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EFFECTIVENESS OF GUIDED IMAGINATION THERAPY USING THE BARCODE WEBSITE APPLICATION (IMAJICARE) ON PAIN SCALES IN POST OPERATIVE APPENDECTOMY PATIENTS AT THE CILEGON CITY GENERAL HOSPITAL

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ABSTRACT

Background: Post appendictomy pain is a common problem that requires effective treatment. Guided imagery therapy is a promising non-pharmacological method, but its manual implementation has not been optimized. This study evaluates the effectiveness of the barcode website based ImajiCare application to reduce post-appendicectomy pain. **Objectives:** This study aims to determine the effectiveness of using guided imagination therapy based on a barcode website application ImajiCare on the pain scale in patients post appendicectomy surgery at Cilegon City Hospital. **Research Methods:** This study used a quantitative design with the Quasy Experimental method and a two group pre test post test design. The sample consisted of 36 respondents who were divided into two groups, namely 18 intervention group respondents who used the ImajiCare application and 18 control group respondents who received manual imagination therapy selected by purposive sampling. Pain scale measurements were made using the Numeric Rating Scale (NRS) before and after the intervention, and the data were analyzed using the Wilcoxon test. **Results:** The intervention group experienced a decrease in the average pain score from
5.39 to 1.83. The control group experienced a decrease from 5.44 to 2.28. Both methods were effective in reducing pain (p-value 0.000). Although ImajiCare showed a slightly greater reduction, the difference in effectiveness between the two groups was not statistically significant (p-value 0.172). **Conclusion:** ImajiCare and manual guided imagery therapy are both effective in reducing post appendicectomy pain. Imajicare offers the advantages of patient independence and efficiency, although its effectiveness is not significantly better than manual therapy.

Keywords: *Pain, Appendictomy, Website, Guided Imagery Therapy*

INTRODUCTION

Surgery is a treatment technique that uses invasive techniques to open or expose the area of the body to be treated. Once the treatment area is open, repairs are made, followed by closure of the wound and suturing. One type of surgery for patients with appendicitis is appendectomy (Arif et al., 2021).

Appendectomy is the surgical removal of the appendix. Appendectomy is the only surgical treatment for an infected appendix. Appendicitis must be treated as soon as possible to reduce the risk of further perforation, such as peritonitis or abscess (Rahayu, 2021). According to the World Health Organization (WHO), the mortality rate from appendicitis worldwide is 0.2–0.8% (Saputro et al, 2019). The prevalence of appendicitis is higher in Europe at 16% compared to 7% in America, 4.8% in Asia, and 2.6% in Africa of the total population (Tuasamu, 2022). Based on data released by the Ministry of Health of the Republic of Indonesia, the incidence of appendectomy in Indonesia was 596,132 people with a percentage of 3.36% in 2019. This case increased to 621,435 people in 2020 with a percentage of 3.53%. Based on data at Cilegon City Hospital, the number of post- appendectomy patients over the last 3 months was 50 people (January, February, March 2025).

Surgery causes pain in patients and requires special care. Pain is one of the complaints that causes discomfort in patients. Pain gives an individual feeling of discomfort. Patients' reactions to pain vary and depend on the severity of the pain felt. Patients respond to pain by shouting, crying, grimacing, and holding the painful area. Therefore, since pain is subjective, greater adaptation is needed toward the pain felt by the patient (Asmadi, 2008 in Astrid & Setiawan 2019)

Pain experienced by patients is a side effect that occurs after surgery. The effects of anesthetic drugs wear off, and the patient complains of severe pain, causing the patient to feel distressed. Untreated pain will cause other problems in the body, namely: in the heart, it causes an increase in heart rate, an increase in blood pressure, and an increase in cardiac pump contractility. In the lungs, it will cause impaired lung development, a decrease in the lung's ability to breathe, and difficulty coughing, which, if not treated, will cause lung infections (Kurniyanta, 2022). Comfort is a basic human need, so the severe discomfort or pain felt by the patient must be immediately addressed through pain medication (Astrid & Setiawan, 2019).

Pain in patients who have undergone post-operative procedures like appendectomy is usually caused by the incision made during surgery that stimulates pain impulses to the brain. This pain can make it difficult for a person to perform daily activities such as walking, eating, and even sleeping. Non-pharmacological nursing actions to reduce pain can be done with distraction techniques, such as deep breathing, finger-clench relaxation, auditory distraction, and diverting attention or thoughts, one of which is guided imagery therapy.

