

## EFFECTIVENESS OF DIGITAL POCKET BOOK INTERVENTION ON KNOWLEDGE OF CERVICAL CANCER PREVENTION AMONG FEMALE ADOLESCENTS

*Efektivitas Intervensi Buku Saku Digital terhadap Pengetahuan Pencegahan  
Kanker Serviks pada Remaja Putri*

**Atin Karjatin<sup>1</sup>, Ridwan Setiawan<sup>1</sup>, Febri Sri Lestari<sup>1</sup>**

<sup>1</sup>Politeknik Kesehatan Kementerian Kesehatan Bandung, Bandung, Indonesia

\*Email: atinkarjatin@yahoo.co.id

### ABSTRACT

Kanker leher rahim (serviks) banyak ditemukan pada wanita di negara berkembang karena pengetahuan, tingkat kesadaran tentang kanker serviks dan deteksi dini masih rendah. Cakupan vaksinasi HPV dosis pertama turun 25%-15% antara tahun 2019 dan 2021. Penelitian ini bertujuan untuk mengetahui pengaruh edukasi melalui media buku saku digital terhadap pengetahuan tentang pencegahan kanker serviks. Penelitian ini dilakukan pada tanggal 6 hingga 9 Agustus 2024 di dua SMK di Indonesia. Desain penelitian ini pre-eksperimental. Sampel penelitian berjumlah 100 remaja putri sekolah menengah kejuruan dengan total sampling yang dibagi menjadi kelompok kontrol dan kelompok intervensi. Pada kelompok intervensi yang diberikan edukasi melalui buku saku digital 20-30 menit perhari selama 4 hari, sedangkan kelompok kontrol hanya diberikan buku saku digital setelah penelitian selesai. Instrumen ini menggunakan kuesioner yang divalidasi dengan keandalan yang diuji menggunakan Cronbach's alpha ( $>0,61$ ), yang menunjukkan konsistensi yang dapat diterima. Berdasarkan hasil uji Mann Whitney diperoleh  $p\text{-value}=0.006 < 0.05$  dan hasil uji Wilcoxon pada kelompok intervensi  $p\text{-value}= 0.032 < 0.05$ , sedangkan pada kelompok kontrol  $p\text{-value}= 0,589 > 0,05$ . Ada perbedaan mean score pengetahuan tentang pencegahan kanker serviks antara kelompok intervensi dan kelompok kontrol dan terdapat pengaruh yang signifikan edukasi melalui media buku saku digital pada kelompok intervensi terhadap pengetahuan remaja putri mengenai pencegahan kanker serviks.

**Kata kunci** buku saku, digital, edukasi, pencegahan kanker serviks, pengetahuan

### ABSTRACT

Cervical cancer is mostly found in women in developing countries because of low knowledge, awareness about cervical cancer, and early detection. Coverage of first-dose HPV vaccination dropped by 25%-15% between 2019 and 2021. This study aimed to determine the influence of education through digital pocket book media on knowledge about cervical cancer prevention. This research was conducted from August 6 to 9, 2024, at two vocational high schools in Indonesia. The design of this study was pre-experimental. The research sample was 100 vocational high school girls with a total sampling divided into a control group and an intervention group. The intervention group was given education through a digital pocket book of 20-30 minutes per day for 4 days, while the control group was only given a digital pocket book after the study was completed. The instrument used a validated questionnaire with reliability tested using Cronbach's alpha ( $>0.61$ ), indicating acceptable consistency. Based on the results of the Mann-Whitney test,  $p\text{-value} = 0.006 < 0.05$ , and the results of the Wilcoxon test in the intervention group,  $p\text{-value} = 0.032 < 0.05$ , while in the control group,  $p\text{-value} = 0.589 > 0.05$ . There was a difference in the mean score of knowledge about cervical cancer prevention between the intervention group and the control group, and there was a significant influence of education through digital pocketbook media in the intervention group on female adolescents' knowledge about cervical cancer prevention

