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Article

THE EFFECT OF PRE-ICU EDUCATION USING INTERACTIVE VIDEO ON ANXIETY LEVELS AND RESILIENCE IN PATIENTS POST OPERATION UNDERGOING INTENSIVECARE

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ABSTRACT

Background: Patients admitted to the Intensive Care Unit (ICU) often experience psychological distress such as anxiety and reduced resilience, primarily due to a lack of knowledge about ICU procedures. Pre-ICU education using interactive video can help patients prepare for intensive care treatment.
Objective: To determine the effect of Pre- ICU education using interactive video on patients' anxiety levels and resilience.
Methods: *This study employed a quasi-experimental two-group design with a pre-test and post-test approach. A total of 60 patients participated, with 30 in the intervention group and 30 in the control group. Data were analyzed using the Wilcoxon Signed-Rank Test and Kruskal- Wallis Test.*
Results: There was a significant reduction in anxiety levels in the interventiongroup (median = 42.50) compared to the control group (median = 43.00). Additionally, there was a significant difference in resilience between the control group (median = 79.00)and the intervention group (median = 77.00), with a p-value of 0.000.
Conclusion: *Pre- ICU education using interactive video is effective in reducing anxiety and enhancing resilience in patients prior to intensive care admission.*

INTRODUCTION

The Intensive Care Unit (ICU) is a specialized hospital unit equipped for intensive treatment, close observation, and comprehensive management ofcritically ill patients. ICU care differs from that in general wards, as it requires strict monitoring and advancedmedical equipment (Wulan, 2019).

Patients in the ICU are commonlyconnected to life-support devices suchas ventilators, monitors, blood pressure devices, thermometers, pulse oximeters,and suction machines. The noise generated by ventilators can contribute to patient anxiety (Dameria, 2017). Alarm sounds from medical devices— such as bedside monitors, syringe pumps, and infusion pumps—can alsocause discomfort (Mindell & Meltzer, 2008, in Sri, 2023).

ICU patients frequently experience psychological distress caused both by their medical condition and the ICU environment, especially due to a lack of understanding of ICU care procedures. They often feel anxious, stressed, or even depressed as a result of unstable health conditions and an unfamiliar environment compared to generalwards (Rasmita et al., 2021).

These emotional responses are highly individual. Common symptoms include anxiety, stress, and post- traumatic depression (Sugumin & Arum Pratiwi, 2017). If left untreated, anxiety can worsen physiological conditions, potentially causing cardiac arrhythmias,shortness of breath, and unstable blood pressure (Hawari, 2011).

Anxiety is a psychological condition characterized by excessive fear and worry. According to the American Psychological Association (APA), it is an emotional response to stress, marked byfeelings of tension, excessive worry, andphysical changes such as increased heart rate and blood pressure (Szuhany & Simon, 2022).

Anxiety in patients often occurs as an emotional response to perceived threats, accompanied by signs such as muscle tension, fear, and heightened alertness (Kasmad et al., 2021). Prolonged anxiety can increase the risk of other mental health disorders, such as depression and post-traumatic stress disorder (PTSD), particularly in long- term medical care patients (Gomes et al., 2023).

Management of anxiety can be achieved through pharmacological and non-pharmacological interventions. Pharmacological approaches include medication, which is common but may produce side effects (Ratnani et al., 2019). Non-pharmacologicalapproaches, such as relaxation techniques, distraction, psychotherapy,thermotherapy, music therapy,acupressure, aromatherapy, guided imagery, and health education, are widely used as alternatives. Health education can be delivered via various media, such as booklets, posters, leaflets, flip charts, and videos(Wahyudi, 2020).

Resilience is one of the factors associated with anxiety. It refers to an individual's ability to recover from adversity and face difficulties with optimism (VanBreda, 2013). Resilience plays a key role in patient recovery, as higher resilience enables better stress management, greater cooperation during treatment, and improved recovery outcomes (Lestari, 2016).

Individuals with high resiliencetypically possess a calmer temperament,better interpersonal relationships, andthe ability to recover from stress and depression (Pragholapati & Munawaroh,2020). One way to reduce anxiety and enhance resilience is through healtheducation, which can be effectively delivered using video media.

