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Effect of Preoperative Nursing Visitation on Perioperative Anxiety, Intra/Post Operative, Nausea, Vomiting and Postoperative Pain in Surgical Patients Electives with Spinal Anesthesia

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ABSTRACT

The perioperative process can cause stress and anxiety of the patient which triggers negative physiological changes. Lack of information and therapeutic relationships between nurses and patients can worsen emotional responses. The purpose of the study was to determine the effect of preoperative nursing visitation on perioperative anxiety, IONV/PONV, and postoperative pain in elective surgery patients undergoing spinal anesthesia. The research design was a Quasi Experimental Pretest Posttest Nonequivalent Control Group with Block Random Allocation. The sample consisted of 53 patients divided into 27 treatment groups and 26 control groups. Anxiety was measured using STAI-S, while IONV/PONV and postoperative pain were assessed using VAS. The results showed that the anxiety score was significantly lower in the treatment group during the perioperative phase ($P < 0.001$). The IONV score was also lower in the treatment group ($P = 0.027$), although the PONV did not differ significantly ($P = 0.059$). Postoperative pain in the treatment group was lower compared to the control group ($P < 0.001$). Preoperative nursing visitation significantly decreased perioperative anxiety, intraoperative nausea and vomiting (IONV), and postoperative pain, although it had no significant effect on postoperative nausea and vomiting (PONV).

Keywords: IONV/PONV, perioperative anseitas, postoperative pain, preoperative nursing visitation

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BACKGROUND

The perioperative phase of surgical procedures with spinal anesthesia is a stressor that threatens the integrity of the patient's body and soul. The patient's anticipatory response to a surgical experience, especially with spinal anesthesia, is considered a threat to the function and integrity of the body and its role. According to the opinion of Zilmaz et al. (2020) mentioned that some of the weaknesses of spinal anesthesia such as the patient's fear of losing control of his limbs and hearing the conversation of the surgical team as well as the sound of the device in the operating room due to his conscious state (Kent et al., 2015; Kömürcü et. al., 2015; Yilmaz et.al., 2020). In addition, the conscious state of patients undergoing spinal anesthesia can increase their anxiety levels, making them feel more vulnerable and fragile (Karlsson, Ekebergh, Mauléon, & Almerud Österberg, 2012; Kent et al., 2015; Yilmaz et al., 2020).

The incidence of anxiety in the preoperative phase is around 11%-80%, depending on the type of surgery, the patient's gender, and whether the patient is undergoing surgery for the first time (Alvarez and Yaban, 2020). The results of several analytical studies obtained in Europe show that the prevalence of preoperative anxiety among surgical patients varies from 27% to 80%, with the highest observed in Spain and the smallest in the NetherlandsWorld *Health Organization (WHO) data* in 2018 found that 50% of elective surgery patients experienced preoperative anxiety. The level of pre-cooperative anxiety reached 534 million people. Data in 2019 saw a decline to around 148 million people, and it is estimated that 50% to 75% experienced anxiety during the preoperative period, with 1.2 million people occurring in Indonesia. Data in 2020 showed that there were 234 million patients in all hospitals in the world and more than 28% of people experienced anxiety (Hudia, Anggraini, Permatasari, 2023).

In addition to perioperative anxiety as a surgical complication, perioperative patients with spinal anesthesia can be at risk of experiencing *Intraoperative/Postoperative Nausea Vomiting*. Subarachnoid blocks cause a slowdown in sympathetic conduction, which can give rise to hypotension and relative hypoxia in the center of vomiting (Gruendeman and Frensebner, 2006, Suprajitno et al., 2013). The prevalence of PONV occurs in 30% of postoperative patients and reaches 80% in high-risk postoperative patients. As many as 30% of more than 100 million surgical patients in the United States experience PONV. In Indonesia, the rate of nausea and vomiting after laparatomy gynecology surgery is around 31.25% and in patients undergoing mastectomy surgery is around 31.4% (Nurprayogi and Chasanah, 2023).

Another complication of perioperative is postoperative pain after regional anesthesia (spinal anesthesia). Dada et al. (2019) in Leyva et al., (2020) defined post-anesthesia *regional rebound* pain as a state of hyperalgesia with an onset between 8 and 24 hours after the administration of the block. Poorly described entities usually refer to a significant increase in pain after the effects of regional anesthesia wear off (Galos et al., 2016, Leyva et al., 2020). The prevalence of major postoperative patients who experience moderate to severe pain is 41% of postoperative patients on day 0, 30% of postoperative patients on day 1, 19% of patients on day 2, 16% of patients on day 3, and 14% of patients on day 4 (Judha and Syafitri, 2018; Utami and Khoiriyah, 2020).

