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The Effectiveness of a Short Video Intervention in Improving CPR Knowledge: A Study in Karangbayat Village

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ABSTRACT

Pengetahuan masyarakat tentang Resusitasi Jantung Paru (RJP) yang terbatas memerlukan metode edukasi yang efektif dan mudah diakses. Video pendek menjadi media yang menjanjikan untuk meningkatkan pemahaman ini. Sebuah penelitian pun dilakukan untuk mengetahui efektivitas intervensi video pendek terhadap pengetahuan RJP di kalangan warga Desa Karangbayat. Penelitian ini menggunakan desain kuasi-eksperimental one-group pretest-posttest terhadap 32 partisipan yang dipilih secara acak. Pengetahuan diukur menggunakan kuesioner tervalidasi sebelum dan sesudah intervensi, kemudian dianalisis dengan uji Wilcoxon. Hasilnya menunjukkan peningkatan pengetahuan yang signifikan. Sebelum intervensi, mayoritas pengetahuan partisipan (65,6%) berada pada kategori 'kurang'. Namun, setelah menonton video, proporsi partisipan dengan pengetahuan 'cukup' melonjak drastis menjadi 97%, meningkat dari 11 menjadi 31 orang. Perbedaan ini terbukti sangat signifikan secara statistik (p = 0,001). Temuan ini membuktikan bahwa video pendek adalah media yang sangat efektif untuk edukasi RJP. Media ini dapat menjadi alternatif yang mudah diakses dan berdampak untuk meningkatkan kesiapsiagaan masyarakat dalam menghadapi keadaan darurat medis. Oleh karena itu, penerapan media ini secara luas sangat direkomendasikan untuk memperkuat keterampilan penyelamatan jiwa.

ABSTRAK

Limited public knowledge regarding Cardiopulmonary Resuscitation (CPR) necessitates the development of effective and easily accessible educational methods. Short videos have emerged as a promising medium to enhance this understanding. Consequently, a study was conducted to determine the effectiveness of a short video intervention on CPR knowledge among the residents of Karangbayat Village. The study employed a quasi-experimental one-group pretest-posttest design involving 32 randomly selected participants. Knowledge was assessed using a validated questionnaire before and after the intervention, with the data subsequently analyzed using the Wilcoxon signed-rank test. The results revealed a significant improvement in knowledge. At baseline, the majority of participants (65.6%) had knowledge classified as 'poor'. However, following the video intervention, the proportion of participants with 'sufficient' knowledge surged dramatically to 97%, increasing from 11 to 31 individuals. This difference was proven to be statistically significant (p = .001). These findings demonstrate that short videos are a highly effective medium for CPR education. This tool can serve as an accessible and impactful alternative to enhance community preparedness for handling medical emergencies. Therefore, the widespread implementation of such media is highly recommended to bolster public life-saving skills

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Introduction

Cardiopulmonary Resuscitation (CPR) is a crucial foundational skill for managing cases of sudden cardiac arrest. Prompt and correct administration of CPR can significantly enhance an individual's chances of survival pending advanced medical treatment (Haniifah et al., 2022). However, numerous studies indicate that public knowledge of CPR remains low, particularly in rural areas with limited access to formal health education (Pivač et al., 2020; Alsabri et al., 2024). This lack of understanding regarding basic CPR techniques contributes to delayed or inadequate first-aid responses in emergency situations, which can consequently increase mortality rates from sudden cardiac arrest (Haniifah et al., 2022). Therefore, effective and widely accessible educational initiatives are necessary to raise public awareness and knowledge of CPR.

Traditional health education methods, such as seminars, lectures, and printed guidebooks, often face limitations in reaching a broader audience and in ensuring long-term retention of information among the public (Ahmed et al., 2023). With technological advancements, digital media like short videos have emerged as an innovative alternative for effectively disseminating health information. Short videos offer a more engaging, interactive, and easily comprehensible method of information delivery, thereby holding the potential to improve public understanding of CPR procedures (Miri et al., 2024). Consequently, it is essential to evaluate the effectiveness of this medium in enhancing CPR knowledge, especially for communities in rural regions that face constraints in accessing formal health education.