Video-based education isconsidered highly effective as it can be accessed anytime and anywhere, presents information visually and repeatedly, and enhances patient comprehension and engagement (Budianti et al., 2020). Interactive video,as a digital learning medium, transformsconventional, monotonous educationinto a practical, flexible, andunrestricted learning process (Hatul Lisaniyah & Salamah, 2020).

Currently, research on the impact ofpre-ICU education using interactive video on patient anxiety and resilience is still limited, with most studies focusing on conventional education methods rather than innovative, technology-based approaches.Therefore, this study aims to investigate"The Effect Of Pre-Icu Education Using Interactive Video On Anxiety Levels AndResilience In Patients Post Operation Undergoing Intensive Care".

METHODS

His study employed a quasi- experimental design with a two-grouppre-test-post-test approach to examine the effect of pre-ICU education using interactive video on patients' anxiety and resilience levels. The research was

conducted at Santosa Hospital Bandung Kopo from June 1 to June 28, 2025. The sample consisted of 60 adult inpatients scheduled for ICU admission, divided equally into an intervention group (n = 30) and a control group (n = 30). Inclusion criteria included : Age >18 years, fully conscious, able to communicate effectively.

The instruments used were the Zung Self-Rating Anxiety Scale (ZSAS) tomeasure anxiety levels. The Zung Self- Rating Anxiety Scale (ZSAS) used in this study was available in the Indonesian version. Its validity and reliability hadbeen previously tested, with item validity scores ranging from a minimum of 0.663 to a maximum of 0.918. Reliability testing was conducted using Cronbach's alpha, with values >0.60 indicating acceptable reliability; the closer the value is to 1, the better the measurement instrument's internal consistency. And the Connor–Davidson Resilience Scale (CD-RISC) to assess resilience. The Connor–DavidsonResilience Scale (CD-RISC) used in this study was available in an Indonesian version, translated by Yuristie Lamsinar and Josephine Ratna in their research. The instrument demonstrated high reliability, with a Cronbach's alpha valueof $\alpha = 0.93$. The collected data were analyzed using the Wilcoxon Signed-

Rank Test forboth groups and the Kruskal-Wallis Test, as the data were not normally distributed. The level of significance in this study was set at 0.05. This studyobtained ethical approval from the ethics committee under approval number III/065/KEPK-SLE/STIKEP/PPNI/JABAR/V/2025.

RESULT

Characteristics of Respondents

Table 1 presents the distribution of respondents based on age, gender, education level,and medical history.

Karakteristik	Total (n=60)	Kelompok Intervensi n=30 (%)	Kelompok Kontrol n=30 (%)
Usia dalam tahun			
17-25	2 (3.3)	1 (3.3)	1 (3.3)
26-35	7 (11.6)	2 (6.6)	5 (16.6)
36-45	9 (15.0)	8 (26.6)	1 (3.3)
46-55	16 (26.6)	8 (26.6)	8 (26.6)
56-65	20 (33.3)	6 (20,0)	14 (46.6)
>65	6 (10.0)	5 (16.6)	1 (3.3)
Jenis Kelamin			
Laki – Laki	27 (45.0)	9 (30.0)	18 (60.0)
Perempuan	33 (55.0)	21 (70.0)	12 40.0)
Pendidikan			
SD	18 (30.0)	9 (30.0)	9 (30.00)
SMP	12 (20.0)	6 (20.0)	6 (20.0)
SMA	23 (38.3)	13 (43.3)	10 (33.3)
S1	7 (11.7)	2 (6.7)	5 (16.7)
Riwayat Penyakit			
Hipertensi	30 (50.0)	15 (50.0)	15 (50.0)
Diabetes Melllitus	11 (18.3)	6 (20.0)	5 (16.7)
Stroke	13 (21.7)	5 (16.7)	8 (26.7)
Tuberkulosis	6 (10.0)	4 (13.3)	2 (6.7)

In the intervention group, the majority were female (70%), whereas in the control group, most were male (60%). The most common age ranges in the intervention group were 36–45 years (26.6%) and 56–65 years (26.6%), while in the control group, the largest proportion was aged 56–65 years (46.6%). In terms of education, most respondents were senior high school graduates, with 13 (43.3%) in the intervention group and 10 (33.3%) in the control group. The fewest were university graduates (6.7%in the intervention group, 16.7% in the control group). Regarding medical history, the most common chronic condition was hypertension (50% in both groups). The least common was tuberculosis (13.3% in the intervention group and 6.7% in the control group).