**Keywords:** cervical cancer prevention, digital, education, knowledge, pocket book,

## INTRODUCTION

Cervical cancer globally is the fourth most common cancer in women, with about 660,000 new cases in 2022<sup>1</sup>. In the same year, about 94% of the 350,000 deaths caused by cervical cancer occurred in low- and middle-income countries.<sup>1</sup> Cervical cancer cases are the second highest in Indonesia in women in 2022.<sup>2</sup> WHO predicts that in 2030 there will be cases of cervical cancer and other types of cancer in Indonesia, increasing up to 7 times. Based on Globocan 2022 data, there are 36,964 incidences of cervical cancer in Indonesia or around 23.3% when compared to all types of cancer, and with 13.2% of deaths from cervical cancer.<sup>2</sup>

Cervical cancer is widely found in developing countries due to low knowledge, awareness, and early detection. The cause of cervical cancer 99.7% is HPV virus infection (*Human Papilloma Virus*) which is driven by several risks of HPV virus infection, including women who get married at the age of less than 18 years are 5 times more likely to be infected with the HPV virus (*Human Papilloma Virus*), women with high sexual activity and change partners, smokers, family history.<sup>3</sup> WHO data between 2019 and 2021, states that the coverage of the first dose of HPV vaccination decreased by 25% to 15%. This shows 3.5 million more girls did not get HPV vaccination in 2021 compared to 2019.<sup>4</sup> In Indonesia itself, HPV vaccine coverage in 2019 is very low, that is, all adults can receive this vaccine, but only 1.1% get twice the dose of HPV vaccine needed to protect against viral infection.<sup>5</sup>

The World Health Organization has recommended that the main target for the HPV vaccine is girls aged 9 to 14 years, namely 1 or 2 doses, because it is at this time that it is very possible to do the HPV vaccine.<sup>1,6</sup> Prevention efforts are behaviors related to

individual health known as *health behaviors*. This can affect the acceptance of the HPV vaccine.<sup>7</sup> This is supported by the issuance of the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/6779/2021 concerning the Human Papillomavirus Vaccine Immunization Introduction Program for 2022-2024.<sup>8</sup>

In the 2021-2023 period, as many as 3,114,505 women aged 30-50 years or 14.6% of the target, have undergone early detection of cervical cancer using the IVA method. The percentage of early detection of cervical cancer with the IVA method in West Java was 15.3%. In 2023, 31,236 (1%) IVA test results were positive, and 324 (0.01%) of 3,114,505 women aged 30-50 years had been diagnosed with cervical cancer.<sup>9</sup> In the Karjatin (2017) study, 30 female sex workers in the high-risk category and the results of *pap smears* were found *negative for intraepithelial lesion or malignancy*, but *Candida albicans*, *bacterial vaginosis*, and *cervixitis* were found. The change of normal cells to abnormal can be caused by exposure to germs, infections, and fungi.<sup>10</sup>

Therefore, knowledge about cervical cancer prevention is very important so that it can be done as early as possible from adolescence by living a healthy lifestyle, maintaining the cleanliness of the reproductive organs, and immunizing<sup>11</sup>. Thus, to increase awareness of the importance of early detection of cervical cancer, health education using pocket book media is needed which can significantly increase adolescent knowledge.<sup>12,13,14</sup>

This digitalization phenomenon can also not be ignored in increasing the knowledge of teenagers, because it will have an impact on the learning process<sup>15</sup>. The study by Riskia (2024) showed that digital reproductive health pocketbooks had a significant effect on

adolescents' knowledge about sexually transmitted infections.<sup>16</sup> Similarly, Oktavia's research found a 19.64% increase in knowledge about anemia prevention after providing education using a digital pocketbook.<sup>14</sup> Therefore, the development of technology can be used as a health education medium for adolescents, especially in efforts to prevent cervical cancer. This study aimed to determine the influence of digital pocket book educational media on cervical cancer prevention knowledge in female adolescents.

