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Improving The Clean and Healthy Living Behavior of Adolescents in Rural Areas of Indonesia: An Educational Intervention Program

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Abstract:
Clean and Healthy Living Behavior (*Perilaku Hidup Bersih dan Sehat* / PHBS) in schools is an effort to create a healthy environment in schools that is aware of preventing disease, improving health, and being active in maintaining a healthy environment in schools independently. This service aims to increase the awareness, attitudes, and PHBS skills of Tempurejo youth by counseling on clean and healthy living behavior based on the SI-TeSa mobile application. The quasi-experiment used pre-post and post-test questionnaires with research indicators, namely knowledge and attitudes, by dividing respondents into a control group (n=30) and an intervention group (n=30). Simple random sampling with a total of 60 respondents based on G power analysis (effect size 0.3, α err probability 0.05, power 0.95). Educational intervention program with PHBS education as well as two demonstrations including the 6 steps for washing hands and reviewing the SI-TeSa (*Sistem Informasi Terampil Kesehatan*) mobile application. The results of the pre-post Wilcoxon test for the intervention group showed a sig value <0.001 (p = 0.05). This indicates that there is an influence of education on clean and healthy living behavior based on the SI-TeSa mobile application. Meanwhile, the control group showed a sig value of 0.124 (p=0.05), indicating that there was no influence of education on clean and healthy living behavior. There was a significant increase in knowledge and attitude scores before and after the SI-TeSa mobile application-based healthy living behavior counseling was carried out.

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INTRODUCTION

Health development is a form of health effort that is carried out in an integrated and sustainable manner to maintain and improve the level of public health to increase awareness, willingness, and ability to live healthily for everyone in order to realize the highest level of public health as an investment for development of socially and economically productive human resources as stated in Republic of Indonesia Law no. 36 of 2009 (Kementerian Kesehatan RI, 2016). According to the Republic of Indonesia Minister of Health Regulation (Permenkes) No. 3 of 2014 concerning Community-Based Total Sanitation (STBM) is an approach to changing hygiene and sanitation behavior through community empowerment by triggering. STBM itself has five pillars, namely Stop Open Defecation (BABS), Hand Washing with Soap (CTPS), Management of Household Drinking Water and Food (PAMM-RT), Safeguarding Household Waste (PS-RT), and Safeguarding Household Liquid Waste (PLC-RT) (Nimah et al., 2021; Putra et al., 2021)

Clean and Healthy Living Behavior is basically all public health behavior carried out based on personal awareness (Kementerian Kesehatan RI, 2016; Nurfadillah, 2020). The things that apply to

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PHBS depend on the scope, for example, in residential environments, schools, offices, etc. However, the general aim of PHBS is the same, namely increasing public awareness to live a clean and healthy life. Clean and Healthy Living Behavior (PHBS) in schools is an effort to create a healthy environment in schools, which must be implemented by students, teachers, school guards, canteen staff, parents, and others with awareness to prevent disease, improve health and be active in maintaining a healthy environment at school independently. There are 15 indicators of PHBS in schools, including the use of clean water, the use of healthy latrines, throwing rubbish in the right place, washing hands using running water, consuming healthy snacks, exercising regularly, doing PSN, not smoking, weighing and measuring height, cutting and cleaning nails, brushing teeth, wearing shoes, using the School Health Unit (UKS) room at school, youth health cadres, and the existence of school health funds. School students are one of the groups vulnerable to health problems caused by environmental factors and lifestyle (Bastiawan et al., 2022). A person's knowledge is one of the factors that can shape a person's behavior. Efforts to increase knowledge about PHBS in schools can be done through outreach. Counseling about PHBS can be carried out by community health center officers, health students who are doing internships or other officers (Munawaroh & Damayanti, 2022).