DIFFERENCES IN ANXIETY SCORES BETWEEN THE INTERVENTION AND CONTROL GROUPS

Table 2. Differences in Anxiety Scores Between the Intervention and Control Groups

	Pre-Test		Post-Test		*Z*	*P*
	Median	**IQR**	**Median**	**IQR**		
Kelompok Intervensi	45.50	5.0	38.00	6.0	-4.460	.000
Kelompok Kontrol	45.50	5.0	45.00	5.0	-4.769	.000

N = 60 (30 in the Intervention Group, 30 in the Control Group)

Based on Table 2, in the intervention group, the median anxiety score before the intervention was 45.50 with an interquartile range (IQR) of 5.0, which decreased to a median of 38.00 with an IQR of 6.0 after the intervention. The Wilcoxon Signed-Rank Test showed a *Z* value of –4.460 with a *p*-value of 0.000. In the control group, the median anxiety score before the intervention was 45.50 (IQR = 5.0), and after the intervention, it slightly decreased to 45.00 with the IQR remaining at 5.0. The Wilcoxon Signed-Rank Test showed a *Z* value of –4.769 with a *p*-value of 0.000. These results indicate a statistically significant difference in anxiety scores before and after the intervention.

DIFFERENCES IN RESILIENCE SCORES BETWEEN THE INTERVENTION AND CONTROL GROUPS

Table 3 Differences in Resilience Scores Between the Intervention and Control Groups

	Pre-Test		Post-Test		*Z*	*P*
	Median	**IQR**	**Median**	**IQR**		
Kelompok Intervensi	73.50	9.0	78.00	4.0	-4.805	.000
Kelompok kontrol	77.00	7.0	80.00	4.0	-4.805	.000

N = 60 (30 in the Intervention Group, 30 in the Control Group)

Based on Table 3, in the intervention group, the median resilience score was 74.13 with an interquartile range (IQR) of 9.0, which increased to a median of 78.00 with the IQR decreasing to 4.0 after the intervention. The Wilcoxon Signed-Rank Test yielded a *Z* value of –4.805 with a *p*-value of 0.000. In the control group, the median resilience score before the intervention was 77.00 (IQR = 4.0), and after the intervention, it increased to 80.00 with the IQR remaining at 4.0. The Wilcoxon Signed- Rank Test also showed a *Z* value of –4.805 with a *p*-value of 0.000. These results indicate a statistically significant difference in resilience scores before and after the intervention.

Effect of Education on Anxiety and Resilience in the Intervention and Control Groups

Table 4 Effect of Education on Anxiety and Resilience in the Intervention and ControlGroups

Variabel	Kelompok	Median	df	P
Kecemasan	Intervensi	42.50	3	.000
	Kontrol	43.00		
Resiliensi	Intervensi	77.00		
	Kontrol	79.00		

Based on Table 4, the results of the Kruskal–Wallis test showed that for the anxiety variable, the median score in the intervention group was 42.50, while in the control group it was 43.00, with a *p*-value of 0.000 ($p < 0.05$) and degrees of freedom (df) = 3. For the resilience variable, the median score in the intervention group was 77.00, and in the control group, it was 79.00, also with a *p*-value of 0.000 ($p < 0.05$) and df = 3. These findings indicate a statistically significant difference between the intervention and control groups.

DISSCUSSION

Profile of Respondent Characteristicsin the Intervention and Control Groups

The study results showed that the average age of respondents in the intervention group was within theranges of 36–45 years (26.6%) and 46– 55 years (26.6%), while in the control group, the majority were in the 56–65 year range (46.6%). These age rangesfall within the categories of middle adulthood and late adulthood.

Individuals in these age categories generally exhibit more stable emotional responses compared to younger adults. According to Santrock (2020), middle-aged adults possess better stress management capacity and more mature cognitive functioning when responding to psychological pressures.