Peroperative anxiety, *intraoperative/Postoperative Nausea Vomiting*, and postoperative pain are perioperative complications that cannot be underestimated. Of the three complications, anxiety is the beginning of the physical problems of perioperative patients. This complication has actually been anticipated with the provision of nursing care by nurses in the operating room, but the negative impact still occurs and is repeated. The solution offered is to carry out a preoperative nursing visitation by an operating room nurse

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who will later follow and coordinate perioperative care for patients. Introducing patients to surgical procedures not only increases their awareness and knowledge, but also greatly helps in reducing psychological stress due to surgery (Bagheri et. al., 2018).

The effect of preoperative nursing visitation in preventing perioperative anxiety, reducing postoperative pain and perioperative complications can be seen from several research studies that have been conducted. The first study by Aydal et.al (2023) reported that operating room nurse visitation before laparoscopic surgery can be an effective method to reduce patient anxiety levels (Aydal et.al, 2023), but this study still cannot prove the effect of preoperative nursing visitation on postoperative pain, besides that this study is limited to patients with laparoscopic surgery. Research by Sadati et.al (2013) reported that preoperative nursing visitation can reduce the level of preoperative anxiety and postoperative complications. The study showed that there was a significant difference between the experimental group and the control group ($p < 0.05$). It was also found that only 6% experienced postoperative nausea and vomiting in the experimental group and 20% in the control group ($p<0.05$). The study was limited to the female population and laparoscopic cases of cholecystectomy.

From the data above, the results of the study are still inconsistent. Researchers want to develop a broader study on the effect of preoperative nursing visitation with the Kolcaba Comfort theory approach on the level of perioperative anxiety, *intra/potoperative nausea vomiting,* and postoperative pain. Bergström, Håkansson, Warrén, and Bjerså (2018) applied Kolcaba's comfort theory to nursing practice in a preoperative setting. Given this is critical to implementing patient care approaches that can reduce anxiety and provide comfort to patients, and comfort theory can help practitioners to achieve this by offering models aimed at meeting the holistic needs of individuals.

METHODS

The design of this study was *Quasi Experimental Research, Pretest Posttest Nonequivalent Control Group Design* with *Block Random Allocation*.**.** This study obtained ethical clearance from the Research Ethics Committee of Mardi Waluyo Regional Hospital, Blitar, with approval number: 800/94.30.5/410.302.3/KEP/IV/2024. The population in this study includes all patients who undergoing elective surgery for the lower abdomen with spinal anesthesia at the Central Surgical Installation of Mardi Waluyo Blitar Hospital in 2024. The exact number of the population could not be determined due to the dynamic and continuous nature of surgical admissions; therefore, the population is considered infinite. Sampling using *the Purposive Sampling* technique with inclusion criteria includes patients aged 18-65 years who are cooperative, can read, and have no history of mental or neurological illness. Exclusion criteria included patients with ASA III-IV physical status, sedative use during surgery, and those requiring postoperative intensive care. The number of samples was determined using the G*Power application and met the criteria of the research subjects was 53 respondents who were divided into two groups: treatment (27 people) and control (26 people). Data were collected through a series of anxiety measurements using *the State-Trait Anxiety Inventory* (STAI-S), as well as *Intraoperative* and *Postoperative Nausea Vomiting* (IONV/PONV) and postoperative pain using *the Visual Analog Scale* (VAS). The data collection procedure included the selection of respondents, allocation to the treatment group or control group with random allocation of the block system, provision of a 60-minute preoperative nursing visitation intervention for the treatment group, and measurement of anxiety and IONV/PONV at various perioperative stages. Hypothesis testing was carried out using parametric statistical tests such as the Independent T-Test and *ANOVA Repeated Measures* with non-parametric alternatives if the data distribution was abnormal with $\alpha = 0.05$.

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RESULTS

The data collection was conducted at Mardi Waluyo Blitar Hospital from April 29 to August 3, 2024. A total of 56 respondents participated, and after excluding 3 due to the need for sedation and intensive postoperative care, 53 respondents remained for the final analysis.

