THE EFFECTIVENESS OF AROMATHERAPY RELAXATION TECHNIQUES AND SLOW STROKE BACK MASSAGE STIMULATION ON CHANGES IN PAIN INTENSITY IN POST-HYDRONEPHROSIS SURGERY PATIENTS AT AMIRA GENERAL HOSPITAL IN 2024

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ABSTRACT
Background: Post-hydronephrosis surgery patients may experience pain. The physical impacts of pain include rapid breathing, increased heart rate, elevated blood pressure, increased stress hormones, delayed healing, and decreased immune function. Pain reduction can be achieved through pharmacological and non-pharmacological approaches. One non-pharmacological method includes aromatherapy relaxation therapy, SSBM stimulation, and a combination of both aromatherapy relaxation and SSBM stimulation.
Objectives: To identify the effectiveness of aromatherapy relaxation techniques and slow stroke back massage stimulation on changes in pain intensity among post-hydronephrosis surgery patients at Amira General Hospital
Methods: This study utilized a quantitative research approach with a quasi-experimental design, specifically employing a pretest-posttest design with three intervention groups. The population consisted of post-hydronephrosis surgery patients at Amira General Hospital. The sample involved 21 respondents, divided into three groups: aromatherapy relaxation therapy (7 respondents), SSBM stimulation (7 respondents), and a combination of aromatherapy relaxation and SSBM stimulation (7 respondents). The sampling technique used was purposive sampling. The research instrument used for data collection was an observation sheet. Data analysis was conducted using dependent t-test and independent t-test.
Results: The study found that changes in pain intensity before and after intervention in post-hydronephrosis surgery patients showed the following p-values: aromatherapy relaxation therapy $p = 0.3711$, SSBM stimulation $p = 0.001$, combination therapy (aromatherapy relaxation and SSBM stimulation) $p = 0.017$, and combination therapy $p < 0.001$. Based on the independent t-test results, $p < 0.05$ indicated a significant difference in pain intensity changes between aromatherapy relaxation, SSBM stimulation, and their combination in post-hydronephrosis surgery patients at Amira General Hospital.
Conclusion: Slow Stroke Back Massage (SSBM) stimulation and the combination therapy (Aromatherapy + SSBM) demonstrated a significant effect on reducing pain intensity in post-hydronephrosis surgery patients. However, aromatherapy relaxation alone did not show a statistically significant effect. The combination therapy provided the most optimal reduction in pain intensity.

Keywords: Aromatherapy Relaxation, Combination, Hydronephrosis, Slow Stroke Back Massage

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BACKGROUND

The incidence of hydronephrosis based on data collected from hospitals across Indonesia in 2002 was 37,636 new cases, with the highest number of visits recorded at 58,959 patients (Faktor et al., 2023). Other data indicate that the incidence of hydronephrosis in the population reaches 5–12%, with the peak occurrence between the ages of 35 and 55 years (Faktor et al., 2023). The adverse effects of untreated hydronephrosis can lead to serious complications, including urinary tract infections (UTIs). Children with moderate to severe hydronephrosis are at a higher risk of developing UTIs. Renal scarring may occur, and if left untreated, hydronephrosis can cause hypertension. In some cases, untreated hydronephrosis may lead to kidney failure, meaning the kidneys can no longer function. Hydronephrosis is caused by an obstruction in urine secretion, resulting in fluid overload problems. According to urological literature, the degree of obstruction can influence the severity of hydronephrosis. In advanced cases, hydronephrosis can lead to decreased kidney function, eventually progressing to chronic kidney failure (Choirul Cahya Fadilah et al., 2020). In addition, the high prevalence of hydronephrosis remains a significant concern, highlighting the need for greater attention and effective strategies to address and reduce its occurrence.