The study findings also revealed thatthe majority of respondents were female, totaling 33 (55.0%), while males accounted for 27 (45.0%). According to Stuart (2019), gender is an internalfactor influencing anxiety, with women generally experiencing higher levels of anxiety than men, as they tend to be more sensitive to emotions.

Consistent with the study byNingrum and Arifin (2021), female patients exhibited higher anxiety levels than male patients prior to undergoing medical procedures. Such differences in gender distribution should be taken into consideration, as they may influence perceptions of the intervention as well as emotional responses.

In terms of educational level, the majority of respondents were senior high school graduates. According to Bandura (1997) as cited in Putri et al. (2022), higher education can contribute to the development of problem-solving skills and self-efficacy.

Arifiati and Wahyuni (2019) reported that education level can influence anxiety, with higher education being associated with broader knowledge and better perception of health-related situations, thereby reducing anxiety. In contrast, individuals with lower education levels may have more difficulty managing anxiety.

Regarding medical history, the most common condition reported washypertension. According to Lazarus and Folkman (1984) as cited in Safitri and Setiawan (2021), stressors such as chronic illness can lead to psychological distress, including anxiety.

Reivich and Shatté (2002) state that resilience is influenced by internal factors (optimism, self-control) and external factors (social support, access to healthcare). Patients with chronicillnesses tend to exhibit lower resilience due to pessimism about recovery, limited social support, and fatigueduring the treatment process.

Effect of Interactive Video Education on Anxiety

Based on the analysis results, the median anxiety score in the interventiongroup before receiving education was 45.50, which decreased to 38.00 after receiving interactive video education. In contrast, in the control group, the median score before education was 45.50 and decreased only slightly to 45.00. This reduction in median scores indicates that most respondents experienced decreased anxiety after receiving the education.

This reduction aligns with the Multimedia Learning Theory developed by Mayer (2001), which explains that information delivered through a combination of visuals, narration, and animation is easier for individuals to understand. It also corresponds with theCognitive Behavioral Theory developed by Beck (1976), which states that anxiety arises from negative thoughts toward a given condition.

Several previous studies alsosupport these findings. Hardiono et al. (2024), in a community service study, reported that audiovisual education reduced pre-operative patient anxiety scores by 35%. The education was delivered through surgical procedurevideos, relaxation techniques, andquestion-and-answer sessions.

Similarly, Achmad Zainullah and Mustika Sari (2024) found a significant decrease in anxiety following pre-

operative video education. Furthermore,studies by Makhfudli et al. (2020) and Taufan et al. (2022) emphasized that video media can be effective and convey educational messages clearly and flexibly.

Education delivered through interactive video media facilitates patients' understanding of ICU procedures and conditions, therebyreducing fear caused by uncertainty. In addition, presenting information in visual and audio formats within the video can stimulate cognitive processingmore effectively compared toconventional education.

Interactive video education can also help transform negative thought

patterns that contribute to anxiety into more positive perspectives by providingclear and accurate information.Interactive videos alsoprovide comprehensive education, with materials that are easy to understand, can be viewed repeatedly, and are accessible anytime and anywhere. This makes video media an effective and efficient educational tool to helppatients enhance their readiness forintensive care.

Furthermore, interactive videos can reduce mental burden, as patients arenot only reading and listening but also able to directly observe the situationsthey will face. Consequently, fear arisingfrom uncertainty can be alleviated.

EFFECT OF VIDEO EDUCATION ONRESILIENCE

Based on the analysis results, the median resilience score in theintervention group increased from 73.50 before education to 78.00 after education. In the control group, themedian score increased from 77.00 to 80.00. These results indicate that patients' resilience improved following the intervention. This demonstrates that education delivered via interactive video can enhance patients' mental readiness and adaptability to the intensive care treatment they are about to undergo.

These findings align with the Self- Efficacy Theory developed by Bandura (1977), which states that an individual's belief in their ability to face challenges (self-efficacy) plays a significant role in their response to stress. They are also consistent with the Broaden-and-BuildTheory (1998), which explains that

positive emotions can broaden thought patterns and build long-term psychological resources, includingresilience.

