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Effect of interactive visual education (EduVit) on anxiety in patients undergoing cardiac surgery

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Abstract

Background: Anxiety is a common psychological issue experienced by patients undergoing cardiac surgery, which can significantly impact mental preparedness and the recovery process. Interactive Visual Education (EduVit) is a non-pharmacological intervention designed to reduce preoperative anxiety levels.

Purpose: To determine the effect of interactive visual education (Eduvit) on reducing anxiety levels in patients undergoing cardiac surgery.

Method: A one-group pretest–posttest approach within a quasi-experimental framework was adopted for this research. The sample consisted of 40 preoperative cardiac surgery patients at a central referral hospital in Central Java, selected using a total sampling technique. Anxiety levels were measured using the Zung Self-Rating Anxiety Scale (ZAS) both before and after the EduVit intervention.

Results: Anxiety levels differed significantly across the two study phases (Marginal Homogeneity test, $p < 0.001$), demonstrating the effectiveness of the intervention.

Conclusion: Interactive Visual Education is effective in reducing anxiety levels among preoperative cardiac surgery patients and is recommended as a standard nursing intervention.

Keywords: Anxiety; Cardiac Surgery; Interactive Visual Education; Preoperative Care.

INTRODUCTION

Anxiety is a common psychological response among patients undergoing cardiac surgery and can adversely affect their hemodynamic stability and psychological readiness (Aardoom, Hilt, Woudenberg, Chavannes, & Atsma, 2022). Although audiovisual education has been recognized as an effective method, there are limitations in the availability of interactive and systematic visual educational materials. Therefore, this study focused on evaluating the effect of the Interactive Visual Education (EduVit) intervention as a solution to address patient anxiety prior to heart surgery (van Rijn, de Heer, Nieuwenhuis-Wendt, van der Kaaij, Moolenaar, van der Ham, & Weldam, 2024).

Cardiac surgery is a major medical procedure that often causes significant anxiety in patients before

undergoing the operation. Preoperative anxiety may arise from fear of anesthesia, surgical complications, postoperative pain, and uncertainty about recovery (Amilia, 2024). High levels of anxiety can negatively affect both psychological and physiological conditions, such as increased heart rate, elevated blood pressure, and reduced readiness to face surgery, which may influence perioperative outcomes and recovery (Akbari, 2025).

One of the non-pharmacological approaches commonly used to reduce preoperative anxiety is patient education. However, conventional education methods such as verbal explanations or printed leaflets are often less effective because patients may have difficulty understanding complex medical information when experiencing emotional distress. Therefore, more innovative and engaging educational

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strategies are needed to improve patient understanding, emotional preparedness, and confidence before cardiac surgery (Gea & Hulu, 2024). Interactive Visual Education (EduVit) is a promising educational method that combines visual and interactive elements to deliver information in a clearer and more understandable way. This approach may help patients better comprehend the surgical process, reduce uncertainty, and lower anxiety levels before surgery (El Mathari, Kuitert, Boulidam, Shehadeh, Klautz, de Lind van Wijngaarden, & Kluin, 2024).

RESEARCH METHOD

A quantitative pre-experimental design with a one group pretest–posttest approach to evaluate the effect of Interactive Visual Education (EduVit) on anxiety levels among preoperative cardiac surgery patients in a referral hospital in Central Java. A total of 40

respondents were recruited using total sampling, in which all eligible patients during the study period were included. Inclusion criteria consisted of adult patients scheduled for cardiac surgery, fully conscious, able to communicate effectively, and willing to participate by signing informed consent. Anxiety levels were measured before and after the intervention using the Zung Self-Rating Anxiety Scale (ZSAR-S). The intervention consisted of providing EduVit, an interactive visual educational media designed to explain the cardiac surgery procedure, perioperative stages, and preoperative preparation. Data were analyzed using the Marginal Homogeneity test with a significance level of $p \leq 0.05$. The study was conducted in accordance with ethical principles and received approval from the institutional ethics committee, with written informed consent obtained from all participants.