Although Cardiopulmonary Resuscitation (CPR) is a proven life-saving procedure for sudden cardiac arrest, the level of public proficiency in this technique remains notably low, particularly in rural areas with restricted access to health information. Karangbayat Village, being a region with limited healthcare resources, faces similar challenges in disseminating CPR-related information. Preliminary observations indicate that a majority of the residents in this area possess minimal knowledge of CPR procedures, potentially diminishing the effectiveness of emergency responses to sudden cardiac arrest incidents within their community. Conventional educational approaches employed thus far, such as lectures and the distribution of printed materials, have often proven ineffective in raising public awareness and comprehension. This is attributable to limited interaction, a lack of visual appeal, and low levels of engagement in the learning process.

Therefore, an alternative educational approach that is more effective, interactive, and accessible to the general public is required. One potential method is the utilization of short videos as an educational medium, given their capacity to present information in a visual, concise, and easily understandable format. However, there is a scarcity of research specifically evaluating the effectiveness of short videos in improving public knowledge of CPR, particularly within rural settings (Nomura et al., 2021).

In response to the growing need for effective health education, this study aims to evaluate the effectiveness of short videos in enhancing public knowledge of Cardiopulmonary Resuscitation (CPR) procedures in Karangbayat Village. Specifically, this research seeks to measure the change in participants' comprehension levels pre- and post-viewing a CPR instructional video and to analyze whether this method can serve as a more effective alternative to conventional approaches. Furthermore, the study aims to provide empirical evidence regarding the benefits of using audiovisual media for health information dissemination in community settings.

By understanding the impact of short videos on CPR knowledge enhancement, this research is expected to yield data-driven recommendations for healthcare professionals, policymakers, and educational institutions in designing more innovative and accessible educational strategies. The findings of this study will not only contribute to the development of more efficient health learning methods but also have the potential to improve community preparedness in managing cases of sudden cardiac arrest, thereby reducing the risk of mortality due to delayed CPR administration.

This research offers a novel contribution to the field of health education by evaluating the effectiveness of short videos as an innovative method for improving public knowledge of Cardiopulmonary Resuscitation (CPR)

procedures. Diverging from previous studies that have predominantly focused on hands-on training or printed materials, this study specifically investigates the impact of short-form audiovisual media in conveying crucial health information. By employing a quantitative approach based on a quasi-experimental one-group pretest-posttest design, this study provides robust empirical evidence regarding the efficacy of short videos in enhancing public comprehension of CPR.

Moreover, the study's results have significant practical implications, particularly for the development of technology-based educational strategies that are more accessible and applicable across various contexts, including resource-limited communities. Given the increasing penetration of digital technology and the popularity of visual media in health information dissemination, the findings from this research can serve as a foundation for governments, healthcare professionals, and non-governmental organizations in designing more effective, scalable, and community-based CPR education programs. Therefore, this research not only addresses a gap in the existing literature but also provides a relevant and applicable solution for enhancing public preparedness in handling medical emergencies.

Research Methodology

Methodology

This study was conducted in April 2024 in Krajan Hamlet, Karangbayat Village, Sumberbaru District, Jember Regency, East Java Province, Indonesia. The research employed a quasi-experimental design with a one-group pre-test/post-test approach to evaluate the effectiveness of a short video intervention in enhancing public knowledge of Cardiopulmonary Resuscitation (CPR). The study population comprised 2,162 individuals, from which a sample of 32 respondents was selected using the simple random sampling method.

Inclusion and Exclusion Criteria

1. Inclusion criteria for this study were: residents of Krajan Hamlet, Karangbayat Village, who consented to participate, were aged between 20-35 years, and were female.
2. Exclusion criteria included individuals who were not present during the research period and those who declined to provide consent.

Research Instrument

The instrument used in this study was a CPR knowledge questionnaire adapted from the research of Devi Nur Asih (2023). Prior to its use, the questionnaire underwent rigorous validity and reliability testing to ensure its accuracy and consistency in measuring CPR knowledge.

