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The Influence of Animated Video Educational Media on Increasing Knowledge about Human Papillomavirus (HPV) Immunization among School-Aged Children

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Abstract

Cervical cancer, the leading cause of death for women in developing countries, is now threatening adolescents aged 21-22 years due to HPV infection and lack of knowledge about prevention through vaccination. In Indonesia, cases and deaths from cervical cancer are relatively high, although the prevalence in NTB is lower. HPV immunization coverage in NTB is still 38,99% of the target of 90%, especially at the elementary school level such as MI Nurul Islam, where low student understanding and parental rejection are obstacles. This research seeks to determine the influence of Animated Video Education Media on HPV knowledge among children aged 10-11 years in MI Nurul Islam, which is in the working area of Karang Pule Health Center. The research is a pre-experimental type with a pretest-posttest design; the total sampling approach determined that the research sample consisted of 40 individuals. By comparing students' knowledge before and after the intervention, the Wilcoxon test with α = 0,05 is used to examine how well video increases knowledge regarding HPV vaccination. The study's findings demonstrated that respondents' knowledge of HPV vaccination was 65% in the poor category prior to receiving the video, and 92.5% in the good category following the video. This was demonstrated by an average increase from 49.25 to 91 with a P-Value (0,000 <0,05). This means that there is an effective video about HPV towards the Level of Knowledge of Children Aged 10-11 Years in MI Nurul Islam, Karang Pule Health Center, Working Area. The results of the study are expected to provide benefits for respondents, future researchers, educational institutions, and research sites.

Keywords: *Animation Video; Education; Human Papillomavirus*

Introduction

Human Papillomavirus (HPV) is a virus that can cause skin infections and potentially cause cervical cancer. The HPV viruses most often detected in cases of cervical cancer are HPV types 16 and 18 (Novalia, 2023). This viral infection is characterized by the growth of warts in various parts of the body such as the mouth, arms, legs, and genitals. One of the interventions recommended as a treatment for cervical cancer in the world is HPV immunization. The HPV immunization program is used as a national immunization program in more than 60 countries around the world (Suryoadji et al., 2022).

Gynaecological conditions such as cervical cancer have a high incidence and are a leading cause of death among women in developing countries. Cervical cancer is most common in women aged 33–54 years. However, current data shows that cervical cancer is most prevalent in young women aged 21–22 years (Ashrtika & Agustina, 2025). Cervical cancer is 99,7% caused by Human Papillomavirus (HPV)

infection, often linked to various sexual and reproductive behaviors. Nonetheless, adolescent girls' knowledge about cervical cancer remains low, which affects their confidence in receiving the HPV vaccine (Sari et al 2020).

Based on data from the World Health Organization (WHO) in 2022, cervical cancer ranks 8th with 662,301 cases. WHO Southeast Asia data shows that cervical cancer is ranked 2nd with 195,898 cases (WHO, 2022). The third highest ranking in terms of the number of cervical cancer problems is occupied by Indonesia (IARC, 2020). In 2022, there were 36,964 cases of cervical cancer in Indonesia, with a death toll of 20,708 people (Ferlay et al., 2021).

The target coverage of HPV immunization by the government in West Nusa Tenggara (NTB) Province is 90%, with achievements as of September 12, 2023, reaching 38,99% and continuing (Dinas Kesehatan NTB, 2023). Meanwhile, the HPV immunization coverage in Mataram City has reached 82,76% of the target of 90%. Especially in the working area of the Karang Pule Health Center, the HPV immunization coverage is 94,50%, with MI Nurul Islam in the 2 lowest coverage, namely 79% (Puskesmas Karang Pule, 2023).

The Government of the Republic of Indonesia made HPV immunization one of the mandatory government-funded immunizations in April 2022. HPV immunization is intended for school children as part of the Bulan Imunisasi Anak Sekolah (BIAS) program for children in grades 5 and 6 of Elementary School, with 2 initial doses. The HPV immunization program itself has become 1 of 14 complete basic immunizations for children. 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 Introduction Program for Human Papilloma Virus Immunization in 2022–2024 (Kemenkes RI, 2021).