The prevalence of hydronephrosis in the United States reaches 31.1%, with cases recorded at 2.9% in women, 2.9% in men, and 2–2.5% in children (Choirul Cahya Fadilah et al., 2020). In Indonesia, the incidence of hydronephrosis is reported at 34% and has increased to 85% (Faktor et al., 2023). Hydronephrosis is the dilation of the pelvicalyceal system due to impaired urine excretion, which can be caused by either obstructive or non-obstructive factors. It is a common medical problem encountered by primary care providers, emergency physicians, and urologists worldwide. Hydronephrosis is classified into obstructive and non-obstructive types, with obstruction most commonly caused by urinary tract stones (Alshoabi, 2018).

Based on hospital data across Indonesia, urinary tract stones are the leading cause of hydronephrosis, with 58,959 hospital visits, 37,636 new cases, 19,018 hospitalizations, and 378 deaths (Baskoro & Rodjani, 2013). Additional data from Cipto Mangunkusumo Hospital show an increasing number of cases of urinary tract stones: 182 patients in 1997, rising to 847 patients in 2002 (Baskoro & Rodjani, 2013). In 2023, medical records from Amira General Hospital Purwakarta reported a rise in inpatient cases diagnosed with hydronephrosis: 64 patients between January and June and 180 patients between July and December. In general, patients require adequate fulfillment of physiological needs. Since hydronephrosis involves obstruction or blockage in the kidneys, patients commonly experience pain (Tulis et al., 2021).

The physical effects of pain include rapid breathing, increased heart rate, elevated blood pressure, increased stress hormone levels, delayed healing, and decreased immune function. Pain also has psychological impacts such as anxiety, stress, sleep disturbances, and fear. Pain management can be performed pharmacologically through the administration of analgesics and sedatives, or non-pharmacologically through distraction, relaxation, warm or cold compress stimulation, deep breathing exercises, music therapy, aromatherapy, reiki, guided imagery, hypnosis, and relaxation techniques. Many patients often believe that medication is the only effective option for pain relief. However, non-pharmacological methods, when applied, can also be very effective in reducing pain(Virgona Bangun et al., 2013).

With the increasing incidence of hydronephrosis, there is a growing need for therapeutic modalities to help reduce pain experienced by patients. Recent studies have highlighted those complementary therapies, particularly aromatherapy with essential oils, can provide comfort and help prevent infection. Aromatherapy, as a complementary therapy, has analgesic, anti-inflammatory, and antimicrobial properties, making it effective in pain and infection management. It uses essential oils derived from the fragrant parts of plants to reduce health problems and improve quality of life. Scents directly affect the brain similarly to analgesic drugs; for example, the scent of lavender can increase alpha brain waves, promoting relaxation (Virgona Bangun et al., 2013). Research conducted by Suyanto & Kristian Nugroho (2023) also showed that aromatherapy relaxation is effective in reducing pain among patients experiencing discomfort.

Another therapy that can be applied to reduce pain intensity in patients with hydronephrosis is Slow Stroke Back Massage (SSBM). Previous studies have examined the effects of back massage on pain intensity, showing significant changes in pain levels after receiving back massage compared to before the intervention (Prastianto, 2017).

SSBM is a form of cutaneous stimulation used to relieve pain by activating the faster A-beta sensory fiber transmission, which acts as a neurotransmitter, thereby reducing pain transmission through the smaller-diameter C and A-delta fibers and closing the synaptic gate for pain impulse transmission. This stimulation triggers peripheral nerve fibers to send impulses through the dorsal horn of the spinal cord. When impulses carried by A-beta fibers dominate, the gate control mechanism closes, preventing pain impulses from being transmitted to the brain. The effectiveness of SSBM in providing relaxation and pain relief has been supported by previous research.

Based on observations at Amira General Hospital in 2023, among 244 post-hydronephrosis surgery patients, none had received aromatherapy relaxation or SSBM therapy. Therefore, based on this background, the title of this study is "The Effectiveness of Aromatherapy Relaxation Techniques and Slow Stroke Back Massage Stimulation on Changes in Pain Intensity in Post-Hydronephrosis Surgery Patients."