1. Validity Test: Validity was assessed using the Content Validity Index (CVI) method, which involved experts in emergency health and health education. Each questionnaire item was evaluated for its appropriateness and relevance in measuring CPR knowledge. The validation results indicated that all items had a CVI score greater than 0.78, signifying good content validity.
2. Reliability Test: Reliability was evaluated using Cronbach's Alpha. The questionnaire was administered to a pilot sample before its application in the main study. A Cronbach's Alpha coefficient greater than 0.7 was obtained, indicating a high degree of reliability and internal consistency.

Research Procedure

The study was carried out through several key stages:

1. Preparatory Stage: Ethical clearance was obtained from the relevant committee prior to the study's commencement (No. 211/KEPK/UDS/III/2024).
2. Sampling and Informed Consent: Selected participants were required to sign an informed consent form before their inclusion in the study.
3. Pre-test: Respondents completed the questionnaire to assess their baseline CPR knowledge before the intervention.
4. Intervention: Respondents were shown the educational short video on CPR twice. The video had a duration of 2 minutes and 19 seconds.
5. Post-test: After the intervention, respondents completed the same questionnaire again to measure any change in their knowledge level.

Justification for Video Duration (2 minutes 19 seconds)

The selection of a 2-minute 19-second video duration was based on several theoretical and empirical considerations:

1. Effectiveness in Enhancing Information Retention: Previous research indicates that short educational videos (under 3 minutes) are more effective in improving comprehension and information retention compared to longer videos (Lin & Yu, 2024). Lengthy videos tend to cause a decline in attention, particularly among a general audience without a medical background.
2. Optimization of Respondent Focus and Concentration: According to research in cognitive psychology, the human attention span for audiovisual content typically ranges from 1 to 3 minutes, after which engagement declines. The chosen duration was intended to deliver dense, memorable information without causing respondent fatigue.
3. Ease of Implementation in Community-Based Programs: In the context of community health education, the use of short videos is highly practical, enabling the rapid delivery of information without requiring extensive training sessions. This makes the method flexible for implementation in various settings, including communities with limited access to formal medical training resources.

Data Analysis

The collected data were analyzed using SPSS software, version 26. The analysis was conducted in two stages:

- Univariate Analysis: This was used to describe the demographic characteristics of the respondents.
- Bivariate Analysis: This was conducted to evaluate the effect of the short video intervention on CPR knowledge enhancement using the Wilcoxon signed-rank test. The research hypothesis was accepted if a statistically significant improvement in respondent knowledge was observed following the intervention.

The methodology employed in this study is expected to provide empirical evidence on the effectiveness of short videos as an innovative health education medium and to contribute to the development of more efficient and applicable technology-based CPR learning strategies at the community level.

Result

The characteristics of the respondents in the study on the effect of a short video on CPR knowledge levels in Krajan Hamlet, Karangbayat Village, are presented in the tables below.

The demographic profile of the participants was analyzed based on age distribution to understand their characteristics.

Table 1. Age Distribution of Study Participants in Krajan Hamlet, Karangbayat Village (2024)

Age (years)	Frequency (n)	Percentage (%)
20-25	6	18.8
26-30	19	59.4
31-35	7	21.8
Total	**32**	**100**

Of the 32 total respondents, the majority (n=19, 59.4%) were in the 26-30 age group. This was followed by the 31-35 age group (n=7, 21.8%) and the 20-25 age group (n=6, 18.8%). This age distribution indicates that the study was predominantly comprised of individuals in their early to mid-adulthood. This demographic is considered to be at an optimal cognitive stage for receiving and internalizing new information, such as education on Cardiopulmonary Resuscitation (CPR).

Table 2. Comparison of Pre-Intervention and Post-Intervention CPR Knowledge Levels

Knowledge Level	Pre-Intervention		Post-Intervention		p-value
	f	%	f	%	0.001
Poor	21	65,6	0	0	
Sufficient	11	34,4	31	97	
Good	0	0	1	3.1	

As shown in Table 2, there was a marked improvement in CPR knowledge among the participants following the short video intervention.

