutrition in preventing COVID-19. Currently, the media takes advantage of information technology. It is useful in helping adolescents plan their nutritional needs and monitor and evaluate food intake that they consumed.

The development of technology through mobile media encourages the creation of various innovations in various fields, one of them is health education, which is marked by the creative concept of mobile-based Electronic Learning (Riyanto, 2006).

According to (Hendra & Rahmad, 2020), The use of higher quality electronic-based systems and more data analysis outputs is for monitoring the plan and evaluating nutrition programs also supporting the decision.

Currently, most of those who use cell phones are teenagers, so there is an opportunity in the health sector to use cell phones as a medium for information and health services. The development of technology is possible to assist the dissemination of information and socialization of several health programs (Hatini & Arisani, 2020).

This study aimed to see the effect of android studio application to increase adolescent knowledge about nutrition in preventing COVID-19.

METHODS

The type of research used pre-experimental using one group pre-test – post-test design without a control group. The population in this study were 213 students from grade XI IPA at SMA Negeri 12 Semarang. The sample was 30 respondents using the purposive sampling technique. The study was carried out for four weeks.

This research population is adolescents/ students who meet the inclusion criteria, namely adolescents who have androids, adolescents aged 10-19 years, and willing to be respondents. The exclusion criteria were adolescents who have IOS (iPhone Operating System).

The data collection instrument used a questionnaire. The media used the android studio application. The researcher was assisted by an enumerator (the homeroom teacher). The android studio application media had passed the validity test of media experts and nutritionists. The questionnaire consists of 17 questions. The pre-test and post-test data were analyzed using the Wilcoxon test statistical technique to determine whether the hypothesis was accepted or not. This research has received ethical approval from the Health Research Ethics Commission of Semarang State University with 164 / KEPK / EC / 2020.

RESULTS AND DISCUSSIONS

The media of studio android application "Covid-19 Nutrition for Teens" used in this study are shown in the figure 1.
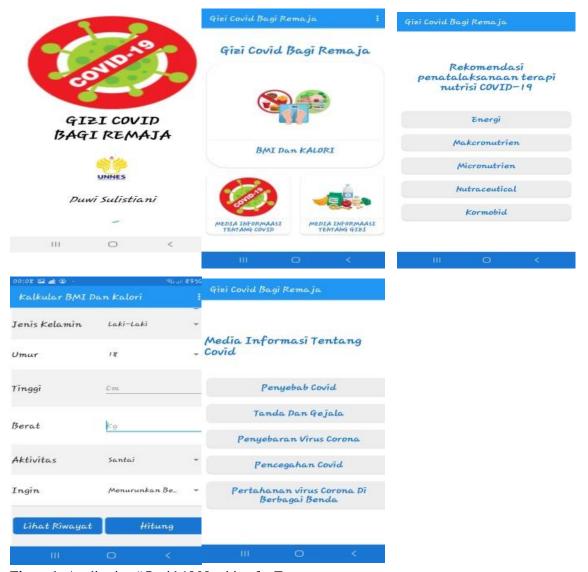
Figure 1. Application "Covid-19 Nutrition for Teens

The android studio application "Covid Nutrition for Teens" consists of 3 menu sections. The first section has BMI (Body Mass Index) and Calorie Menu to see your ideal body weight or nobody's weight and height. The second part of the menu contains the causes, signs, and symptoms of Covid-19, the spread, prevention, and defense of the coronavirus in various objects. The third menu is nutritional information media, which contains recommendations for managing COVID-19 nutritional therapy, namely energy, macronutrients, micronutrients, nutraceuticals, comorbidities.

The sample of normality data test was carried out by the Wilcoxon test (because the number of respondents was more than 50). The sample of data criteria is normally distributed if the p-value is ≥ 0.05. The test results on the sample data are shown in the table.

Table 1. Distribution of Normality Data Test Results for Youth/ Students of SMA N 12 Semarang

No	Variable	P (Value)	Noted	Categorize (P)
1	*Pre – test*	0.03	Not normal	Median (8.00)
2	*Post – test*	0.001	Not normal	Median (16.00)

Based on table 1. After the normality data test was carried out, it was found that the knowledge variable wasn't normally distributed. Judging from the pre-knowledge p-value 0.03 and post-knowledge 0.001 (≤ 0.05). Because the data is not normally distributed, what is seen in the median value.