Health behavior problems in school-age children are usually related to personal hygiene, the environment and the emergence of various diseases that often attack school-age children, apparently generally related to PHBS (Ikram et al., 2022). Health problems that occur in school-age children make it clear that PHBS values in schools are still minimal and have not reached the expected level. For this reason, intervention activities are needed that can increase knowledge, attitudes, and actions about PHBS in school children (Mufida et al., 2021; Susanto et al., 2016). One form of intervention carried out by the PPK Ormawa BPM Team at the Faculty of Nursing as a form of service is counseling on clean and healthy living behavior based on the SI-TeSa mobile application where this service aims to increase the awareness, attitudes, and skills of clean and healthy living behavior (PHBS) of Tempurejo youth.

METHOD

Study Design

This was quasi-experiment research with a pre-test and post-test given to adolescent participants aged 12-15 years. We used two groups in this research which were devided into intervention groups and a control group.

Population, Sample, and Setting

The population of this study were all junior high school teenagers in the rural area of Tempurejo subdistrict based at MTS Baitul Hikmah with a total of 345 students. The sample determined in this study was determined with a total of 60 respondents based on G power analysis (effect size 0.3, α err probability 0.05, power 0.95). The determined sample was then divided into two groups, namely the intervention group (n=30) and the control group (n=30). Researchers selected the samples involved in this research using a purposive sampling method. Researchers apply several criteria for appropriate respondents to be able to follow research procedures, including: (1) willing to become participants; (2) have an Android device; (3) aged 13-15 years; (4) Willing to follow research procedures from start to finish. The exclusion criteria set by researchers in this study include: (1) Respondents did not continue the research process because they were sick or withdrew; (2) there are obstacles in installing the applications used in the research process.

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Instrument

The research instrument uses pre-post and post-test questionnaires with research indicators including knowledge and attitudes. The data collection tool in the form of a questionnaire consists of three parts. The first part of the respondent's identity questionnaire statement includes name, age, address and education. The second part of the questionnaire includes questions about knowledge of implementing Clean and Healthy Living Behavior (PHBS). The knowledge questionnaire was developed from previous research and consists of 10 questions (Bambu & Tahun, 2019). For the knowledge questionnaire, the answers include multiple choice questions. Participants get a score of 10 if the answer is correct and 0 if the answer is wrong. The minimum score is 0 and the maximum score is 10. We used an attitude questionnaire from previous research to measure participants' attitudes towards implementing Clean and Healthy Living Behavior (PHBS). The attitude questionnaire consists of 10 questions. Participants are asked to choose answers according to the participants' beliefs about Clean and Healthy Living Behavior (PHBS). The answer choices consist of four answer choices, namely strongly agree, agree, disagree, and strongly disagree. Participants will tick the selected answers. The minimum score is 0, while the maximum score is 10.

Intervention

The stage of implementing the intervention for participants began with explaining the research procedures to the participants and an education and training session was held one day for the intervention group providing five sessions of education and training activities (Table 1), while the control group followed routine health service procedures as usual. The intervention process was carried out in small groups consisting of 30 participants in each group. This educational session begins with an introduction to Clean and Healthy Living Behavior (PHBS) in general which occurs in human life. The second educational session continued with explanations regarding Clean and Healthy Living Behavior (PHBS) in school and household environments. The concept of the educational program implemented is Self Directed Learning. The function of the research and enumerator team is to facilitate the implementation of the intervention process. There was an active discussion between participants based on the learning media used. The educational program in the next session was also carried out with a demonstration of the 6 steps for proper and correct hand washing guided by the facilitator team and followed by the research participants. The second demonstration involved participants reviewing the SI-TeSa (Sistem Informasi Terampil Kesehatan) mobile apps which had been developed by the research team. After the educational program, participants were asked to fill out a post-test questionnaire.

The "*Sistem Informasi Terampil Kesehatan*" (SI-TeSa) mobile application was designed in July 2023 and inaugurated on August 3, 2023, in collaboration with the information technology team. This application has 3 main domains containing featured articles, healthy calculators, and superior products from the SI-TeSa mobile application. The Si-TeSa application can be downloaded via Playstore. The first domain is a featured article featuring insight into health tips for people in the community to have a healthy living.

Health education is carried out for five sessions. The counseling method used two types, the intervention group used teaching aids in the form of posters, leaflets, and the SI-TeSa mobile application, while the control group was not given any intervention. The control group followed school health unit activities as usual.

