

The Effectiveness of Animated Videos in Health Education: Improving Knowledge, Attitudes, and Behaviors

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Abstract

Background: Health education plays a crucial role in enhancing the knowledge, attitudes, and behaviors of the community. Animated videos have become an increasingly popular educational method due to their ability to present complex information in an engaging manner. However, systematic mapping of their effectiveness is still lacking. Objective: This scoping review aims to clarify the evidence of the effectiveness of animated video-based health education in improving knowledge, attitudes, and behaviors. Methods: This literature review employs the PCC model (P: Patients, Families, Community; C: Health Education Attitudes and Behaviors; C: Animated Videos, Digital Media) to identify relevant literature. Inclusion criteria consisted of articles published in English within the last 10 years, while narrative articles, integrative reviews, scoping reviews, systematic reviews, and meta-analyses were excluded. The results of the analysis are reported in accordance with the PRISMA-ScR guidelines. Results: Out of 578 identified articles, 12 met the inclusion criteria. Conclusion: Animated educational videos have proven effective in enhancing knowledge and attitudes. The implications for nursing practice include the development of video-based educational materials to improve communication and understanding among patients regarding complex health issues.

Keywords: Animated Video; Attitude; Behavior; Health Education; Knowledge.

Introduction

Health is a fundamental aspect of human life, and health education has a crucial role in increasing awareness, knowledge, and healthy living behaviors in society (Notoatmodjo, 2010). The effectiveness of health education allows individuals to make better decisions regarding their health, prevent disease, and improve the overall quality of life. Along with the development of technology, various methods and media of health education have been developed, one of which is the use of animated videos. (Aisah et al., 2021)

Animated videos offer significant potential as a medium for health education due to their ability to present complex information visually, engagingly, and understandably. Through animated videos, the public can receive health education that enhances their knowledge, alters attitudes, and improves their understanding (Yanti et al., 2022). Previous studies have demonstrated that animated videos can enhance memory retention, motivation, and audience engagement. Research findings indicate that animated videos are effective in increasing knowledge, attitudes, and behaviors related to various health topics. For instance, a study by Nintao et al. (2023) found a significant increase in knowledge regarding cell-free DNA screening among pregnant women after using animated videos, with an average score increase of +7.1. Additionally, research by Doheny et al. (2023) reported improvements in patient knowledge and comfort regarding the health impacts of air pollution following a two-minute video intervention. Meanwhile, Supady et al. (2023) demonstrated that an educational animated video about sodium consumption led to a significant increase in knowledge regarding associated health risks.

However, despite the fact that there is a lot of research on the effectiveness of animated educational videos, there are gaps in the literature that need to be noted. First, there is no comprehensive synthesis that maps the effectiveness of animated video-based health education across different populations and outcomes. A study by showed that although animated videos are widely used, there is an urgent need for a thorough evaluation regarding the long-term impact

of these interventions in various cultural and population contexts. This suggests the need for further research to assess the effectiveness of animated videos in improving health knowledge, attitudes, and behaviors across a wide range of demographics. (Vallone et al., 2021)

This coverage review aimed to map and analyse the existing evidence on the effectiveness of animated video-based health education, including the types of interventions that have been tested, the target populations involved, the outcomes measured, and the strengths and limitations of the studies. By conducting this review, it is hoped that it can help fill gaps in the literature and provide direction for future research.

Research Method

Design

This study uses the scoping review approach as the most appropriate method of literature analysis to explore the diversity of interventions and outcomes in animated video-based health education, as this method allows researchers to map the various existing evidence, identify the types of interventions that have been tested, as well as the target populations involved, thus providing a comprehensive picture of the effectiveness of animated videos as a means of health education; literature search was conducted by applying the PCC (Population, Concept, Content) framework, and the results of the analysis were reported in accordance with the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) guidelines, which ensure transparency and systematics in the reporting of research results.