Socio-Demographic Characteristics of Respondents

The data obtained from a total of 53 respondents, consisting of 27 respondents in the treatment group and 26 respondents in the control group. From the data above, it was found that *the Mean* and *Standard Deviation* of the respondent's age were 43.85 ± 13.48. Other characteristic data were obtained that most (58.5%) were women, almost half (35.8%) were college-educated, almost half (37.7%) were not working, almost all (86.8%) were married, most (62.3%) had never had previous surgery and almost half (32.1%) had lower *abdominal* surgery is the act of herniotomy. There was no difference between the treatment group and the control group from the socio-demographic variable (age) of the respondents ($P > 0.05$).

Table 1. Socio-Demographic Characteristics of respondents, Mardi Waluyo Blitar Hospital, April-August 2024

It	Data	Sum	Percentage (%)	Treatment		Control	
				n	%	n	%
1	Age : Min-Mak : *Mean* ±SD	19-65	43.85±13.48	27	50,9	26	49,1
2	Gender						
	a. Man	22	41,5	12	44,4	10	38,5
	b. Woman	31	58,5	15	55,6	16	61,5
3	Education						
	a. SD	7	13,2	4	14,8	3	11,5
	b. JUNIOR	9	17,0	4	14.8	5	19,2
	c. SMA	18	34,0	6	22,2	12	46,2
	d. PT	19	35,8	13	48,1	6	23,1
4	Work						
	a. Not working	20	37,7	8	29,6	12	46,2
	b. ASN/PNS	7	13,2	5	18,5	2	53,8
	c. Private Employees	6	11,3	2	7,4	4	15,4
	d. Self employed	7	13,2	3	11,1	4	15,4
	e. Laborer	4	7,5	1	3,7	3	11,5
	f. Farmer	1	1,9	0	0	1	3,8
	g. Pensioner	8	15,1	8	29,6	0	0
5	Marital Status						
	a. Unmarried	3	5,7	0	0	3	11,5
	b. Marry	46	86,8	25	92,6	21	80,8
	c. Widow/Widower	4	7,5	2	7,4	2	7,7
6	Previous Surgery History						
	a. Yes	20	37,7	11	40,7	9	34,6
	b. Not	33	62,3	16	59,3	17	65,4
7	Operation Actions						
	a. Herniotomy	17	32,1	11	40,7	6	23,1
	b. Laparatomi	16	30,2	5	18,5	11	42,3
	c. Appendectomy	6	11,3	4	14,8	2	7,7
	d. SCTP Elective	14	26,4	7	25,9	7	26,9

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Differences in preoperative anxiety scores in the treatment room in both study groups before getting preoperative nursing visitation

Table 2. Preoperative *State Trait Anxiety Inventory* (STAI-S) Score in the treatment room between the treatment and control groups at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

(STAI-S) preoperative in the treatment room	Treatment Groups	Control Group
Mean	41,12	44,92
Std. Deviation	7,10	8,56
Min-Max	25-55	26-62
Shapiro-Wilk normality test	*P* = 0.884	*P* = 0.973
Free sample T test	*P = 0.083*	

In the STAI-S treatment group, it was measured before the preoperative nursing visitation was carried out, as well as in the control group. It can be concluded that the preoperative anxiety in the treatment group before the preoperative nursing visitation and the control group were under the same level of anxiety conditions.

Differences in preoperative anxiety scores in the operating room reception room between the group receiving preoperative nursing visitation and the control group

The results of the analysis showed that *the Mann-Whitney* U test was *Pvalue<0.001, so it was concluded that there was a significant difference in preoperative anxiety in the treatment room between the treatment and control groups.* The results can be seen in table 3.

Table 3. Preoperative *State Trait Anxiety Inventory* (STAI-S) Score in the Operating Room Reception Room between the Treatment and Control Groups at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

(STAI-S) preoperative in the operating room reception room	Treatment Groups	Control Group
Mean	28,23	44,35
Std. Deviation	6,97	8,48
Min-Max	20-47	25-60
Shapiro-Wilk normality test	0,026	0,927
Mann-Whitney *U* Test	*P* < 0.001	

Difference in intraoperative anxiety scores between the group receiving preoperative nursing visitation and the control group

Table 4. Intraoperative *State Trait Anxiety Inventory* (STAI-S) Score between treatment and control groups at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

(STAI-S) intraoperative	Treatment Groups	Control Group
Mean	30,19	45,92
Std. Deviation	9,64	10.42
Min-Max	20-59	26-70
Shapiro-Wilk normality test	<0.001	0,991
Mann-Whitney *U* Test	*P* < 0.001	

The results of the analysis of *the Mann-Whitney U* test showed *a Pvalue<0.001, so it was concluded that there was a significant difference between* intraoperative anxiety in the treatment group and the control group.