## METHODS

### Design and Sample

The research design was a pre-experimental research to determine the influence of digital pocket book educational media on cervical cancer prevention knowledge in female adolescents. This research was conducted from August 6 to 9, 2024, at two vocational high schools in Indonesia. The research sample consisted of 100 female adolescents, divided into two groups: 50 students from SMK Puragabaya (Puragabaya Vocational High School) as the experimental group and 50 students from SMK Negeri 11 (State Vocational High School 11) as the control group. The sampling technique used was total sampling, and all participants had provided informed consent before the study was conducted. This study has obtained ethical approval issued by the Research Ethics Committee of the Poltekkes Ministry of Health Bandung No: 13/KEPK/EC/V/2023

### Variable and Instrument

The independent variable was education using a digital pocketbook, and the dependent variable was the knowledge of female adolescents related to cervical cancer prevention. This cervical cancer prevention digital pocket book was developed by the researchers themselves. This digital pocket book contains an explanation of the definition of cervical cancer, the

stages of cervical cancer, risk factors for cervical cancer, signs and symptoms of cervical cancer, prevention of cervical cancer, and complications of cervical cancer. The instrument used a questionnaire that had been tested for reliability using the Cronbach's alpha test through the SPSS application, obtained from all knowledge questions with a reliability value of  $>0.61$ , meaning that the questions were reliable. In the intervention group, a pretest was first carried out, then respondents were given a digital pocket book to read 20-30 minutes per day for 4 days. Then, respondents who have read, documented their activities while reading, and filled out the observation form. After that, a post-test was carried out on the fourth day. In the control group, only pretest and posttest were carried out without intervention. Then, respondents received a digital pocket book after the data collection was completed.

### Statistical Analysis

The data normality test uses *the Kolmogorov-Smirnov test* because the number of samples is more than 50 with a significance value of less than 0.05, so the data is not distributed normally. Then, for the homogeneity test, the result was less than 0.05, so that the variance of the control group and the experimental group was not homogeneous. Because the data is not normally distributed and is not homogeneous, the Mann-Whitney test is used to determine the difference in knowledge, while to determine the influence of digital book education media on cervical cancer knowledge in female adolescents, the *Wilcoxon test* is used.

## RESULT

Table 1 showed that all respondents in this study totaled 100 individuals, consisting of 15-year-old female adolescents who were first-year students at two vocational high schools (SMK). A total of 50 respondents from

SMK Puragabaya comprised the intervention group, while the other 50 respondents from SMK Negeri 11 served as the control group. Thus, all

respondents had relatively homogeneous characteristics in terms of age and gender.

**Table 1. Respondent Characteristics (n = 100)**

Characteristics	Category	n	%
Age	15 years	100	100
Gender	Female	100	100
School Origin	SMK Puragabaya (Intervention)	50	50
	SMK Negeri 11 (Control)	50	50

**Table 2. Knowledge of Cervical Cancer in Experimental and Control Groups**

Intervention Groups	Pretest			Post test		
	Category	n	%	Category	n	%
	Good	26	52,94 %	Good	32	64%
	Enough	16	31,37 %	Enough	8	16%
	Less	8	15,69%	Less	10	20%
	Total	50	100%	Total	50	100%
Control Group	Pretest			Post test		
	Category	n	%	Category	n	%
	Good	9	18 %	Good	16	32%
	Enough	33	66 %	Enough	23	46%
	Less	8	16%	Less	11	22%
	Total	50	100%	Total	50	100%

Table 2 showed that in the intervention group, more female adolescents were categorized with a good category than in the control group.

**Table 3. Differences in Cervical Cancer Knowledge in the Experimental and Control Groups**

Variable	Group	N	Mean Rank	Sum of Rank	p-value
Knowledge	Posttest-Pretest Intervention	50	58.47	2923.50	0.006
	Posttest-Pretest Control	50	42.53	2126.50	

\*Mann-Whitney Test

Table 3 showed that there is a difference in the mean score of knowledge about cervical cancer prevention between the intervention group and the control group, with  $p\text{-value} = 0.006 < 0.05$ .