Search Methods

The article search in this study was conducted using the PCC model (P: Population; C: Concept; C: Content) or (P: Patient, Family, Community, C: Attitude and Behavior Health Education, C: Animated Video, Digital Media) are more relevant to the context of this coverage review. The use of PCCs allows researchers to focus more on the

specific characteristics of studies related to animated video-based health education. This PCC model is designed to identify the target population, the concepts being researched, and the context in which the intervention took place. In this case, the population in question includes patients, families, and communities.

The inclusion criteria for this study are divided into several categories to make it easier to identify relevant articles. First, the targeted population includes patients, families, and communities, which are groups that could potentially benefit from health education interventions. Second, for interventions, only articles that discuss health education based on animated videos will be included. Third, in terms of research results, it is directed at measuring knowledge improvement, changes in attitudes, and behaviors related to health. For study design

limitations, only experimental studies, including randomized controlled trials and quasi-experimental studies will be taken into account. Furthermore, the language of the article should be in English for easy understanding and analysis. Finally, the publication period criteria stipulate that the article must be published within the last ten years, i.e. between 2015 and 2025.

In addition, the exclusion criteria clearly stipulate that narrative review, integrative review, scoping review, systematic review, and meta-analysis articles will not be included in this review. Search results are reported in accordance with the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) guidelines, which ensure that research results are delivered with good transparency and systematics.

Table 1. PCC Framework

| PCC framework | |
|----------------------|---|
| P: Population | Patients, Families, Communities. |
| C: Concept | Health Education Attitudes and Behaviors |
| C: Content | Animated Video, Digital Media |

Search Outcome

In this study, the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews) guidelines have been followed to ensure that the process and reporting of scoping reviews are carried out with good transparency and systematics. The researcher obtained 12 articles that corresponded to the keywords. An assessment based on eligibility against the inclusion and exclusion criteria resulted in 12 articles that met and could be used in the literature review. The results of this study are reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Statement (PRISMA):

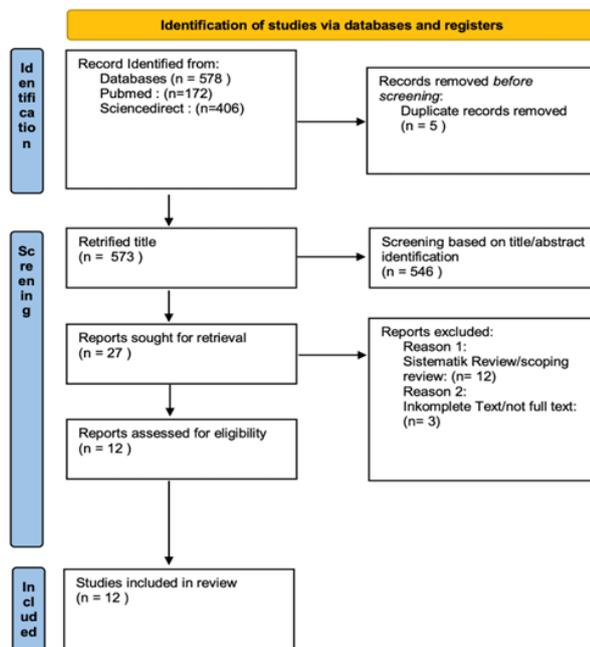


Figure 1. PRISMA Flow Chart

Quality Appraisal

The researcher analyzed each incoming

literature that met the criteria. Data is analyzed by summarizing the results of the selected playback to obtain topics and subtopics. After that, the researchers combined the results of the data analysis and analyzed them to find subthemes. To achieve the purpose of this literature review, a literature review was carried out on the effectiveness of animation videos in improving overall attitude and behavior knowledge using PRISMA, so that 12 articles were found that were worthy of review.