RESEARCH RESULTS

Table 1. Frequency Distribution of Respondents (N= 40)

Variable	Results	P-Value
Age (Mean±SD)(Range)(Year)	(56.8±8.7)(38-72)	
Gender (n/%)		
Male	25/62.5	
Female	15/37.5	
Education (n/%)		
Did Not Complete School	3/7.5	
Elementary School	11/27.5	
Junior High School	13/32.5	
Senior High School	10/25.0	
University	3/7.5	
Surgical History (n/%)		
Never	29/72.5	
Yes	11/27.5	
Pre-Test Anxiety Level (n/%)		
Normal	0/0.0	0.000
Mild	19/47.5	
Moderate	16/40.0	
Severe	5/12.5	

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Post-Test Anxiety Levels (n/%)	
Normal	4/10.0
Mild	24/60.0
Moderate	11/27.5
Severe	1/2.5

Based on the table of respondent characteristics, the mean age of patients undergoing cardiac surgery was 56.8 ± 8.7 years, with an age range of 38–72 years. Based on gender, most respondents were male, totaling 25 patients (62.5%), while female respondents accounted for 15 patients (37.5%). In terms of educational background, the majority of respondents had a junior high school education, totaling 13 patients (32.5%), followed by elementary school with 11 patients (27.5%), senior high school with 10 patients (25.0%), and both did not complete school and university education with 3 patients each (7.5%). Regarding surgical history, most respondents had never undergone surgery before, totaling 29 patients (72.5%), while 11 patients (27.5%) had a previous surgical history.

Before the intervention (pre-test), most respondents were categorized as having mild anxiety, totaling 19 patients (47.5%), followed by moderate anxiety with 16 patients (40.0%) and severe anxiety with 5 patients (12.5%), while no respondents were classified as normal. After the intervention (post-test), a change in the distribution of anxiety levels was observed, with most respondents categorized as having mild anxiety, totaling 24 patients (60.0%), followed by moderate anxiety with 11 patients (27.5%), normal anxiety levels with 4 patients (10.0%), and severe anxiety with 1 patient (2.5%). Statistical analysis showed a significant difference in anxiety levels before and after the intervention, with a p-value of 0.000 ($p < 0.05$).

DISCUSSION

The findings of this study demonstrate that Interactive Visual Education (EduVit) was effective in reducing anxiety levels among patients undergoing cardiac surgery (Kwon, Lee, Park, Oh, & Kim, 2023). This result supports the theoretical perspective that preoperative anxiety is largely influenced by uncertainty, lack of information, and fear of the unknown. According to Mishel's Uncertainty in Illness Theory, patients who face unfamiliar medical procedures often experience heightened anxiety

when they are unable to interpret events related to their treatment. In the context of cardiac surgery, uncertainty about the surgical process, anesthesia, postoperative pain, and possible complications may intensify emotional distress. By providing structured and comprehensible information through interactive visual media, EduVit may help reduce uncertainty and promote a greater sense of control, thereby lowering anxiety (Ubjaan, Burhan, & Dewi, 2025).

From a cognitive-behavioral perspective, anxiety is closely associated with an individual's perception of threat and their ability to understand and cope with stressful situations. When patients perceive surgery as a highly threatening and unpredictable event, they are more likely to develop maladaptive emotional responses (Arif, Fauziyah, & Astuti, 2022). Educational interventions, particularly those using visual and interactive formats, can modify this perception by improving knowledge, correcting misconceptions, and increasing preparedness. Visual learning theory also supports the use of interactive media, suggesting that information presented through visual stimuli is more easily processed and retained than verbal explanations alone. Therefore, EduVit may enhance patients' understanding of the perioperative process more effectively than conventional education, which contributes to emotional reassurance and better psychological adaptation before surgery (Suhesti, Kasron, & Dewi Prasetyani, 2024).

These findings are also consistent with nursing theories emphasizing the importance of patient education as a therapeutic intervention. In preoperative nursing care, education is not only intended to increase knowledge but also to support emotional adaptation and reduce psychological distress. The use of interactive visual education aligns with the principles of patient-centered care, where information is tailored to the patient's needs, comprehension level, and emotional condition (Aktas, Uğur, & Orak, 2020). By helping patients feel more informed, prepared, and involved in their care, EduVit may function as a meaningful non-pharmacological

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intervention to reduce anxiety before cardiac surgery. Therefore, integrating interactive visual educational strategies into routine preoperative nursing practice may strengthen holistic care and improve patients' psychological readiness for surgery (Ng, Wang, Shen, Toh, & He, 2022).