METHODS

Study Design

This study used a quantitative research approach with a quasi-experimental design, specifically employing a one group pretest-posttest design. The study aimed to evaluate the effectiveness of aromatherapy relaxation techniques, slow stroke back massage stimulation, and their combination on pain intensity in post-hydronephrosis surgery patients.

Setting

The study was conducted at Amira General Hospital, Purwakarta, Indonesia, from January to July 2024. Data collection was carried out in the inpatient surgical ward.

Research Subject

A purposive sampling technique was used to recruit respondents who met the study criteria.

Inclusion criteria were: (1) post-hydronephrosis surgery patients, (2) conscious and able to communicate verbally, (3) willing to participate in the study, and (4) age ≥ 18 years. Exclusion criteria were: (1) patients with unstable vital signs, (2) patients who experienced severe complications after surgery, and (3) patients with impaired cognitive function.

The total sample consisted of 21 respondents, divided into three intervention groups: 7 respondents received aromatherapy relaxation, 7 respondents received SSBM stimulation, and 7 respondents received a combination of both interventions. The sample size was determined based on the study objectives and feasibility considerations of the clinical setting.

Instruments

Pain intensity was measured using the Numeric Rating Scale (NRS), a standardized instrument commonly used in clinical settings to assess pain levels on a scale of 0–10, where 0 indicates no pain and 10 indicates the worst possible pain. The NRS has been widely validated and shown to have good reliability for pain measurement in postoperative patients. An observation sheet was also used to record patient data. No translation or modification of the instrument was required.

The intervention was carried out by trained nurses.

1. Aromatherapy relaxation technique: 5 drops of essential oil were mixed with 50 ml of water and diffused for 15 minutes in the patient's room.
2. Slow Stroke Back Massage (SSBM): performed for 15 minutes with gentle, rhythmic strokes on the patient's back according to the SSBM protocol.
3. Combination therapy: simultaneous application of aromatherapy relaxation and SSBM stimulation for 15 minutes.
4. Pain intensity was measured before and after each intervention session.

Data Analysis

Data were analyzed using SPSS software. Descriptive statistics were used to summarize respondent characteristics and pain scores. Dependent t-test was used to compare pre- and post-intervention pain intensity within each group. Independent t-test was used to compare differences in pain intensity between groups. A significance level of $p < 0.05$ was considered statistically significant.

Ethical Consideration

The study obtained approval from a university ethics committee prior to data collection under letter number: No.9025/Sket/Ka.Dept/RE/UIMA/VI/2024. All respondents were provided with information regarding the research purpose, procedures, and their rights, and signed informed consent was obtained. Participant confidentiality and anonymity were strictly maintained throughout the study.

RESULTS

Table 1. Characteristics of Respondents Based on Age, Education, Occupation, and Gender

Characteristics	Category	Frrequency	
		N/mrean	(%)/SD

Age	Nurmreric	49.6	12.6
Education (n,%)	Senior High School	6	28.6
	Elementary School	6	28.6
	Junior High School	5	23.8
	College/University	4	19.0
Occupation (n,%)	Entrepreneur	6	28.6
	Housewife	6	33.3
	Civil Servant	5	14.3
	Private Employee	4	23.8
Gender (n,%)	Male	11	52.4
	Female	10	47.6

Based on the table above, the total number of respondents was 21, with no missing data. All respondents were post-hydronephrosis surgery patients with a mean age of 49.6 years and a median age of 51 years, indicating that half of the respondents were younger than 51 years and the other half were older. The age range of respondents was 21 to 72 years. In terms of educational background, the majority had completed senior high school and elementary school, with 6 respondents (28.6%) in each group. Regarding occupation, most respondents were housewives (7 respondents; 33.3%), followed by entrepreneurs (6 respondents; 28.6%). In terms of gender, the majority of respondents were male (11 respondents; 52.4%).