The existence of a policy of mandatory HPV immunization for women is highly expected to reduce the number of cervical cancers and the number of deaths of women in the future, especially those caused by cervical cancer. One effort to increase knowledge about HPV immunization for early prevention of cervical cancer is to provide as much counseling and information as possible to HPV immunization targets, such as children in grades 5 and 6 at the elementary school level (Suryoadji et al., 2022).

Research Harmawati & Patricia, (2020) use of interesting media can be an effective supporter of health education and is more easily accepted by the target. One of the media that can be used is audiovisual or video media. Interesting media will be easy to remember and is expected to have a positive impact on public health behavior, especially in cancer prevention efforts. Using technological media, such as animated video educational media, can help in learning. Another important aspect of using media is to help clarify learning messages. Information delivered verbally is sometimes not fully understood, especially if it is not good at explaining the material (Martiana et al., 2022).

Research Mumekh et al., (2022) entitled Health Education on HPV Vaccination in School Children on Teacher's Knowledge and Attitudes shows that health education in the form of counseling using leaflets has a good influence on increasing teacher knowledge before and after being given health education on Human Papillomavirus (HPV) vaccination in school children at SDN 81 Manado. The difference between this study and previous studies is in terms of media/tools, this study uses animated video media, and in terms of targets, this study is aimed at

children in grade 4 of elementary school/equivalent MI who will be the target of the next HPV immunization in the BIAS program. The research aims explicitly to measure the difference in knowledge scores before and after the intervention to prove that animated videos are a more engaging and effective educational tool for delivering complex health information to the pre-adolescent group, thereby providing a basis for recommending optimal health promotion strategies to the local Karang Pule Health Center.

Methods

This type of research is Pre-Experimental with a One Group Pretest Posttest Design, where, before the intervention is given, a video about HPV Immunization, the level of knowledge is measured first (pretest), then after the intervention is given, the level of knowledge is measured again (posttest) (Jiwantoro, 2017; Notoatmodjo, 2020).

This study was conducted at MI Nurul Islam, Karang Pule Health Center Working Area in February 2025. The population in this study was all female students in grade 4. The number of female students in grade 4 was 40, and the sampling technique used was total sampling, in which the entire population served as the research sample, so the number of samples in this study was 40 (Jiwantoro YA et al., 2023). In this study, the sample comprised female students aged 10-11 years who were willing to be respondents and could understand the purpose of the study, and excluded those in unhealthy/sick conditions.

The measuring instrument used to measure the level of knowledge about Human Papilloma Virus Immunization is a questionnaire adapted from Technical instructions for implementing the Human Papilloma Virus (HPV) Immunization Introduction Program during the School Children's Immunization Month (BIAS) by the Ministry of Health of the Republic of Indonesia 2023, consisting of 10 statements with true and false choices. The questionnaire was developed from several indicators for each statement. The statements include the definition of HPV, the purpose of HPV immunization, the benefits of HPV immunization, the impact of not having HPV immunization, where to get HPV immunization, and the dosage of HPV immunization.

Raw scores obtained from the knowledge and skills questionnaires were transformed into qualitative categories to facilitate the interpretation of competency levels. This mechanism uses a percentage-based criterion: Scores ranging from 76% to 100% are classified as "Good"; scores between 56% and 75% are categorized as "Sufficient"; and scores below 56% are designated as "Poor". This categorization standardizes the measurement of competency improvement and helps assess the practical impact of the mentoring intervention.