The Wilcoxon signed-rank test yielded a p-value of $< .001$, which is below the significance level of $\alpha = .05$. Consequently, the null hypothesis (H_0), stating there is no difference, was rejected, and the alternative hypothesis (Ha) was accepted. This result indicates that the short video intervention had a statistically significant positive effect on improving the CPR knowledge of the community in Krajan Hamlet, Karangbayat Village. The findings suggest a direct correlation between the video-based intervention and the participants' enhanced comprehension of CPR procedures.

Discussion

The participant demographic in this study was predominantly composed of individuals in the 31-35 age group (21.8%) and the 20-25 age group (18.8%). This distribution indicates that the majority of participants were in the early to mid-adulthood stage of life, a period considered cognitively optimal for receiving and internalizing new information, including education on Cardiopulmonary Resuscitation (CPR). Previous studies have shown that individuals in this age range possess a greater capacity for learning compared to older age cohorts, particularly in comprehending practical, skills-based health concepts (Yang & Yu, 2024). Furthermore, they

tend to be more receptive to technology-based learning methods, such as educational videos, which likely contributed to the effectiveness of the educational intervention in this study.

Further statistical analysis revealed a significant increase in knowledge levels following the short video intervention. Prior to the intervention, the majority of respondents (65.6%) had knowledge levels classified as 'poor,' while only 34.4% demonstrated 'sufficient' understanding. However, post-intervention, the proportion of respondents with 'sufficient' knowledge increased dramatically to 97%, indicating that nearly all participants experienced an improvement in comprehension after receiving education via the audiovisual medium. This finding is consistent with previous research demonstrating that educational videos are more effective in enhancing understanding of health concepts than conventional lecture- or text-based learning methods (Miri et al., 2024). The short video format allows for clearer, more interactive, and more memorable information delivery, which contributed to the intervention's effectiveness in improving public understanding of CPR (Julita, 2022).

The results of this research also align with various earlier studies indicating that audiovisual media are superior to conventional methods in enhancing public health literacy (Ashtari, 2025). A study conducted by Robson et al. (2022) found that interactive short videos could improve memory and comprehension of medical concepts more effectively than text-based materials or lectures. This is because videos present visual and auditory elements that work in concert to facilitate learning, making information easier to digest and retain (Mayer, 2022). In the context of CPR education, research by Robson et al. (2022) also showed that the use of video-based simulations can increase an individual's readiness to handle medical emergencies. Therefore, the findings of this study corroborate the empirical evidence that short video-based educational methods have a significant impact on improving public understanding of CPR, especially in communities with limited access to hands-on training.

The success of the short video in enhancing CPR knowledge in this study can also be elucidated through the lens of Cognitive Load Theory (CLT), as proposed by Knapp et al. (2022). CLT posits that effective learning occurs when the cognitive load imposed on an individual remains within an optimal range, thereby enabling the encoding of information into long-term memory. In this context, the short video, with its duration of 2 minutes and 19 seconds, delivered information in a concise, clear, and focused manner, thus avoiding the cognitive overload that can occur with overly long or complex material (Afify, 2020). Other research also suggests that the optimal duration for educational videos ranges from 1 to 3 minutes, as the human attention span tends to decline thereafter (Costley et al., 2021). Consequently, the choice of a short video in this study was grounded in the principle of cognitive efficiency, which allowed for the effective delivery and retention of CPR information by the respondents.

Beyond its effectiveness in improving comprehension, the use of a short video as a CPR education method in this study holds significant practical implications, particularly for community empowerment in regions with limited access to formal medical training (Almuslamani et al., 2020). Conventional CPR training often necessitates certified instructors, specialized facilities, and considerable time commitments, which can be barriers to implementation at the community level (Breen et al., 2020). Conversely, short videos facilitate widespread, cost-effective dissemination and can be accessed on-demand via digital devices, thereby expanding the reach of public health education (Xuan et al., 2024). A study by Sun et al. (2024) demonstrated that video-based CPR training can enhance public readiness to respond to sudden cardiac arrest in non-medical settings, especially when the video includes clear demonstrations and easy-to-follow instructions. This study thus provides empirical evidence that short video-based education can be an innovative and sustainable solution for improving public health literacy, particularly concerning first-aid skills like CPR.