Univariate Analysis

Table 2. Description of Pain Intensity Scores Before and After Aromatherapy Relaxation Intervention

Therapy	**Pain Intensity**	**N**		**%**
Aromatherapy Relaxation	Moderate	Before	3	42.9
		After	2	28.6
	Mild	Before	4	57.1
		After	5	71.4

Based on the table above, a total of 7 respondents received aromatherapy relaxation therapy. Before the intervention, 3 respondents (42.9%) experienced moderate pain intensity, and 4 respondents (57.1%) experienced mild pain intensity. After the aromatherapy relaxation intervention, the number of respondents experiencing moderate pain decreased to 2 (28.6%), while those experiencing mild pain increased to 5 (71.4%).

Table 3. Description of Pain Intensity Scores Before and After Slow Stroke Back Massage (SSBM) Intervention

Therapy	**Pain Intensity**		**N**	**%**
SSBM Intervention	Moderate	Before	5	71.4

		After	1	14.3
	Mild	Before	2	28.6
		After	6	85.7

Based on the table above, a total of 7 respondents received SSBM stimulation therapy. Before the intervention, 5 respondents (71.4%) experienced moderate pain intensity and 2 respondents (28.6%) experienced mild pain intensity. After the SSBM stimulation therapy, the number of respondents experiencing moderate pain decreased to 1 respondent (14.3%), while those experiencing mild pain increased to 6 respondents (85.7%).

Table 4. Description of Pain Intensity Scores Before and After the Combination of Aromatherapy Relaxation and Slow Stroke Back Massage (SSBM) Intervention

Therapy	Pain Intensity		N	%
Aromatherapy Relaxation + SSBM Stimulation	Moderate	Before	6	85.7
		After	0	0
	Mild	Before	1	14.3
		After	7	100

Based on the table above, a total of 7 respondents received the combination of aromatherapy relaxation and SSBM stimulation therapy. Before the intervention, 6 respondents (85.7%) experienced moderate pain intensity and 1 respondent (14.3%) experienced mild pain intensity. After the intervention, the number of respondents experiencing moderate pain decreased to 0 (0%), while those experiencing mild pain increased to 7 respondents (100%).

Bivariate Analysis
Normality Test

Table 5. Shapiro–Wilk Normality Test of Pain Intensity Before and After Aromatherapy Relaxation, SSBM, and Combination Therapy

Pain Intensity	Normalitas	Sig. Shapiro-Wilk
NRS	Aromatherapy Group (Pretest–Posttest)	< .001
	SSBM Group (Pretest–Posttest)	0.099
	Aromatherapy + SSBM Combination (Pretest–Posttest)	0.294

The Shapiro–Wilk normality test showed that the pretest and posttest data of the aromatherapy group had a p-value < 0.001, which is less than 0.05, indicating that the data were not normally distributed. In contrast, the pretest and posttest data of the SSBM group had a p-value of 0.099 (> 0.05), indicating that the data were normally distributed. Likewise, the pretest and posttest data of the aromatherapy and SSBM combination group had a p-value of 0.294 (> 0.05), indicating a normal distribution.

Homogeneity Test

Table 6. Homogeneity Test

Pain Intensity	F	df1	df2	p
NRS Before	0.553	2	18	0.585
NRS After	0.725	2	18	0.498

Based on the table above, the p-value is greater than 0.05, indicating that the data are homogeneous.

Independent T-Test Analysis of Pain Scores in Post-Hydronephrosis Surgery Patients

Table 7. Independent T-Test of Pain Scores with Aromatherapy Relaxation Intervention

Pain Intensity – Aromatherapy Group	n	Mean Difference	p	Effect Size
NRS Pretest vs Posttest	7	2.00	0.371	1.00

Since the normality test showed that the data were not normally distributed, the Wilcoxon Signed-Rank Test was used. The results indicated no statistically significant difference between pretest and posttest conditions in the aromatherapy group (p = 0.372). The mean difference of 2.00 indicates that the posttest pain score was 2 points lower than the pretest score. However, because p > 0.05, it can be concluded that aromatherapy alone did not produce a significant reduction in pain intensity.