Two phases of analysis were used in this study: univariate analysis was used to ascertain the frequency distribution of respondent characteristics, and bivariate analysis was used to ascertain the impact of animated video educational materials regarding HPV vaccination on the knowledge of children between the ages of 10 and 11. Knowledge data, although conceptually ordinal (e.g., scores), was processed as interval data for statistical testing by summing the correct answers. Samples with a number below 50 were tested for normalcy using the Shapiro-Wilk test (Arikunto, 2018) (Sugiyono, 2021). There is an impact of animated video educational media about HPV immunization on the level of knowledge of children

aged 10-11 years, as this study demonstrates that the data is not normally distributed in (0,000 < 0,05). The Wilcoxon test with P-value 0,000 < 0,05 indicates that the alternative hypothesis is accepted and the null hypothesis is rejected.

Research ethics begins with permission from educational institutions and schools located in the Karang Pule Health Center Working Area, and is based on ethical principles of confidentiality. This research has also obtained ethical approval with the number DP.04.03/F.XLVIII.14/36/2025 on January 13, 2025.

Results

The research conducted on 40 respondents obtained data on respondent characteristics and data related to the level of knowledge about Human Papillomavirus Immunization before and after being given animated video education media. The data collected using this questionnaire instrument obtained the following results:

Table 1. Distribution of Respondent Characteristics Based on Age at MI Nurul Islam in 2025

Variable	Frequency	Percentage (%)
Age		
10 years	35	87,5
11 years	15	12,5

Table 1 shows that the largest age group of respondents in the 10-year age group is 35 respondents (87,5%). All respondents in this study were female (100%) and were in grade 4 of elementary school (100%).

Based on the results of research conducted on 40 students of MI Nurul Islam, the level of knowledge about HPV immunization before being given MEDVISI was as follows:

Table 2. Respondent's Knowledge Level Before and After Being Given an Animated Video at MI Nurul Islam in 2025

Knowledge	Respondents	
	Frequency	Percentage (%)
Before:		
1. Good	14	35
2. Sufficient	26	65
After:		
1. Good	37	92,5
2. Sufficient	3	7,5

Table 2 shows the results of the level of knowledge about HPV Immunization before being given the video, the majority were in the less than adequate category, as many as 26 respondents (65%), and after being given the video, the majority were in the good category, as many as 37 respondents (92,5%).

Table 3 Results of Analysis of Respondents' Knowledge Level Before and After Being Given Video at MI Nurul Islam in 2025

	N	Mean	Std. Deviation	Min.	Max.	P Value
Pre-Test	40	49,25	10,473	30	70	0,000
Post-Test	40	91,00	10,077	70	100	

Table 3 shows the results of the level of knowledge about HPV immunization before the education was carried out, with a minimum score of 30, a maximum score of 70, an average (mean) of 49,25, and a standard deviation of 10,473. For the post-test, the minimum score was 70, the maximum was 100, the mean was 91.00, and the standard deviation was 10.077. The analysis using the Wilcoxon Test with a P-value of 0,000 (<0,05) indicated that the Alternative Hypothesis (Ha) was accepted. The Null Hypothesis (H0) was rejected, demonstrating that the video about HPV immunization had an influence on the level of knowledge among children aged 10-11 years in MI Nurul Islam, which is in the working area of Karang Pule Health Center.

Discussion

Knowing comes from sensing an item, and knowledge is the outcome of understanding. The five senses of humans, sight, hearing, smell, taste, and touch, are where sensing begins. Humans may learn certain things by using their eyes and ears. Age, education, and employment are some of the characteristics that affect knowledge (Notoadmodjo, 2018). According to the findings of a study on human papilloma virus vaccination that was carried out at MI Nurul Islam prior to receiving treatment in the form of video, the majority of respondents 26 in all, or 65% had knowledge in the less category, while 14 in all, or 35%, had sufficient knowledge, with an average pre-test knowledge score of 49.25.

Although some respondents were at a sufficient level of knowledge, the results of the HPV immunization knowledge questionnaire showed that the majority of respondents could not answer correctly on numbers 6 and 7, which discussed the targets of HPV immunization and the dosage of HPV immunization. Of the 40 respondents who answered question number 6 correctly, 5 people and 8 people answered question number 7 correctly. The high number of incorrect answers to both questions indicates a gap in the respondents understanding of the material which could be caused by limited initial knowledge or insufficient information acquisition so that they gave answers.