Table 2. Groups Distribution by Level of Nutritional Knowledge

Knowledge Categorize	Pre-test		Post-test	
	N	%	N	%
Not good	13	43.3	12	40.0
Good	17	56.7	18	60.0
Total	30	100	30	100

Based on table 2. It is found that the knowledge of respondents at the time of pre-test was 13 (43.3%) respondents who had poor knowledge, and 17 (56.7%) respondents had good knowledge. For the post-test results of respondents with poor knowledge, 12 (40.0%) respondents and 18 (60.0%) respondents had good knowledge.

Table 3. The effect of android studio application on nutritional knowledge (pre-post) (N = 30)

Increasing Score	Decreasing Score	Constant Score	mean	P (value)
30	0	0	15.50	0.000

Based on table 3 shows that there is an increased average score of respondents' knowledge before and after nutrition intervention is given. Obtained from 30 respondents after the pre-post test, which had a score increased by 30 respondents, the score decreased by 0, the score remained no, and the average (mean) was 15.50. The results of statistical analysis with the Wilcoxon test obtained p (value) 0.000 ≤ 0.05. So it can be concluded that there is an influence before and after the intervention using the android studio application media.

This study's results are in line with the research from (Hatini & Arisani, 2020) that shows mobile applications are more effective in increasing knowledge. After educating the android application media to patients with kidney failure, there is an effect in increasing family and patient knowledge. If patients and families are often exposed to education or understand the meaning of information that is important to them, this will impact changing their lifestyle and self-confidence to maintain better Health (Relawati et al., 2018).

According to (Ismayanty et al., 2019), there is an effect of the application for early pregnancy risk detection (DILAN) in increasing the knowledge and attitudes of pregnant women about pregnancy risks. This research is also similar to (Media et al., 2019). There is a significant effect of Media Information on Breastfeeding Management on Knowledge, Attitudes, and Working Mothers in Campurjo Village.

This research has been proven by Fertimah (2018), where the results show that the provision of audiovisual media and meditation applications affects in increasing knowledge of anemia and compliance by drinking iron tablets for pregnant women.

This is influenced by the increase of smartphones user, which is said to be a new type of media because it can access information quickly through internet facilities, one of them is smartphone-based media, namely the android application.

According to (Ratiyun et al., 2018), the Session-Fit android application is an alternative for health workers in providing adolescent reproductive health education to increase adolescent knowledge.

Adolescent changes in the level of knowledge occur because of the provision of nutrition counseling and discussion, which aims

to increase understanding and provide information about nutritional problems for adolescents. Because they're still learning the process stage, so it's easy to receive the information conveyed (Diba et al., 2020).

Poor nutritional knowledge will hinder the government's efforts to improve children's nutritional status in Indonesia (Pahlevi, 2012). Good knowledge will support the correct behavior in applying balanced nutrition.

According to (Notoatmodjo Soekidjo, 2014), knowledge results from knowing someone who is obtained from sensory results, namely the senses of sight, hearing, smell, taste, and touch. Knowledge of nutrition is an important factor and can influence individuals, families, and communities (Demirozu et al., 2012).

According to (Aini, 2019) the adolescent phase is an important period for shaping behavior and changing mindsets, so they are the key to influence (education and health in general), both from direct education or information technology media, like smartphones.

Nowadays, information technology is growing rapidly. Many people are helped by various facilities produced by technological advances. One of the developing technologies is the Android-based smartphone. Because it is considered to provide convenience and benefits for its users, many practitioners and academics are developing its application (Kamel Boulos et al., 2014).

This innovation in Information Technology (IT) has brought various changes and improvements in other fields, such as health. Healthcare Information Technology (HIT) applications or projects provide more comprehensive data or information on health-related topics. It provides on-the-go access to health-related information (Ceniza et al., 2020).

According to (Muhson 2010; Sinta et al., 2019), The progress of science and technology has a huge influence on various fields of human life, like education. Education is an inseparable part of the human maturation process certainly has a big contribution to the development of science and technology. However, education also needs to take advantage of advances in science

and technology in order to be able to achieve its goals effectively and efficiently.

In the globalization era, technological developments are increasingly advanced, and there is a lot of smartphone users of, especially teenagers. The community or adolescents find it easier to access information from these devices because they are easy to carry everywhere and accessed anytime. So, researchers made a health education innovation based on the Android Studio application. Providing education based on the android studio application is a new way to increase knowledge and be applied in the world, especially in Indonesia.

Thus, the existence of the android studio application (NUTRITION COVID-19) can make it easier for adolescents/ students to increase their nutrition knowledge and still be able to maintain immune balance to prevent virus attacks.

CONCLUSION

Based on this research, it can be concluded that there is an influence before and after the intervention using android studio application media. So, it can increase adolescent knowledge about nutrition in preventing Covid-19.

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