Data Abstraction

A search of the literature from two databases (pubmed and sciencedirect) found 578 articles, there were 5 articles that were duplicates, leaving 573 articles. A total of 573 articles were then screened and the results of the screening, as many as 546 articles were removed because they did not match the title/abstract. Then after the filter, the searched reports were obtained and 27 articles were taken. Of the 27 articles selected based on the type of articles that did not meet the criteria such as narrative review articles, integrative reviews, scoping reviews, systematic reviews, meta analysis (in English), 12 articles were obtained and there were 3 articles that were selected because they were not complete texts so that the results of the screening were the remaining 12 articles that were assessed as eligible. Literature review.

In the process of abstracting the data, key variables are extracted from each study that meets the inclusion criteria. The extracted variables include the identity of the study, such as the author's name, year of publication, and research title. In addition, the study design was noted to understand the type of research method used, such as randomized controlled trials or quasi-experimental studies. The target population studied was also in focus, including participant characteristics such as age, gender, and relevant health conditions. Details about the intervention, especially the use of animated videos as an educational medium, are clearly expressed to find out the context of the implementation of the health education.

The measured results are an important aspect, where the research is directed at the

measurement of knowledge improvement, attitude change, and behavior modification. Finally, the findings of each study are recorded, including the size of the reported effects, statistical significance, and the resulting changes in scores.

By extracting data through these variables, the research can conduct a comprehensive and in-depth analysis, supporting conclusions about the effectiveness of animated video-based health education. All extracted data are analyzed to summarize the results of the selected research, helping to identify topics and subtopics relevant to the objectives of this study.

Data Analysis/ Synthesis

In this scoping review, the researcher conducted data analysis with a descriptive thematic synthesis approach. This method is used to organize and summarize the results of the extracted research, thus allowing the identification of themes and patterns that emerge from the reviewed literature.

The process begins with reading and analyzing each article in depth. The researcher reviews the titles and abstracts to assess the suitability of the set criteria, as well as to remove articles that do not meet these criteria. After that, the researcher conducted a further review of the full text of the included article.

Using descriptive thematic synthesis, researchers can identify key topics and subtopics related to the effectiveness of animated video-based health education. This analysis not only includes the presentation of the information found, but also highlights the relationships between themes and illustrates the trends resulting from various studies. This ultimately supports making more comprehensive conclusions about the effectiveness of this health education media.

Results

This coverage review resulted in 12 articles that met the inclusion and exclusion criteria. The year of publication is limited to the last 5 years (2015-2025). Some of the key points that resulted from this coverage review include:

Characteristics of Studies

In this coverage review, a total of 12 articles were identified, all using experimental designs to evaluate the effectiveness of animated video-based health education. Of the 12 articles, the types of experimental designs used are:

1. Randomized Controlled Trials (RCTs): 6 articles, which are the main method for evaluating interventions by randomly dividing participants into experimental and control groups.
2. Cluster Randomized Controlled Trials (cluster RCTs): 3 articles, which apply group divisions based on clusters such as schools or communities instead of individuals.
3. Quasi-Experimental Studies: 3 articles, which were conducted without randomization and often used groups compared to non-randomized controls.

All articles were published in the last 10 years (2015–2025) and were written in English.

The geographical distribution of the study shows that the majority are from outside Indonesia, covering countries such as the United States, Germany, South Africa, Thailand, China, Pakistan, Malaysia, and Vietnam. Three studies originated from Indonesia, showing local contributions in the context of animated video-based health education. The target population in these studies is very diverse, ranging from adolescents, pregnant women, the elderly, students, to health workers. However, most interventions are given to individuals/patients, not specifically to families as a unit. This type of intervention involves the use of short animated videos based on behavioral theories such as the Health Belief Model (HBM) and the Prototype Willingness Model. Topics raised include COVID-19 prevention, nutritional understanding, genetic screening, vaccination education, decreased interest in antibiotics, sexting prevention, drug abuse, and anemia prevention.