Guided imagery is a therapy based on pleasant thoughts and concentration on images that gradually free oneself from thoughts of the pain being experienced. This therapy includes therapeutic elements that calm the mind for the purpose of healing, thereby reducing the level of pain. Guided imagery is a process that involves all the senses, starting from sight, touch, smell, and hearing, and uses mental imagery by instructing the body to heal and supporting the body through relaxation (Astrid & Setiawan, 2019)

Guided imagery relaxation is a technique that uses all the senses to form an image through a cognitive process that modifies pleasant objects or places, events, and situations. Pleasant stimulation will cause the release of a hormone called endorphin. The release of this hormone can inhibit neurotransmitter transmission, thereby reducing pain. This therapy gradually reduces pain perception by diverting concentration and attention from the pain. Inhaling oxygen from the air into the lungs will make the patient feel comfortable, relaxed, and calm (Herliana & Solehudin, 2024). According to research by Syahfitri and Ariyana (2022) entitled "Application of Guided Imagery Therapy for Pain Reduction in Post- Appendicitis Surgery Patients," it states that post-appendicitis surgery patients who previously felt moderate pain experienced a decrease to the mild pain category after guided imagery technique was

performed. Research conducted by La Ede et al., (2024) entitled "The Effect of Guided Imagery Relaxation Technique on Reducing the Pain Scale in Post- Appendectomy Patients" found that there was a decrease in the pain scale after guided imagery therapy was performed on post-appendectomy patients with hypothesis test analysis yielding a p-value of 0.000.

Guided imagery therapy is one type of non-pharmacological therapy that can reduce pain. In patient care activities, nurses generally still perform them manually and not optimally. Data collection is also still mostly done manually. To overcome this, there is a need for information technology that can meet the patient's needs independently. One information technology that can help overcome this pain problem is barcode website technology. A website is a collection of web pages and digital files (in the form of images and videos) stored on a web server and accessible via the internet. This barcode website technology aims to simplify various information and can help nurses in maintaining and monitoring patient activity in dealing with pain (Nugraha et al., 2022).

In this digitalization era, almost every sector, including the health sector, has felt significant advantages or benefits from information technology. The application of information technology in the health sector is very necessary, both in service activities and data collection activities (Nugraha et al., 2022). The latest health technology has developed towards mobile health, which can be used as an assessment to reduce the pain scale. Research conducted by Nugraha et al (2022) entitled 'Pain Assessment Stimulation and Healing Application (PASHA): Web-Based Application Design' found that the development of this website is very important in pain assessment and can make it easier for the public to perform pain management techniques independently. Thus, this pain assessment can be used anytime and anywhere without further assistance, and can facilitate the work of nurses.

At Cilegon City Hospital, many patients undergo appendectomy surgery and complain of pain after the operation. Therefore, a barcode website-based information technology called ImajiCare was created. ImajiCare is a technology system that can help simplify the work of nurses and patients in the process of pain assessment, pain management, and evaluation after performing pain management. This technology is expected to improve the quality of life of patients (Nugraha et al., 2022).

Based on the description above, the researcher will conduct a study using a barcode website-based technology model that is easily accessible to post-operative patients who have recovered from anesthetic medication, where this barcode website facilitates patients in maintaining health and reducing the pain scale suffered by the patient. Therefore, the researcher is interested in conducting research with the title, 'Effectiveness of Using Guided Imagery Therapy Based on a Barcode Website Application (ImajiCare) on the Pain Scale in Post-Appendectomy Patients at Cilegon City Hospital

METHODS

This study used a quantitative design with the Quasy Experimental method and a two-group pre-test post-test design. The sample consisted of 36 respondents who were divided into two groups, namely 18 intervention group respondents who used the ImajiCare application and 18 control group respondents who received manual imagination therapy selected by purposive sampling. Pain scale measurements were conducted using the Numeric Rating Scale (NRS) before and after the intervention, and the data were analyzed using the Wilcoxon test.

RESULT

Table 1 Average Pain Scale Scores Before and After Guided Imagery Intervention at Cilegon City Hospital

Variabel	Mean	SD	Min-Max
Pre-test Intervensi	5.39	.778	4-6
Post-test Intervensi	1.83	.857	1-4

Pre-test Kontrol	5.44	.784	4-6
Post-test Kontrol	2.28	1.018	1-4

Table 1 shows that the average pre-test pain scale score for the intervention group was 5.39, and after ImajiCare was administered, the average post-test pain scale score in the intervention group decreased to 1.83. Meanwhile, the average pre-test pain scale score for the control group was 5.44, and after manual guided imagery action was given, the average post-test pain scale score for the control group also decreased to 2.28.

Table 2 Normality Test Results in the Intervention Group and Control Group at Cilegon City Hospital

	Statistic	**df**	**Sig.**
Pre-Test Intervention Group	0.737	18	0.000
Post-Test Intervention Group	0.815	18	0.002
Pre-Test Control Group	0.699	18	0.000
Post-Test Control Group	0.859	18	0.012

Table 2 shows that the normality test results for the intervention group and control group obtained pre-test and post-test values with a p-value of 0.000 < 0.05. This result leads to the conclusion that the research data on the effectiveness of using guided imagery therapy based on a barcode website application (ImajiCare) on the pain scale in post- appendectomy patients are not normally distributed. Therefore, the bivariate statistical test used in this study is the Wilcoxon test.

Table 3 Wilcoxon Sign Rank Test Results for Pain Scale Before and After Guided Imagery was Given to Post-Appendectomy Patients at Cilegon City Hospital

			N	**Mean Rank**	**p-value**
Pre-test Intervent i	dan on Gro	Post-test up	18	9.50	.000

Table 3 concludes that the results of the Wilcoxon Sign Rank Test on the pain scale show identical p-values between the intervention group and the control group, which is 0.000 < 0.05. This is interpreted as meaning there is no significant difference between the two groups, namely the intervention group and the control group, in this significance test.