Table 8. Independent T-Test of Pain Scores with SSBM Intervention

Pain Intensity – SSBM Group	n	Mean Difference	p	Effect Size
NRS Pretest vs Posttest	7	0.857	0.017	1.24

The results showed a statistically significant difference between pretest and posttest conditions in the SSBM group (p = 0.017), with a mean difference of 0.857 points. Because p < 0.05, it can be concluded that SSBM therapy significantly reduced pain intensity.

Table 9. Independent T-Test of Pain Scores with Aromatherapy and SSBM Combination Intervention

Pain Intensity – Aromatherapy + SSBM Group	n	Mean Difference	p	Effect Size
NRS Pretest vs Posttest	7	2.86	<0.001	2.67

The results showed a highly significant statistical difference between pretest and posttest conditions in the combination therapy group ($p < 0.001$), with a mean difference of 2.86 points. Since $p < 0.05$, it can be concluded that the combination of aromatherapy relaxation and SSBM stimulation produces a very significant reduction in pain intensity compared to either intervention alone.

DISCUSSION

Characteristics of Respondents Based on Age, Education, Occupation, and Gender

Based on the results of this study conducted at Amira General Hospital, there were 21 respondents, all of whom were post-hydronephrosis surgery patients. The respondents' ages ranged from 21 to 72 years. This finding is in line with the study by Ferawati Dakio et al., titled *"Analysis of Determinant Factors of Hydronephrosis Incidence at RSUD Dr. M.M. Dunda Limboto, Gorontalo Regency,"* which showed that hydronephrosis cases were most common in the 20–60 age group, with 54 patients (63.5%), while in the >60 age group there were 31 patients (36.5%) (Faktor et al., 2023).

Age has a strong relationship with pain perception. Younger patients tend to report higher pain levels compared to older patients. Cultural factors may also influence pain reporting; older patients may perceive pain as a natural part of illness and therefore choose not to report it. Studies have shown that pain sensitivity decreases with increasing age, due to physiological, biochemical, and homeostatic changes in somatosensory pathways involved in pain processing and perception. This means older patients may have a higher pain threshold and lower pain discrimination ability than younger patients (Zhi et al., 2024).

Based on educational characteristics, most respondents had completed senior high school and elementary school (28.6% each). Similarly, research by Sumberjaya & Mertha (2020) found that most respondents had a senior high school education (42%) and only 8% had completed elementary school.

Hydronephrosis a condition characterized by kidney swelling due to urinary obstruction or reflux is more closely associated with medical and physiological factors rather than educational background. However, socioeconomic status, which is often linked to education, can influence access to healthcare services, awareness of medical conditions, and the timeliness of treatment, which in turn can affect health outcomes. Previous studies have shown that individuals with lower socioeconomic status may experience delays in diagnosis and treatment due to limited access to healthcare and lower health awareness.

Regarding occupational characteristics, most respondents were housewives (7 respondents). Occupation and daily activities may influence the prevalence of hydronephrosis. Conditions such as kidney swelling due to urinary retention can be exacerbated by physical strain, lack of regular health checkups, and limited health knowledge, which are commonly found in the routines of housewives (Faktor et al., 2023).

Based on gender characteristics, most respondents were male (11 respondents; 52.4%). This is consistent with the study by Alshoabi et al. (2021) titled *"Etiology of Hydronephrosis in Adults and Children: Ultrasound Assessment in 233 Patients,"* which reported that of 233 respondents, 154 were male and 79 were female. This male predominance is supported by

previous research by Ahmed et al., which showed that urinary tract stones—the most common cause of hydronephrosis are more prevalent in men due to hormonal factors.

The high prevalence of hydronephrosis in men is associated with the effect of androgens on lithogenic risk factors, which increase calcium oxalate excretion and deposition in the pelvicalyceal system, leading to stone formation.