Almost all studies reported an improvement in knowledge, and some also showed positive changes related to attitudes and behavioural intentions. However, not all interventions resulted in significant changes in real practice, especially on long-term outcomes such as health behaviors or long-

term adherence.

Types of Health Education

In this review, all the studies reviewed (12 articles) applied digital media-based health education interventions, with variations in the types of media used. In general, the forms of health education used can be categorized into three main types:

1. Animated Health Education Video. A total of 6 studies explicitly used animated videos as the main educational medium. These videos are designed to visually convey health information with storytelling, moving illustrations, and engaging audio. Topics discussed include COVID-19 prevention, cell-free DNA screening in pregnancy, sodium consumption control, anemia prevention, and prevention of sexting behavior and drug abuse.
2. Non-Animated Educational Videos (Standard Educational Video). A total of 5 studies used educational videos without animation, such as talking-head videos, simulations, or demonstrations aimed at conveying information factually. This type is used, for example, in conveying nutritional information, counseling patients, or providing information to children's parents.
3. Application-Based Digital Media or Mobile Platform. One study used digital media based on mobile phone applications, which allowed users to access educational materials in the form of videos, texts, and other interactive features. While not entirely in the form of animated videos, this approach utilizes digital technology to deliver health education flexibly.

Effectiveness of Health Education

The results of the scoping review found that health education media based on animated videos were consistently effective in improving knowledge, and in some studies also improved attitudes and intentions to behave healthily. These interventions have been shown to be beneficial on a wide range of populations and health topics, such as COVID-19 prevention, sodium consumption control, anemia education, and antibiotic use.

Table 2. Results of Literature Study

| No. | Author and Title | Types of Interventions | Results | Conclusion |
|-----|--|---|---|--|
| 1. | Nintao, et al, 2023 (Thailand). Effects of an animated educational video on knowledge of cell-free DNA screening among Thai pregnant women: a randomized control trial. | This study was a randomized controlled trial that compared the effects of animated educational videos combined with traditional counseling against traditional counseling. | The group watching the video experienced a significant improvement in knowledge scores regarding cell-free DNA screening (mean +7.1) compared to the non-video group (+4.2; p = 0.03). | Adding animated educational videos to traditional counseling can be more effective in increasing pregnant women's knowledge of cell-free DNA screening than using traditional counseling alone. |
| 2. | Doheny et al, 2023, (United States) Short animated video increases knowledge and perceived comfort in clinical counseling on inequitable health impacts of air pollution among interprofessional health learners and clinicians. | This study uses a two-minute animated educational video to increase knowledge and comfort in providing counseling related to the health impacts of air pollution. | Of the 218 participants, there was a significant increase in knowledge scores and participants' comfort levels in identifying patients at risk and providing counseling on preventive health behaviors after watching the videos. | The animated educational video significantly increases knowledge about the disproportionate health impacts of air pollution and increases the convenience of identifying and providing counseling to at-risk patients. |
| 3. | Supady, et al, 2023 (Germany) A short, animated storytelling video about sodium intake as a major cardiovascular risk factor and recommendations for a healthy diet: an online, randomized, controlled trial. | This study used a randomized controlled trial that evaluated the effects of a short animated video on sodium intake on knowledge and behavioral expectations related to a healthy diet. | Of the 10,000 participants recruited, the study found a significant increase in knowledge about sodium and an increase in behavioral expectations for reducing sodium intake after watching videos. | Short-form animated educational videos are effective in increasing knowledge about the impact of sodium on cardiovascular health and can contribute to healthier dietary behavior changes in the community. |
| 4. | Marx and Koning, 2025. (Germany) Comparing the effectiveness of animated videos and talking-head videos in science communication. | This study was a randomized controlled experiment that compared the effects of animated video and talking-head video on conveying nutritional information. | There is no significant difference between the two video formats in terms of knowledge transfer, video evaluation, or intent to share content. However, participants showed increased knowledge about the topics being watched. | Both video formats, both animated and live speaking, are equally effective in conveying nutrition knowledge. |
| 5. | Mansor, et al, 2023. (Malaysia) Effectiveness of a Theory-Based Digital Animated Video Intervention to Reduce Intention and Willingness to Sext Among Diploma Students: Cluster Randomized Controlled Trial. | This study was a randomized controlled trial that used theory-based digital animation video to reduce the intention and willingness to sexting among diploma students. | From 300 participants, the results showed that the intervention significantly reduced intention and willingness to sexting as well as improved knowledge, attitudes, perceived norms, and perceptions of prototypes related to sexting. | An animated video-based intervention using the Prototype Willingness Model was effective in reducing intention and willingness to sexting among students, as well as improving understanding of the associated risks. |