Table 1. How to Perform the Educational Intervention Program

Sessions	Objectives	A Summary of Topics and Activities	Educational Time (min)
1	General understanding of PHBS	Explains PHBS in general terms of all human life activities in various places	30
2	PHBS in Schools	PHBS identification is carried out in schools, especially MTS Baitul Hikmah, by all school members	30
3	PHBS in the Household	PHBS identification is carried out in the home environment by all family members	30
4	Hand Washing Demonstration	Demonstrate the steps for washing hands with 6 steps properly and correctly, started by the facilitator and then followed by the research participants	30
5	Si-Tesa Application Demonstration	Divide participants into teams guided by the facilitator regarding how the Si-Tesa application works	30

Data Collection

Data were entered into SPSS software (version 22) after collection, cleaning, and organization. We describe the characteristics of respondents such as name, age, address, education, whether they know about PHBS, where they found out about PHBS, and whether they have social media. In addition, central tendency and dispersion index measures were applied to display quantitative data. Data were collected from 60 research respondents who were divided into two groups using simple random sampling, then processed into SPSS statistics in numerical data.

Data Analysis

The collected data was analyzed using univariate and bivariate analysis. Before the educational intervention, variable scores between the intervention group were compared with those of the control group using the Wilcoxon test, and p=0.05 was considered statistically significant. The normal distribution of the data was checked by applying the Mann-Whitney test to the post-test data, and the pre-test data in the intervention and control groups were compared using the non-parametric Wilcoxon test because the data was not normally distributed.

Ethical Approval

This research was approved by the Research Ethics Committee Review Board No.2208/ UN25.8/ KEPK/ DL/ 2023. Ethical and administrative approval from the Jember District Health Service and the community health center was obtained for this research.

RESULT

Table 2. Demographic Characteristic of the Sample at Baseline

Characteristics	Intervention Group (n=30)	Control Group (n=30)	Total Sample (n=60)
	f (%)	f (%)	f (%)
Ages			
12 years old	5 (16.7)	3 (10)	8 (13.3)
13 years old	10 (33.3)	9 (30)	19 (31.7)
14 years old	8 (26.7)	13 (43.3)	21 (35)
15 years old	7 (23.3)	5 (16.7)	12 (20)
Gender			
Male	30 (100)	-	30 (50)
Female	-	30 (100)	30 (50)
Have you ever known what PHBS is ?			
Once	26 (86.7)	25 (83.3)	51 (85)
Never	4 (13.3)	5 (16.7)	9 (15)
How do you know what PHBS is?			
Friend	2 (6.7)	-	2 (3.3)
Social media	7 (23.3)	2 (6.7)	9 (15)
School	21 (70)	28 (93.3)	49 (81.7)
Do you have social media?			
I Have	30 (100)	30 (100)	60 (100)
I Do not Have	-	-	-

Table 2 shows the characteristics of the research sample. The majority of respondents who filled out the questionnaire in the intervention group were 13 years old with a percentage of 33.3% (10 respondents), while in the control group the majority were 14 years old with a percentage of 43.3% (14 respondents). The three indicators in the knowledge variable include whether you have ever heard of PHBS, how you found out about PHBS, and whether you have social media. The first indicator shows a percentage of 85% answered with Never. The second indicator shows that the highest percentage, 81.7%, answered with School. The third indicator shows that the largest percentage (100%) answered with Have.

Table 3. Dimensions of Knowledge and Attitude of Tempurejo Teenagers in Intervention and Control Groups at Baseline and After Intervention

Group	Dimensions of Knowledge and Attitude	Baseline (Min-Max)	After intervention (Min-Max)	Wilcoxon test result
Intervention Group				
	Knowledge	5-10	8-10	<0.001
	Attittude	12-30	19-30	0.025
Control Group				
	Knowledge	1-10	0-10	0.124
	Attittude	8-26	13-29	0.022

Table 3. Shows the difference in min-max knowledge values after counseling with a Wilcoxon test value <0.001 in the intervention group and 0.124 in the control group. The attitude dimension also shows the same thing, with a Wilcoxon test value of 0.025 in the intervention group and 0.022 in the control group.