The assumption in this study is that hydronephrosis is related to strenuous physical activity without adequate daily electrolyte intake. This is supported by the fact that most respondents with hydronephrosis were male. Men are often less attentive to their personal health, and since more than half of the respondents were working individuals, routine work activities may lead to neglect of proper fluid and electrolyte intake. Although the majority had at least a secondary education, this level of education did not necessarily translate into healthy fluid and electrolyte management habits, leading to an increased risk of kidney problems due to imbalances between physical activity and fluid-electrolyte intake.

Effectiveness of Aromatherapy Relaxation on Changes in Pain Intensity in Post-Hydronephrosis Surgery Patients at Amira General Hospital

Based on the results of the study on the effectiveness of aromatherapy relaxation before and after the intervention, the p-value obtained was 0.372, which is greater than 0.05. This indicates that aromatherapy did not cause a statistically significant reduction in pain intensity. These findings are not consistent with several previous studies, Anasril, Tri Mulyono H (2024) found that lavender aromatherapy effectively reduced pain intensity in patients after open fracture calcaneus surgery. Similarly, Anwar et al. (2018) in their study titled *"The Effect of Lavender Aromatherapy on Pain Intensity Reduction in Post-Cesarean Section Patients"* reported that aromatherapy was effective in reducing pain intensity, with a p-value of 0.000.

The difference between this study and previous research may be attributed to several factors. Not everyone responds to aromatherapy in the same way, as genetic, psychological, and physiological factors can influence its effectiveness. Additionally, the effectiveness of aromatherapy can be affected by individual expectations and beliefs. If a person does not believe in the benefits of aromatherapy, they may not experience the same level of relief as someone who does. Pain itself is often a complex and multifactorial condition, and in some cases, it may require a more comprehensive treatment approach than aromatherapy alone can provide.

The findings suggest that while aromatherapy functions as a complementary therapy intended to promote relaxation, its effectiveness as a standalone intervention for post-surgical pain may vary due to individual physiological responses. Aromatherapy can induce a state of relaxation in the body, allowing patients to respond more adaptively to pain stimuli. Furthermore, aromatherapy may help lower anxiety levels, which can indirectly contribute to a reduction in pain intensity.

Effectiveness of Slow Stroke Back Massage (SSBM) Stimulation on Changes in Pain Intensity in Post-Hydronephrosis Surgery Patients at Amira General Hospital

Based on the results of this study, the p-value for pain intensity before and after the SSBM stimulation intervention was 0.017, which is less than 0.05. This indicates that SSBM

stimulation had a statistically significant effect in reducing pain intensity. These findings are consistent with several previous studies. Research by Rahmawati & Mukhoirotin (2024) titled *"Slow Stroke Back Massage Intervention to Reduce Pain Intensity After Cesarean Section"*, reported a p-value of 0.000, demonstrating that SSBM was effective in decreasing pain intensity. Similarly, a study by Prastianto (2017) titled *"The Effect of Cutaneous Slow Stroke Back Massage Stimulation on Pain Intensity in Elderly Patients with Osteoarthritis"* also showed a significant reduction in pain intensity (p = 0.000).

These results align with Suryani and Fitriyani (2015), who stated that one form of cutaneous stimulation is slow stroke back massage, a gentle back-stroking technique that provides comfort, reduces muscle tension, relaxes the patient, and improves circulation. The mechanism of SSBM involves the release of endorphins, which block pain signal transmission to higher centers in the central nervous system. This is supported by Mander (2004), who explained that massage involves applying manual pressure to soft tissues—such as muscles, tendons, or ligaments—without causing joint movement or changes, with the aim of relieving pain, promoting relaxation, and improving circulation. The main function of massage is considered to "close the gate" to inhibit the transmission of pain impulses. Furthermore, tactile stimulation and the positive sensations produced through gentle and empathetic touch help enhance the analgesic effect of massage (Andarmoyo, 2013).

Mechanistically, SSBM performed on the correct anatomical points is believed to induce comfort by relaxing muscles and tissues, while the tactile stimulation triggers the release of endorphins. This neurochemical response leads to a significant reduction in pain intensity among hydronephrosis patients. In essence, SSBM provides comfort and relaxation after surgery by loosening tight muscles and ligaments, resulting in reduced pain intensity.