6. Susanty Sri, et al, 2022. (Indonesia). Animated video development COVID-19 prevention and management for anxiety among older adults in Indonesia. The intervention was carried out through the development of animated educational videos on COVID-19 prevention and management tailored to local cultural preferences. The results showed that respondents' knowledge of COVID-19 information increased, and anxiety levels decreased significantly after watching the video compared to the control group. Animated educational videos are effective in increasing knowledge and reducing anxiety among the elderly regarding COVID-19 prevention and management.
7. Goggin Kathy, et al, 2020. (Amerika Serikat). Reductions in Parent Interest in Receiving Antibiotics Following a 90-Second Video Intervention in Outpatient Pediatric Clinics. The intervention was in the form of a 90-second animated video explaining the careful use of antibiotics to parents of children with symptoms of acute respiratory infections. After watching the video, the parents' interest in receiving antibiotics dropped by an average of 10 points. In parents with high initial interest (≥ 60), the decline was more significant, with more than 50% of them switching to low or neutral interest levels. Animated videos are effective in reducing parental interest in antibiotics, especially among those who had a previous high interest.
8. Adam Maya, et al 2021. (Afrika Selatan). Evaluation of a community-based mobile video breastfeeding intervention in K h a y e l i t s h a , South Africa: The Philani MOVIE cluster-randomized controlled trial. The intervention was in the form of a series of animated videos delivered by public health workers (mentor mothers) to promote exclusive breastfeeding. The study did not find a significant difference in exclusive breastfeeding (EBF) rates between the video intervention group and the control group. Although there was an increase in maternal knowledge in the first month, there was no significant difference in the fifth month. Mobile-based video showed no improvement in exclusive breastfeeding outcomes compared to face-to-face counseling. However, these videos can replace some of the time of in-person interaction, so they can be a practical solution in supporting public health programs in areas with limited resources.
9. Qi Haiwen, et al, 2023. (China & Pakistan). Effects of Animated Movies on the Aggression and Behavior Performance of Primary School Students and Their Control Using a Cognitive Behavioral Anger-Control Training (CBACT) Program. The intervention used was the Cognitive Behavioral Anger-Control Training (CBACT) program to control and reduce aggression in elementary school students, which was evaluated through the influence of watching animated films. The results showed that watching violent animated films increased aggression in students, especially in male students. The CBACT program successfully reduced aggression levels and improved student behavior after the intervention. Watching animated movies reduces aggression and behavioral problems in students, especially after watching violent animated movies.