**Table 4. The Effect of Digital Pocket Book Educational Media on Cervical Cancer Knowledge in Female Adolescents**

Variable	Group	N	Z	p-value
Knowledge	Intervention	50	-2.142	0.032
	Control	50	-0.540	0.589

\*Wilcoxon test

Table 4 showed that there is a significant influence of education through digital pocket book media for cervical cancer prevention on the knowledge of female adolescents.

## DISCUSSION

The results showed that there was a difference in the mean score of knowledge about cervical cancer

prevention between the intervention group and the control group. In the intervention group, knowledge was increased after being given a pocket book intervention for cervical cancer prevention. In addition, there was an effect of providing interventions using digital pocket book media for cervical cancer prevention on the knowledge of



intervention groups who were educated using digital pocket books. The provision of a digital pocket book intervention in this study was given to increase the knowledge of female adolescents related to cervical cancer prevention. Media is a means of bridging health information to the target, so that the digital pocket book for cervical cancer prevention is the right medium to be used as an intervention for adolescents. This is in line with the research of Riskia, et al. (2024) who found that there is an influence of digital reproductive health pocket books on knowledge of sexually transmitted infections in adolescents.<sup>16</sup> In the study of Sofiana et al. (2021) also showed that pocket books can increase knowledge and attitudes regarding the prevention of Soil-transmitted helminths.

Therefore, it can be concluded that the use of digital pocket books is an effective and practical educational medium to improve adolescents' knowledge and awareness regarding cervical cancer prevention.<sup>17</sup> Research by Sukmawati and Sartika (2022) found that one of the factors that can affect knowledge is media and information exposure.<sup>18</sup> In addition, previous research has also stated that information obtained from formal and non-formal education can have an immediate impact, resulting in changes and increases in knowledge.<sup>19</sup> One way to improve and encourage increased knowledge is by providing health education.<sup>20</sup>

This digital pocket book is a digital information medium that is suitable for use in providing health education. This digital pocket book is interesting because it not only contains writing but also pictures. In addition, digital pocket books can be accessed anywhere and anytime, so that they can easily improve the understanding of adolescents.<sup>15,17</sup>

This study has several strengths. The use of a digital pocketbook as an

educational medium represents an innovative approach that aligns with the characteristics of today's adolescents, who are highly familiar with digital technology. This medium is attractive, interactive, easily accessible at any time, and capable of increasing engagement and learning motivation. Moreover, the topic addressed is highly relevant to public health issues, particularly cervical cancer prevention among female adolescents, as part of the national effort to improve HPV vaccination coverage and early cervical cancer detection. Nevertheless, this study also has several limitations. The short intervention duration (four days) and the absence of long-term measurement limit the ability to evaluate knowledge retention or behavioral changes over time. The sample, which was limited to two schools in a specific region, also restricts the generalizability of the findings to the broader adolescent population. Furthermore, this study focused only on the aspect of knowledge, without assessing changes in attitude or actual preventive practices related to cervical cancer.

The findings of this study have important implications for education and health promotion practices. The results indicate that the digital pocketbook can serve as an effective and efficient educational medium to enhance adolescents' knowledge about cervical cancer prevention. Therefore, healthcare providers and educators are encouraged to integrate similar digital media into school-based health education programs and student health unit (UKS) activities. These findings may also serve as a foundation for policymakers in developing technology-based strategies for adolescent health promotion. Future research is recommended to employ randomized experimental designs with longer follow-up periods and to evaluate the impact on attitudes and preventive behaviors, in order to obtain a more

comprehensive understanding of the effectiveness of such interventions.

## CONCLUSION

There was a difference in the mean score of knowledge about cervical cancer prevention between the intervention group and the control group, and there was a significant influence of education through the digital pocket book media of cervical cancer prevention on the knowledge of female adolescents. Health workers can provide education and counseling to female adolescents using the digital pocket book media for cervical cancer prevention as one of the efforts to prevent cervical cancer.

## ACKNOWLEDGEMENTS

We would like to be thankful to Politeknik Kesehatan Kemenkes Bandung for their valuable insights and contributions to this study. Sumber dana berasal dari Pagu DIPA Poltekkes Kemenkes Bandung dana Rupiah Murni.

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