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Difference in postoperative anxiety scores between the group receiving preoperative nursing visitation and the control group

Table 5. Postoperative *State Trait Anxiety Inventory* (STAI-S) Score between treatment and control groups at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

(STAI-S) postoperative	Treatment Groups	Control Group
Mean	22,45	35,38
Std. Deviation	3,82	9,63
Min-Max	20-35	22-54
Shapiro-Wilk normality test	<0.001	0,053
Mann-Whitney *U* Test	*P* < 0.001	

The results of the analysis *of the Mann-Whitney U* test showed *a Pvalue<0.001, so it was concluded that there was a significant difference between postoperative anxiety in the treatment group and the control group.*

Differences in perioperative anxiety in each phase (preoperative in the treatment room, preoperative in the operating room reception room, intraoperative, and postoperative) in the group that received preoperative nursing visitation.

Table 6. Results of *the Shapiro-Wilk normality* test and *Mann Whitney test* perioperative assessment data in the treatment group at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

Perioperative Ansias	N	*P*	Median	Average±S.B	*P*
Preoperative phase in the treatment room	27	0,884	42	41.12±7.10	
Preoperative phase in the operating room reception room	27	0,026	26	28.23±6.97	<0.001
Intraoperative Phase	27	<0.001	28	30.19±9.64	
Postoperative Phase	27	<0.001	20	22.45±3.82	

The results of the analysis with *the Friedman test* in the treatment group obtained a value of p<0.001 with the lowest average anxiety in the postoperative phase (22.45). Because of the p<0.001 value, it can be concluded that there are differences in perioperative anxiety in each phase (preoperative in the treatment room, preoperative in the operating room reception room, intraoperative, and postoperative) in the treatment group, or it can be said that there is a significant influence of preoperative nursing visitation on perioperative anxiety in the treatment group.

Table 7. Calculation (αBonferroni) of the results of the *Wilcoxon Test* analysis of the treatment group at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

Perioperative Ansias	Preoperative anxiety in the treatment room ***vs*** preoperative in the reception room Operating room	Preoperative versus *intraoperative* anesthesia in the treatment room	Preoperative versus *postoperative* anesthesia in the care room	Preoperative anxiety in the reception room Operating room *vs* intraoperative	Preoperative anxiety in the reception room Operating room *vs* postoperative	Intraoperative *vs* postoperative anxiety
P Initial	<0.001	0,001	<0.001	0,449	<0.001	<0.001
(αBonferroni)	0,0083	0,0083	0,0083	0,0083	0,0083	0,0083
Interpretation	Significant	Significant	Significant	Insignificant	Significant	Significant

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Since *the Post-Hoc test* involves several tests, the *Bonferroni Correction* with (*m*) number of tests 6, (αBonferroni) is 0.0083. The results of the analysis with *the Wilcoxon Test* showed a p< value of 0.001 and less than (αBonferroni) in the measurement of the preoperative phase anxiety in the operating room reception room to the preoperative phase anxiety in the treatment room, so it was concluded that the anxiety in the preoperative phase in the operating room reception room was different from the preoperative phase anxiety in the treatment room. The measurement of intraoperative phase anxiety to preoperative phase anxiety in the treatment room obtained a value of p< 0.001 and less than ($_{Bonferroni}$ α) so that it was concluded that anxiety during the intraoperative phase was different from anxiety during the preoperative phase in the treatment room. The measurement of postoperative phase anxiety to preoperative phase anxiety in the treatment room obtained a value of p< 0.001 and less than (αBonferroni) so that it can be concluded that anxiety during the postoperative phase is different from anxiety during the preoperative phase in the treatment room.