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|-----|--|--|--|---|
| 10. | Vandormael Alain, et al, 2021. (Jerman). The Effect of a Wordless, Animated, Social Media Video Intervention on COVID-19 Prevention: Online Randomized Controlled Trial | The intervention was in the form of a wordless animated video that was disseminated through social media to increase knowledge and intentions of COVID-19 prevention behavior. | The intervention video was viewed 1.2 million times in the first ten days and increased knowledge about COVID-19 prevention by 7.6% compared to the control group that did not get the video. However, only one in five preventative behaviors showed a significant change in behavioral intent. | Video interventions were effective in increasing knowledge about COVID-19 prevention, but had little impact on behavioral intent. |
| 11. | Aisyah Siti, et al, 2022. (Indonesia). Animated educational video using health belief model on the knowledge of anemia prevention among female adolescents: An intervention study. | The intervention was in the form of an animated educational video that used the Health Belief Model to increase knowledge about the prevention of anemia among adolescent girls. | The animated video shown three times significantly increased knowledge about the prevention of anemia in the intervention group. The knowledge score increased from an average of 94 (pre-test) to 102 (second post-test). | Animated educational videos have been shown to be effective in increasing knowledge in adolescent girls about anemia prevention, including various indicators from health belief models. |
| 12. | Nurani Sri V, et al, 2022, (Indonesia). The Effect of Health Promotion through Animation Videos on Adolescent's Knowledge related to Drugs Abuse. | The intervention was in the form of an animated video that was used to increase adolescents' knowledge about prevention in drug abuse. | Animated video. Before the intervention, 63.8% of respondents had poor knowledge, while after the intervention, only 3.4% were in that category. | There is a positive effect of health promotion through animated educational videos on adolescents' knowledge about drug abuse in Kampung Tengah. Creative health promotion methods can attract attention and increase adolescents' knowledge related to the dangers of drugs. |

Discussion

Based on the table of results of the literature study, it was found that most of the articles showed a significant improvement in knowledge after the intervention. Although there were also those who noted positive changes in attitudes or behavioural intentions, the improvements were not as strong as improvements in knowledge, with only a few articles showing no significant difference in the main outcomes. The results of this study indicate that animated video-based health education is an effective method to improve knowledge, attitudes, and behaviors in the context of health.

However, there is an interesting phenomenon where improvements are more consistently seen in the aspect of knowledge

compared to attitudes and behaviors. One reason may lie in the complexity of behavior change which is often much more complicated than knowledge enhancement. While knowledge can be gained through effective information delivery, changing attitudes and behaviors requires additional factors, such as intrinsic motivation and social support, that may not always be available in the context of the intervention.

In addition, the process of changing attitudes and behaviors often requires sustained reinforcement. Once-in-a-lifetime health education, while successful in improving knowledge, may not be enough to drive long-term behavioral change in the absence of additional interventions or consistent reinforcement from the surrounding environment. Contextual factors also play an

important role in this process. Modification of attitudes and behaviors is greatly influenced by the social and cultural environment that individuals face. For example, internalized societal norms and habits can often hinder the application of new knowledge. Therefore, even if a person has a better knowledge of health issues, the context they are exposed to can be a challenge for desired behavioral changes.

In this case, animated videos can be integrated into health education programs by presenting complex information in an engaging and easy-to-understand form. By utilizing animated videos in the curriculum, health education providers can increase participant engagement, strengthen understanding, and help bridge the gap between knowledge and behavior. It is important to design theory-based interventions that can direct the development of educational videos to ensure that the message conveyed is directional and impactful.

Going forward, further studies focusing on long-term behavioral outcomes are needed to evaluate the effectiveness of animated videos in sustaining behavior change. The study should also assess interventions that combine theory-based approaches and combined educational strategies in order to produce more substantial outcomes. Through this approach, it is hoped that more effective methods can be found in creating positive and sustainable changes in public health behavior.

Conclusion

This scope review aims to map and summarize the existing evidence on the role of animated educational videos in health education. The results of the coverage review show the existence of a number of studies documenting improvements in health-related knowledge, attitudes, and behaviors after the use of animated videos. Nonetheless, it is important to emphasize that this review does not conclusively establish effectiveness, but rather a mapping of evidence and trends that have emerged in the literature.

The findings from the studies analyzed show that animated videos can be an interesting and useful tool in conveying

health information. However, gaps in research remain, including the need for more studies focusing on long-term behavioral outcomes and the application of theory-based interventions. Thus, this review is expected to provide direction for future more systematic research in exploring the potential and challenges of the use of animated videos in the context of health education.

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