Based on the results of the study, the age of the respondents fell into the category of elementary school-aged children totaling 40 people with 35 people aged 10 years (87,5%) and 5 people aged 11 years (12,5%). Based on research conducted by (Mumekh, Bunsal, & Basoo, 2022), it was stated that the knowledge of elementary school-aged children in general is still limited to concrete and real things, and is at the level of concrete (real) thinking, not imaginary or something abstract.

The most important aspect of education in the learning process that must follow technological advances is learning media (Salsabila, 2022). So, the latest technology has a role in making learning more interesting and memorable. In addition, it can help an intermediary in achieving learning goals or known as learning media. This animated video media is very helpful in learning because it broadens the knowledge and insights of students. Students will get new experiences by learning using animated videos because students do not just watch or listen. With the animated video media, they can listen and see the reading of the text and animated movements in the form of images directly according to the material that will be delivered by the educator (Alifa, 2021).

The results of the researcher's analysis during the study, this animated video media is very interesting and enthusiastic from respondents, because of the relaxed and fun learning method, as well as the presence of moving images and sound. In 5 screenings, respondents showed a significant increase in Human Papillomavirus immunization. This is in line with the theory put forward by Field & Gilson (2018). Learning with animated videos can provide students with experiences because they see and listen at the same time, which raises many questions that make children more interested in learning (Anggraeni et al., 2021).

The majority of students are satisfied and interested in using animated videos in the classroom, according to research by Cholik & Umaroh (2023) titled Utilisation of Animated Videos as Learning Media in the Digital Era. The use of positive learning media can enhance and pique students' interest in learning more, and the creation of animated videos as learning media is strongly advised to improve the quality of learning and provide students with a better learning experience.

The movement of one frame with another that is different from each other in a predetermined time duration to create the impression of movement, along with sound that supports the movement of images, such as conversation sounds or dialogues, is what makes animated video media, which is a video display like a film made up of images and sound that is then designed to be more interesting (Husni, 2021).

Furthermore, animated video content can support the teaching and learning process. It can boost students' motivation, thoughts, and feelings by using moving picture illustrations and narrative sound, and it helps make the message's meaning clear, so that learning goals can be met more effectively (Anggraeni et al., 2021).

Based on the results of this study, the researcher argues that animated video can improve the knowledge of children aged 10-11 years. The animated video contains moving and sound animations on different backgrounds. The animations in animated video have characters that convey information about HPV immunization, accompanied by several dialogues. The HPV virus in the animated video is designed to speak and introduce itself, making the definition of HPV easier for respondents to understand. Animated video also involves several senses, such as sight and hearing. Respondents' interest in animated video is proven by the repetition of MEDVISI 5 times a day, but respondents are not bored and still listen well.

This study uses engaging, easily understood animated videos for elementary school children, thereby providing information about HPV immunization in an effective and enjoyable visual format. However, this study has limitations in the sample, which is limited to only one class, and the relatively short duration of the intervention, so that it is not yet possible to determine the long-term effects of increasing children's knowledge.

Conclusion

This study concluded that the Animated Educational Video (MEDVISI) was significantly effective in increasing the knowledge of 10-11-year-old children regarding Human Papillomavirus (HPV) Immunization. Before the intervention, the majority of respondents (65%) had a poor level of understanding. However,

after being given an Animated Video, there was a significant increase, with the majority of respondents (92.5%) achieving a good level of knowledge. Thus, animated video-based educational media has proven to be helpful in increasing children's awareness of the importance of HPV vaccination in the Karang Pule Community Health Center working area. Further research is recommended to test whether increasing children's knowledge through animated media is also positively correlated with changes in attitudes and parental approval of HPV immunization.

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