Several previous studies alsosupport these findings. For instance,Nurdini et al. (2024), in a study on university students, demonstrated that coping strategy education delivered via video was effective in improving adaptive abilities, which are indicatorsof resilience. Similarly, Lestari and Estria (2024) reported that educational interventions can strengthenpsychological aspects such as optimism and self-efficacy, which are key components of resilience. Improving self-efficacy serves as an important foundation for building resilience.

Systematically presented video education can strengthen patients' confidence in their ability to undergo the required medical procedures. Well- structured and simply designed educational videos enable patients to better understand and adapt to changes in their condition and treatment.

This study demonstrates that pre- ICU education delivered through interactive video—explaining treatment procedures and ICU conditions—can shape positive perceptions, enhance self-efficacy, and improve patients' mental readiness for intensive care

EFFECT OF VIDEO EDUCATION ON ANXIETY AND RESILIENCE

The results of the Kruskal–Wallis test in this study showed significant differences in patients' anxiety and resilience levels between the intervention and control groups before and after the education. This indicates

that video-based education can helpreduce anxiety and improve resilience. Such education can enhance patients' knowledge and self-confidence prior to undergoing intensive care.

Interactive video education can strengthen patients' self-efficacy by providing clear understanding, as wellas preparing and equipping them to facetreatment procedures. Increased self- efficacy plays a crucial role in reducing anxiety and building resilience.Informative video education can foster positive thinking and help reduce anxiety. When patients feel calmer and more optimistic, their adaptive capacity increases, and coping strategies can develop more effectively—forming one of the foundations for building resilience.

These results are consistent with thestudy by Zainullah and Sari (2024),which integrated relaxation techniques into pre-operative educational videos, providing evidence that video educationcan promote adaptive coping strategies in addition to reducing anxiety.

The study conducted by Arif et al. (2022) utilized multimedia video as a pre-operative preparation tool and found a significant reduction in anxiety in the intervention group compared to the control group. Pre-ICU education using interactive video media can assist patients in alleviating tension and concerns related to the intensive care environment

CONCLUSION

1. The characteristics of respondents inthis study showed that the majority were female, aged 39–58 years. Most respondents were senior high school graduates, and the majority had a history of hypertension. There were no significant differences in characteristics between the intervention and control groups. Age and gender are important factors to consider when providing pre-ICU education, even though they were not the primary variables analyzed for the effect of video interventionon anxiety and resilience; theyshould still be taken into account to ensure that the education providedis effective and well-received.
2. Patient anxiety in the intervention group tended to decrease afterreceiving interactive videoeducation, compared to the control group. In the intervention group, the median anxiety score before the intervention was 45.50 with an IQR of 5.0, decreasing to a median of 38.00 with an IQR of 6.0 after theintervention. In the control group, the median anxiety score before the intervention was 45.50 with an IQR of 5.0, and after the intervention it decreased slightly to 45.00 with the IQR remaining at 5.0.
3. Patient resilience increased in the intervention group after receiving interactive video education, with a median score of 74.13 and an IQR of 9.0 before the intervention,increasing to a median of 78.00 and a reduced IQR of 4.0 afterward. Inthe control group, the median resilience score before the intervention was 77.00 with an IQR of 4.0, increasing to 80.00 after the intervention with the IQR remaining at 4.0.
4. Pre-ICU education using interactive video was proven to be more effective in reducing anxiety and increasing resilience in patients scheduled for intensive care admission, with a *p*-value of 0.000 ($p < 0.05$). Therefore, the alternative hypothesis (Ha) was accepted, andthe null hypothesis (Ho) wasrejected.

RECOMMENDATIONS

1. For hospital institutions **:** Implementinteractive video–based pre-ICU education as part of the standard patient preparation protocol to improve patients' psychologicalreadiness prior to intensive care admission.
2. For healthcare professionals(nurses) : Utilize educational videos as an effective and efficient medium for delivering consistent informationto patients. This education can be combined with interactive discussions or brief counseling sessions to enhance emotionalimpact.
3. For future researchers **:** Consider using longer and more interactive videos, incorporating psychological support components or family education to strengthen the effect onresilience, and applying alternativeresearch designs.
4. For nursing education institutions : The findings of this study can serve as learning material for patient education practice and for the development of technology-basedhealth education media.

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