Differences in perioperative anxiety of elective surgical patients with spinal anesthesia in each phase (preoperative in the treatment room, preoperative in the operating room reception room, intraoperative, and postoperative) in the control group

Table 8. Results of *the Friedman* Test for perioperative anxiety in the control group at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

Perioperative Ansias	N	Median	Average±S.B	*P*
Preoperative phase in the treatment room	26	44,50	44.92±8.56	
Preoperative phase in the operating room reception room	26	43,50	44.35±8.48	<0.001
Intraoperative Phase	26	45,00	45.92±10.42	
Postoperative Phase	26	34.00	35.38±9.64	

The results of the analysis with *the Friedman* test in the control group obtained a value of p<0.001 with the lowest average anxiety in the postoperative phase (35.38). Because of the p<0.001 value, a *post-hoc test* is needed to determine where specific differences occur between groups or time. The results of the analysis with *the Wilcoxon Test* showed a value *of P*= 0.319 and greater than (αBonferroni) in the measurement of the preoperative phase anxiety in the operating room reception room to the preoperative phase anxiety in the treatment room so that it can be concluded that there is no difference in the anxiety in the preoperative phase in the operating room reception room to the preoperative phase anxiety in the treatment room Measurement of intraoperative phase anxiety to anxiety preoperative phase in the treatment room obtained a value *of P*= 0.489 and greater than (αBonferroni) so that there was no difference in anxiety.

Table 9. Calculation (αBonferroni) of the results of the *Wilcoxon Test analysis* of the control group at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

Perioperative Ansias	Preoperative anxiety in the treatment room ***vs*** preoperative in the reception room Operating room	Preoperative versus *intraoperative* anesthesia in the treatment room	Preoperative versus *postoperative* anesthesia in the care room	Preoperative anxiety in the reception room Operating room *vs* intraoperative	Preoperative anxiety in the reception room Operating room *vs* postoperative	Intraoperative *vs* postoperative anxiety
P Initial	0,319	0,489	<0.001	0,157	<0.001	<0.001
(αBonferroni)	0,0083	0,0083	0,0083	0,0083	0,0083	0,0083
Interpretation	Insignificant	Insignificant	Significant	Insignificant	Significant	Significant

The intraoperative phase versus the preoperative phase in the treatment room. The measurement of postoperative phase anxiety to the preoperative phase in the treatment room

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was obtained p< 0.001 and less than (αBonferroni) so that there was a difference in postoperative anxiety to preoperative phase anxiety in the treatment room.

Difference in mean *score of Intraoperative/Postoperative Nausea Vomiting* of elective surgery patients with spinal anesthesia in the nursing visitation group and the control group

Table 10. *Intraoperative Nausea Vomiting* (IONV) Score of elective surgery patients with spinal anesthesia treatment and control group at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

IONV/PONV	IONV		PONV	
	Treatment Groups	Control Group	Treatment Groups	Control Group
Mean	1,29	2,34	1,15	1,55
Std. Deviation	0,73	1,93	0,73	1,16
Min-Max	1 - 3,75	1 - 7	1 – 4,8	1 - 5
Shapiro-Wilk normality test	<0.001	<0.001	<0.001	<0.001
Mann-Whitney *Test*	0,027		0,059	

In the IONV variable of *the Mann-Whitney* test, a *Pvalue* of 0.027 < α 0.05 was obtained, so there was a difference *in the score of Intraoperative Nausea Vomiting* of elective surgery patients with spinal anesthesia between the treatment group that received preoperative nursing visitation and the control group.

The PONV variable showed *a Pvalue* of 0.059 > α 0.05, which can be concluded that there was no difference in the score *of Postoperative Nausea Vomiting* of elective surgical patients with spinal anesthesia between the treatment group that received preoperative nursing visitation and the control group.

Difference in Mean Score of Postoperative Pain of elective surgery patients with spinal anesthesia in the group receiving nursing visitation and the control group

Table 11. Postoperative Pain Score of elective surgery patients with spinal anesthesia treatment and control group at Mardi Waluyo Blitar Hospital, July 29 to August 3, 2024

Postoperative Pain	Treatment Groups	Control Group
Mean	4,32	6,47
Std. Deviation	1,32	1,88
Min-Max	3 – 7,5	3 - 10
Shapiro-Wilk normality test	0,004	0,362
Mann-Whitney *Test*	<0.001	

The results of the analysis showed that the Mann-Whitney U test was a P value of <0.001 < α 0.05, which can be concluded that there was a difference in the postoperative pain score of elective surgery patients with spinal anesthesia between the treatment group that received preoperative nursing visitation and the control group.