Another theoretical explanation for the effectiveness of EduVit can be understood through Lazarus and Folkman's Transactional Model of Stress and Coping. This theory explains that anxiety arises when individuals appraise a situation as threatening and perceive that their coping resources are insufficient to manage it. Cardiac surgery is often interpreted by patients as a life-threatening event, which may trigger emotional distress when they feel unprepared. By providing clear, structured, and visually engaging information, EduVit may strengthen patients' cognitive appraisal of the situation, enabling them to perceive the procedure as more understandable and manageable. As a result, patients may develop more adaptive coping responses and experience reduced anxiety before surgery (Frans-Rensen, Slond, Liesdek, de Heer, Suyker, Jaarsma, & Weldam, 2022).

In addition, the effectiveness of EduVit may also be interpreted through Bandura's Self-Efficacy Theory. Self-efficacy refers to an individual's belief in their ability to manage challenging situations (Hardiono, Arisdiani, & Asyrofi, 2024). Patients who receive adequate preoperative education are more likely to feel confident in their capacity to undergo the surgical process, follow instructions, and participate in postoperative recovery. Interactive visual education can enhance this sense of confidence by transforming complex medical explanations into accessible and meaningful information. When patients understand what to expect, their perceived ability to face surgery improves, which may reduce helplessness and emotional tension. This suggests that EduVit not only functions as an informational tool but also as a psychological support strategy that promotes self-confidence (Pradono, Hapsari, Supardi, & Budiarto, 2018).

From the perspective of adult learning theory, the use of interactive visual education is also highly relevant in clinical settings. Adult learners tend to benefit more from educational approaches that are practical, problem-centered, and directly related to their immediate needs (Bashir, Misquith, Has, &

Bukhari, 2024). Patients preparing for cardiac surgery are in a situation where the need for information is urgent and emotionally significant. Conventional education may be less effective because anxiety can impair attention and memory. However, visual and interactive learning methods can improve engagement, facilitate comprehension, and help patients retain essential information despite emotional stress. This supports the assumption that EduVit is particularly suitable for preoperative patients who require concise, understandable, and emotionally supportive education (Santoso & Hardiyani, 2025).

These findings reinforce the role of nurses as educators and therapeutic communicators in perioperative care. Within nursing theory, patient education is considered an essential intervention to promote adaptation, reduce distress, and improve readiness for treatment (Ramba, Tania, & Citraningtyas, 2024). The use of EduVit reflects an innovative extension of this role, as it integrates communication, education, and psychological support into a single intervention. By addressing both informational and emotional needs, interactive visual education may contribute to more holistic and patient-centered care (Lestari & Kosim, 2024). Therefore, implementing EduVit as part of routine preoperative nursing interventions may help optimize the quality of perioperative services and strengthen the overall patient experience during cardiac surgery preparation (Subramaniam, Dearani, Stulak, Lahr, Lee, & Miller, 2025).

CONCLUSION

EduVit has been validated as an effective nonpharmacological method for reducing anxiety levels in patients undergoing cardiac surgery. Given its effectiveness, this intervention should be adopted as part of standard hospital education protocols to prepare patients psychologically before surgery.

REFERENCES

- Aardoom, J. J., Hilt, A. D., Woudenberg, T., Chavannes, N. H., & Atsma, D. E. (2022). A preoperative virtual reality app for patients scheduled for cardiac catheterization: pre-post questionnaire study examining feasibility, usability, and acceptability. *JMIR cardio*, 6(1), e29473.