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Tabel 4. Intervention Effect on Knowledge and Attitude of Tempurejo Teenagers in Intervention and Control Groups at Baseline and After the Intervention

Variable		Min-Max	Mann-Whitney test result
Knowledge			
	Intervention	5-10	<0,001
	Control	1-10	
Attitude			
	Intervention	12-30	<0,001
	Attitude	8-26	

Table 4 shows the results of sig <0.001 (α=0.05), this means that the hypothesis is accepted or there is a significant influence on knowledge after providing education on clean and healthy living behavior whether based on the SI-TeSa mobile application or not. Meanwhile, the attitude value in the Mann Whitney test results showed sig <0.001 (α=0.05), it means that the hypothesis was accepted or there was a significant influence on attitudes after providing counseling on clean and healthy living behavior based on the SI-TeSa mobile application or not.

DISCUSSION

The research results showed that a series of health education interventions based on the SI-TeSa mobile application carried out on respondents had a significant influence on clean and healthy living behavior. When compared with the control group, the intervention group had a more significant effect. Health education about PHBS for teenagers based on the SI-TeSa mobile application aims to increase teenagers' knowledge about clean and healthy living behavior. Good knowledge tends to encourage someone to behave well and correctly (Putra et al., 2021). Knowledge itself is influenced by many factors, one of which is formal education. The higher a person's education, the broader their insight and knowledge (Marantika & Dwihestie, 2020). However, this does not mean that those with low education tend to have low knowledge. A person's knowledge of an object contains two aspects, namely positive and negative aspects. These two aspects will determine a person's attitude. The more positive aspects and objects that are known, the more positive the attitude towards certain objects will be (Khan et al., 2021).

The Si-TeSa-based educational program which was implemented over five sessions had a significant influence on teenagers' knowledge and attitudes in implementing clean and healthy living behavior. The results of this research are relevant to previous research which explains that educational programs carried out in target groups have been proven to increase knowledge and attitudes in carrying out clean and healthy living activities (Mufida et al., 2021; Sasmitha et al., 2020). Knowledge is the result of knowing and this occurs after people sense a particular object. Most of the knowledge as stated in Lawrence Green's theory is that health behavior is influenced by knowledge as a predisposing factor (Hillier, 2020). Besides, behavior that is based on knowledge or cognition will be more lasting than behavior that is not based on knowledge, and people who have a lot of knowledge will tend to easily explore their desires in the form of action (Idyawati et al., 2020).

The educational program which contains outreach activities and interactive questions and answers to increase public knowledge about hygiene and healthy living behavior (PHBS) is implemented in accordance with the initial activity plan. This is in accordance with previous research which states that health education activities in several sessions will provide the target with a concrete picture of how clean and healthy living techniques can be applied in daily life

practices (Kusuma, 2022). The use of the Si-TeSa application as a learning medium also has a significant impact on increasing respondents' knowledge and attitudes. Previous research has proven that application-based media is effective in increasing knowledge and attitudes towards a concept being studied (Fitriani et al., 2022). Media applications which consist of a combination of audio and visual certainly have their own appeal in terms of conveying information to someone (Yunanto et al., 2017). This attraction makes it easy for someone to be impressed and have a good memory of the concepts conveyed in the media.

Application media as an educational medium can be used anytime and anywhere. This media has several advantages, including not being limited by space and time and making it possible for the wider community to learn independently (Rifanti & Pujiharsono, 2018). Independent learning carried out by someone will certainly allow someone to master special knowledge (Hidayati, 2017). An increasing knowledge domain will of course form an attitude that is in line with changes in the knowledge that has been formed. A changed attitude will guide a person's perspective in responding to a phenomenon they are facing. The attitude dimension is one of the determinants of the direction of practice a person will carry out.

CONCLUSION

There was a significant increase in knowledge and attitude scores before and after the SI-TeSa mobile application-based healthy living behavior counseling was carried out. Knowledge factors influence health behavior, whereas behavior that is based on knowledge will be more lasting. Future researchers can add other variables or characteristics that can influence teenagers' knowledge and attitudes.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest, financial or otherwise, during the research.

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