Table 4 Independent Test Results for the Effectiveness of Using Guided Imagery Therapy Based on a Barcode Website Application (ImajiCare) on the Pain Scale in Post- Appendectomy Patients at Cilegon City Hospital

	Group	**N**	**Mean Rank**	**p-value**
Result	Intervention Group	18	16.25	
	Control Group	18	20.75	.172

Table 4 explains that the average post-test pain scale score in the intervention group was 16.25, while the post-test score in the control group was 20.75. This proves that the average pain scale in the intervention group was lower compared to the control group. Furthermore, a p-value sig. of 0.172 > 0.05 is interpreted as the intervention group not being significantly more effective compared to the control group.

DISCUSSION

1. **The Effectiveness of Manually Guided Imagery Therapy on the Pain Scale in Post-Appendectomy Patients**

   Based on the results of the Wilcoxon test, it was concluded that HA was accepted with a p-value of 0.000 < 0.05, which means there is an effectiveness of using manually guided imagery therapy on the reduction of the pain scale in post- appendectomy patients at RSUD Kota Cilegon. This is supported by the fact that out of a total of 18 respondents in the control group, they experienced a reduction in pain between the pre-test and post-test, with mean values of 5.44 and 2.28. This aligns with the view of Syafhitri and Saraswati (2022), who stated that guided imagery therapy can reduce the pain scale in post-operative patients.

   Guided imagery can reduce pain because this technique can trigger a psychophysiological response that reduces sympathetic nervous system activity which affects pain. In addition, this action is able to stimulate the release of endorphins (neurotransmitters) that provide a relaxation effect and reduce pain. Guided imagery utilizes the individual's imagination in a guided manner, with the aim of developing relaxation and improving the individual's quality of life, by imagining a pleasant place or situation for the individual (Kartika, 2023).

2. **The Effectiveness of Using Website-Based Guided Imagery Therapy (ImajiCare) on the Pain Scale**

   Based on the average score of the pain scale in the post-test within the intervention group, which was 16.25 conversely, the average score in the post-test of the control group was 20.75. The average pain scale score in the intervention group was lower than the average score in the control group, and the p-value sig. of
   0.172 > 0,05 means that H0 was accepted, indicating significant difference between the pain scale scores of the intervention and control groups. This is evidenced by a study conducted by La Ede, et. al (2024), which explains that manual relaxation methods can reduce pain but are not as effective as methods that are more structured and technology-based.

   Based on the research results conducted on the intervention group, respondents used the ImajiCare website application for guided imagery therapy. The pre-test in the intervention group showed an average score of 5.39, indicating that the respondents experienced moderate pain. Then, after 3 days of therapy, the average pain score significantly decreased to 1,83. This decrease indicates that guided imagery therapy using the ImajiCare website can effectively reduce the respondents' pain level. This is in line with the research conducted by Nugraha et al., (2022) which explained that technology-based non-pharmacological interventions can reduce pain intensity and accelerate recovery after surgery.

   Conversely, the control group only received manually guided imagery therapy without using ImajiCare. The average pain scale score in the control group's pre-test showed an average value of 5.44. After 3 days of manually guided imagery, the average pain score decreased to 2.28. Performing the manually guided imagery procedure will provide a greater stimulus because a sense of mutual trust will arise between the nurse and the patient through deep interaction, body language, and facial expressions. It also allows for adjusting the procedure by observing the patient's condition, which can make the intervention more effective when performed directly (Ivanali, 2024).

   However, digitization is also important to implement. The digitization of this guided imagery procedure must still be developed because it will impact hospitals with insufficient staffing, simplify nurses tasks, and improve information openness for clients regarding monitoring their own pain scale (Sari, 2023).

CONCLUSION

1. Based on the respondents' characteristics regarding age, the 95% confidence interval estimation states that the average age of the respondents is 25.59 - 35.39 years. Based on gender, the majority of respondents in this study were males 19 compared to 17 female respondents. Based on education, the majority of respondents in both the intervention and control groups had a Senior High School (SMA) education background.
2. The intervention group, before receiving barcode website-based guided imagery therapy (ImajiCare), had an average pain scale score of 5.39 and after the administration, the average pain decreased to 1.83 The level of reduction in the pain scale was a difference of 3.56.
3. The control group, before manually guided imagery therapy was performed, had an average pain scale score of 5.44 and after the manual imagery therapy was administered, the pain decreased to 2.28 The level of reduction in the pain scale was a difference of 2.64.
4. The results of the effectiveness analysis of using the barcode website application- based guided imagery therapy (ImajiCare) showed a p-value of 0,000 < 0,05 from the statistical test using the Wilcoxon test. The conclusion drawn is that the ImajiCare application and manually guided imagery therapy are equally effective in reducing pain after appendectomy surgery.
5. The use of website-based technology such as ImajiCare has high practical value and has been proven to facilitate nurses' work in conducting more structured pain assessment, management, and evaluation. ImajiCare offers the advantages of patient independence and efficiency, although its effectiveness is not significantly better than manual therapy.

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