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- Akbari, A. (2025). The effects of preoperative education on postoperative outcomes in cardiac surgery patients.
- Aktas, Y. Y., Uğur, H. G., & Orak, O. S. (2020). Discharge education intervention to reduce anxiety and depression in cardiac surgery patients: a randomized controlled study. *Journal of PeriAnesthesia Nursing*, 35(2), 185-192.
- Amilia, Y. (2024). Pengaruh pendidikan kesehatan menggunakan video dalam menurunkan tingkat kecemasan pada pasien pre operasi hernia. *Jurnal Keperawatan Muhammadiyah*, 9(3).
- Arif, T., Fauziyah, M. N., & Astuti, E. S. (2022). Pengaruh pemberian edukasi persiapan pre operatif melalui multimedia video terhadap tingkat kecemasan pada pasien pre operasi elektif. *Jurnal Ilmiah Kesehatan Media Husada*, 11(2), 174-181.
- Bashir, Z. S., Misquith, C., Has, P., & Bukhari, S. M. (2024). The effectiveness of virtual reality on anxiety and pain management in patients undergoing cardiac procedures: a systematic review and meta-analysis. *Cureus*, 16(4).
- El Mathari, S., Kuitert, L., Boulidam, N., Shehadeh, S., Klautz, R. J., de Lind van Wijngaarden, R., & Kluin, J. (2024). Evaluating virtual reality patient education in cardiac surgery: impact on preoperative anxiety and postoperative patient satisfaction. *Journal of Clinical Medicine*, 13(21), 6567.
- Frans-Rensen, S. A., Slond, F., Liesdek, O. C., de Heer, L. M., Suyker, W. J., Jaarsma, T., & Weldam, S. W. (2022). Patients' voices in the development of pre-surgical patient education using virtual reality: A qualitative study. *PEC innovation*, 1, 100015.
- Gea, W. P., & Hulu, M. P. S. (2024). Mengatasi Kecemasan dalam Perspektif Jean Paul Sartre. *Bersatu: Jurnal Pendidikan Bhinneka Tunggal Ika*, 2(4), 1-12.
- Hardiono, E., Arisdiani, T., & Asyrofi, A. (2024). Edukasi Audiovisual Untuk Mengurangi Kecemasan Pada Pasien Pre-Operasi Di Rs Qim Batang. *Jurnal Pengabdian Masyarakat*, 1(8), 16-20.
- Kwon, H., Lee, J., Park, Y. S., Oh, S. H., & Kim, J. (2023). Effects of preoperative education using virtual reality on preoperative anxiety and information desire: a randomized clinical trial. *Journal of Clinical Monitoring and Computing*, 37(5), 1401-1407.
- Lestari, F. F., & Kosim, K. (2024). Manajemen Pengkajian Kecemasan Pada Pasien Pra Operasi Di Bedah Umum. *SENTRI: Jurnal Riset Ilmiah*, 3(3), 1409-1418.
- Ng, S. X., Wang, W., Shen, Q., Toh, Z. A., & He, H. G. (2022). The effectiveness of preoperative education interventions on improving perioperative outcomes of adult patients undergoing cardiac surgery: a systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, 21(6), 521-536.
- Pradono, J., Hapsari, D., Supardi, S., & Budiarto, W. (2018). Panduan manajemen penelitian kuantitatif.
- Ramba, E., Tania, E., & Citraningtyas, T. (2024). Kecemasan Preoperasi pada Pasien yang Akan Menjalani Operasi Appendiktomi. *JURNAL MEDSCIENTIAE Ypeðumenu: Universitas Kristen Krida Wacana*, 3(3), 375-380.
- Santoso, F. P., & Hardiyani, T. (2025). Pengaruh Video Edukasi Terhadap Tingkat Kecemasan Pasien Pre Operasi Sectio Caesarea dengan Teknik Spinal Anestesi. *Jurnal Penelitian Ilmiah Multidisipliner*, 2(02), 1452-1461.
- Subramaniam, T., Dearani, J. A., Stulak, J. M., Lahr, B., Lee, A., & Miller, J. D. (2025). A randomized, controlled trial of in-hospital use of virtual reality to reduce preoperative anxiety prior to cardiac surgery. In *Mayo Clinic Proceedings* (Vol. 100, No. 2, pp. 220-234). Elsevier.

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- Suhesti, S., Kasron, K., & Dewi Prasetyani, D. P. (2024). *Efektivitas Pelatihan Kegawatdaruratan Jantung Terhadap Pengetahuan Dan Keterampilan Mahasiswa Keperawatan Dalam Penanganan Kegawatdaruratan Jantung Lanjut Di Institusi Ambulan Gawat Darurat 118* (Doctoral dissertation, Universitas Al-Irsyad Cilacap).
- van Rijn, M. M., de Heer, L. M., Nieuwenhuis-Wendt, J., van der Kaaij, N. P., Moolenaar, E. G., van der Ham, D. H., & Weldam, S. W. (2024). Use of virtual reality in preoperative education of cardiac surgery patients—A feasibility study. *Patient Education and Counseling*, 129, 108394.
- Ubjaan, N. P., Burhan, A., & Dewi, F. K. (2025). Perbedaan edukasi spinal anestesi menggunakan video dan booklet terhadap tingkat kecemasan pasien pre anestesi spinal. *Holistik Jurnal Kesehatan*, 19(10), 3116-3122.

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