DISCUSSION

Differences in preoperative anxiety scores in the treatment room in both study groups before getting preoperative nursing visitation

Based on the results of the study, the average STAI-S of the treatment group before being given preoperative nursing vision was 41.12±7.10, while the average STAI-S control group was 44.92±8.56. The results of the analysis of the free sample T test were *P value* 0.083 > α 0.05, which concluded that there was no difference in preoperative anxiety in the treatment room between the treatment group and the control group. The mean preoperative anxiety score measured in the treatment group and the control group before receiving the preoperative nursing visitation did not have a significant difference. These results showed

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that both research groups had comparable levels of preoperative anxiety before. These findings are consistent with the study by Aydal et al. (2023), which reported that the average STAI-S score before the preoperative nursing visitation intervention was 43.14±9.06 in the treatment group and 45.22±8.31 in the control group. Similarly, Bagheri et al. (2018) found that the average STAI-S score before the intervention was 45.6±9 in the treatment group and 48.6±9.7 in the control group. Additionally, Cengel et al. (2022) reported average STAI-S scores of 42.38±4.96 in the treatment group and 42.53±5.63 in the control group. The STAI-S scores in these studies are comparable to the scores obtained in this study, which were 41.12±7.10 in the treatment group before the visitation and 44.92±8.56 in the control group. The absence of significant differences in preoperative anxiety scores, as indicated by the results of the independent T test (P = 0.083 > α 0.05), suggests that both groups had comparable characteristics from the start. This uniform condition increases the reliability of future research findings, because it reduces the possibility of research bias and the influence of confounding variables in influencing research results.

Differences in preoperative anxiety scores in the operating room reception room in elective surgery patients with spinal anesthesia between the group receiving nursing visitation and the control group

Based on the research data in Table 4.3, it shows that there is a significant difference in the preoperative anxiety score (STAI-S) between the treatment group and the control group. The treatment group that received the preoperative nursing visitation had a lower average STAI-S score (*Mean* = 28.23) compared to the control group that did not receive the preoperative nursing visitation (*Mean* = 44.35). The results of the analysis *of the Mann-Whitney* U test showed a P value < 0.001, which shows that this difference is statistically significant. The difference in preoperative anxiety in the operating room reception room in the treatment and control groups was due to the preoperative nursing visitation provided by the researcher. The results of this study are in line with the research of Bagheri et.al (2018) which showed that there was a difference in the average preoperative STAI-S between the treatment group and the control group. The average STAI-S in the treatment group was 50.9±10.7 and the treatment group was 42.3±9.2 with a significance level of <0.05. Another study from Aydal (2019) stated that the average STAI-S of the treatment group was 43.14±9.06, and the control group was 43.44±7.85 with a significance level of P<0.001. Preoperative anxiety is a common condition experienced by patients before undergoing surgery, often due to uncertainty and fear of the outcome of surgery as well as potential complications. Nelson et al. (2021) stated that information uncertainty and lack of effective communication between staff and patients are the main triggers for preoperative anxiety. Preoperative nursing visitation helps reduce this anxiety by providing clear information about the procedure to be undertaken, thereby reducing uncertainty and giving patients a sense of control. These findings are in line with research by Haugen et al. (2020) which shows that preoperative health education can significantly reduce anxiety by providing patients with a better understanding of the medical procedures to be performed. Preoperative nursing visitations that provide emotional, social, and health education support can effectively lower preoperative anxiety. Decreased levels of preoperative anxiety not only have an impact on the psychological comfort of patients but can also accelerate postoperative recovery. In the context of services in hospitals, the implementation of preoperative nursing visitation can improve the quality of health services provided.

Differences in intraoperative anxiety scores of elective surgery patients with spinal anesthesia in the group receiving nursing visitation and the control group

Based on the results of the study in table 4.4, the intraoperative *State Trait Anxiety Inventory* (STAI-S) score in the group that received preoperative nursing visitation had an average value of 30.19 with a standard deviation of 9.64. In contrast, the control group that

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did not receive visitation had a higher average score, which was 45.92 with a standard deviation of 10.42. The non-parametric statistical test using *Mann-Whitney* U showed a P value < 0.001, indicating a significant difference between the two groups. The difference in the average intraoperative anxiety is partly due to nursing interventions, especially preoperative nursing visitations provided by researchers. The preoperative nursing visitation in this research is not only carried out in the treatment room area but the patient always receives assistance from the researcher as an operating room nurse during the surgery. This emphasizes the importance of mental assistance during the patient's surgery. The results of this study are in line with previous research., Mitchell (2021) found that high intraoperative anxiety can negatively impact the course of surgery, including causing complications such as increased blood pressure, unstable heart rate, and increased need for anesthetic drugs. This study shows that intraoperative anxiety management is an important factor that needs to be considered to improve safety and surgical outcomes. Furthermore, Roberts et al. (2023) found that an unfriendly and intimidating operating environment can increase intraoperative anxiety. They suggest that modifications to the operating environment to make it more comfortable, as well as interventions that focus on the patient's emotional needs, can help reduce anxiety during surgery.