The findings of this research not only contribute to the literature on the effectiveness of short videos in CPR education but also underscore the importance of innovation in technology-based health learning strategies. With the expanding access to digital media, the use of educational videos as a health intervention tool is becoming increasingly relevant for raising public awareness and skills, especially in first aid. However, despite the

significant increase in knowledge observed, several limitations must be acknowledged. A key limitation is the absence of a control group, which would have provided a clearer comparison of this method's effectiveness against other approaches. Furthermore, this study focused on knowledge acquisition without assessing whether this improved comprehension translates into practical CPR skills in a real-world scenario. Therefore, future research is recommended to integrate direct skills assessment and to compare the effectiveness of short videos with other learning methods, such as simulations or instructor-led training. By doing so, future studies can further strengthen the scientific foundation for optimizing more effective and sustainable health education methods.

Study Limitations

Although this study demonstrates the effectiveness of short videos in improving public knowledge of CPR, several limitations should be considered when interpreting the results. First, the study employed a quasi-experimental one-group pretest-posttest design, which lacks a control group. This design prevents a direct comparison of the short video's effectiveness against other educational methods, such as lectures or hands-on simulations. Second, the research was limited to measuring changes in knowledge levels and did not assess whether this improved comprehension translates into the practical application of CPR skills. This is a critical consideration, as enhanced knowledge does not always directly correlate with the proficient execution of CPR techniques in real-world scenarios.

Third, the study's focus was on a restricted population, females aged 20-35 in Krajan Hamlet, Karangbayat Village. Consequently, the findings may not be generalizable to broader demographics, including older age groups, males, or individuals with different educational backgrounds. Fourth, while the 2-minute 19-second video proved effective for short-term attention and comprehension, the long-term retention of this educational effect was not assessed. Fifth, the study relied on a self-report questionnaire to measure knowledge, a method susceptible to respondent bias, such as the tendency to provide socially desirable answers rather than responses that reflect true understanding.

To address these limitations, future research is recommended. Future studies should consider employing robust experimental designs with control groups, incorporating direct assessments of practical CPR skills, and measuring long-term knowledge retention. Additionally, future research could broaden the study population and compare the effectiveness of various technology-based educational methods to determine the most optimal approach for improving public preparedness for medical emergencies.

Conclusion

This study demonstrates that short videos serve as an effective educational method for improving public knowledge of the first-aid procedure, Cardiopulmonary Resuscitation (CPR). Statistical analysis using the Wilcoxon signed-rank test revealed a significant increase in knowledge levels post-intervention, with a p-value $< .001$, which is well below the significance threshold of $\alpha = 0.05$. This finding indicates that interactive visual media, such as short videos, can serve as a strategic alternative in health education, particularly for communities with limited access to formal medical training.

Beyond its effectiveness in improving knowledge, this study also highlights the potential of short videos as an educational tool that is accessible, cost-effective, and capable of reaching a broad audience. With their brief duration, these videos can effectively deliver information without overwhelming the audience's attention span, which is a key challenge in community-based education programs. Therefore, the use of short videos in CPR education represents an innovative solution for enhancing public preparedness for medical emergencies, especially in areas with a scarcity of certified instructors and training facilities.

Nevertheless, this study has several limitations, including the absence of a control group, a restricted sample population, and the fact that the video's effectiveness in improving practical CPR skills was not assessed. Therefore, future research is recommended to employ more robust experimental designs, evaluate the long-term impact of the video intervention, and compare the effectiveness of various technology-based educational methods. By doing so, future research can further strengthen the scientific foundation for developing innovative, effective, and sustainable health education strategies.

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Conflict of Interest

The authors declare that there is no conflict of interest related to the research, authorship, and/or publication of this article.

Credit Author Statement

Nanda Cecilia Pramundari : Methodology, Validation, Formal Analysis, Data Collection**; Feri Ekaprasetia:** Conceptualization, Investigation, Data Curation, Writing-Original Draft; **Arief Judi Susilo :** Writing-Review & Editing, and Project Administration.

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