Effectiveness of the Combination of Aromatherapy Relaxation and Slow Stroke Back Massage (SSBM) on Changes in Pain Intensity in Post-Hydronephrosis Surgery Patients at Amira General Hospital

The results of this study showed that the combination of aromatherapy relaxation and SSBM produced a p-value < 0.001, which is lower than 0.05. This indicates that the combination therapy caused a highly significant reduction in pain intensity. These findings are consistent with several previous studies. Research by Shelia Fitriani et al. (2023) titled *"Application of Slow Stroke Back Massage and Lavender Aromatherapy to Reduce Chronic Pain in Cervical Cancer Patients"* reported that the first respondent experienced a pain reduction from a scale of 5 to 1, and the second respondent from 6 to 1. This shows that the application of SSBM and lavender aromatherapy can effectively reduce pain levels in cervical cancer patients. Similarly, a study by Setyowati et al. (2019) on *"The Effectiveness of Slow Stroke Back Massage with Lavender Aromatherapy on Pain Reduction in Cervical Cancer Patients at Kariadi Hospital Semarang"* found a significant difference in pain reduction in the intervention group (p = 0.000).

The combination of aromatherapy and SSBM can significantly reduce pain intensity due to several synergistic mechanisms. The combination of massage and aroma creates a rich and calming sensory experience that diverts attention from pain and enhances feelings of comfort and relaxation. When used together, aromatherapy and SSBM amplify each other's

effects. Massage helps facilitate the absorption of essential oils through the skin, while the pleasant aroma enhances the relaxation response. The overall positive and soothing therapeutic experience can improve mood and emotional well-being, contributing to a lower perception of pain.

The assumption in this study is that the use of aromatherapy is strongly recommended as a complementary intervention to reduce pain intensity in hydronephrosis patients. Likewise, SSBM therapy has been scientifically proven to effectively lower pain intensity when massage is performed on the correct anatomical points, resulting in a positive and subjectively perceived effect on patient comfort and pain relief.

CONCLUSION

Based on the results of this study, the characteristics of the 21 post-hydronephrosis surgery respondents showed an average age of 49.6 years, ranging from 21 to 72 years, with a majority being male (52.4%) and most having primary and secondary education (28.6% each). The aromatherapy relaxation intervention showed a decrease in pain intensity from moderate to mild, but the statistical test results were not significant ($p = 0.372$). The Slow Stroke Back Massage (SSBM) intervention showed a significant result ($p = 0.017$) with an increase in the number of respondents in the mild pain category. The combination of aromatherapy relaxation and SSBM produced the most optimal outcome, with all respondents shifting to the mild pain category and a significance value of $p < 0.001$, indicating a highly significant reduction in pain intensity. Therefore, it can be concluded that the combination of aromatherapy relaxation and SSBM is more effective than either intervention alone in reducing pain intensity among post-hydronephrosis surgery patients.

SUGGESTIONS

Based on the findings and conclusions of this study, several recommendations can be made. Theoretically, Amira General Hospital may consider integrating aromatherapy relaxation and slow stroke back massage (SSBM) as complementary therapies in postoperative pain management, supported by standardized operating procedures (SOPs) in medical-surgical nursing care. Practically, these findings can serve as a reference for nursing students in applying complementary therapies and for clinical nurses as an additional intervention for postoperative pain management in patients with hydronephrosis. Scheduling combined therapy sessions is also recommended, as the intervention has been shown to significantly reduce pain intensity. Methodologically, future studies are encouraged to further explore the effects of aromatherapy relaxation and SSBM by including additional variables, controlling anxiety and pain perception factors, and setting inclusion criteria based on mild to moderate anxiety levels to enhance research accuracy and applicability.

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CONFLICTS OF INTEREST

The author declares that there is no conflict of interest regarding the conduct of this research, the writing of the manuscript, or the publication of the findings.

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