Difference in postoperative anxiety scores of elective surgery patients with spinal anesthesia in the group receiving nursing visitation and the control group

The results of this study showed a significant difference in the level of postoperative anxiety between patients who received preoperative nursing visitation and the control group who did not receive the intervention. The average postoperative STAI-S score in the treatment group was 22.45, which was significantly lower than that of the control group which had an average score of 35.38. A smaller standard deviation in the treatment group (3.82) compared to the control group (9.63) also showed that the variability of the level of anxiety was lower in patients receiving nursing visitation, indicating the consistency of the effects of the intervention. The results of this study provide a strong basis for the implementation of the preoperative nursing visitation program as a standard in preoperative patient management. Significant improvements in patients' psycho-emotional outcomes suggest that preoperative nursing visitation not only reduces anxiety but also has the potential to improve overall clinical outcomes. Huang et al. (2023) reported that structured nursing interventions, including preoperative visits featuring detailed explanations of surgical procedures and relaxation techniques, are effective in reducing both preoperative and postoperative anxiety. Patients who are mentally well-prepared before surgery exhibit higher satisfaction with the care provided and tend to recover more quickly. This study underscores the effectiveness of preoperative nursing visits in lowering postoperative anxiety levels. The significant decrease in postoperative STAI-S scores observed in the intervention group emphasizes the vital role of nurses in preparing patients mentally and emotionally for surgery.

Differences in perioperative anxiety of elective surgical patients with spinal anesthesia in each phase (preoperative in the treatment room, preoperative in the operating room reception room, intraoperative, and postoperative) in the group receiving preoperative nursing visitation

The results showed a significant effect of preoperative nursing visitation on the decrease in perioperative anxiety in patients undergoing elective surgery with spinal anesthesia. Analysis using *the Friedman test* in the treatment group showed a consistent decrease in anxiety levels, starting from the preoperative phase in the treatment room to the postoperative phase. The lowest anxiety score was recorded in the postoperative phase with a median of 20 and an average standard ± deviation of 22.45 ± 3.82. The Friedman test applied showed a *P-value* < 0.001, indicating a significant difference in perioperative anxiety at

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various phases. These results were corroborated by Wilcoxon's analysis**,** which showed that the most significant difference occurred between anxiety in the preoperative phase in the treatment room compared to other phases, specifically the postoperative phase (P<0.001). The results of this study are in line with research by Thompson et al. (2021) showing that patients who received preoperative nursing interventions had lower levels of anxiety, which had a positive impact on perioperative outcomes and postoperative recovery. Another study by Anderson et al. (2022) also showed that comprehensive preoperative education and emotional support provided by nurses can reduce anxiety by reducing patient uncertainty regarding the procedure to be undertaken. Wang et al. (2023) also mentioned that the information provided during preoperative visitation was shown to reduce uncertainty and increase a sense of control in patients, thereby lowering anxiety.

Although the results of the study show significant effectiveness, a critical evaluation must be carried out regarding the implementation of nursing visitation. It is worth considering further modifications and adaptations of this program to increase effectiveness in the intraoperative phase, where anxiety tends to increase. This study proved that preoperative nursing visitation significantly reduced perioperative anxiety in elective surgery patients with spinal anesthesia. The treatment group that received this intervention showed a more consistent and significant decrease in anxiety than the control group that did not receive the intervention. Therefore, the integration of these interventions into clinical practice is recommended to improve perioperative care outcomes. Although the results of the study show a significant influence, a critical evaluation must be carried out regarding the implementation of nursing visitation. It is worth considering further modifications and adaptations of this program to increase effectiveness in the intraoperative phase, where anxiety tends to increase.

Differences in perioperative anxiety of elective surgical patients with spinal anesthesia in each phase (preoperative in the treatment room, preoperative in the operating room reception room, intraoperative, and postoperative) in the control group

The results of the study in the control group, which did not receive a preoperative nursing visitation intervention, found that the level of anxiety remained high throughout the perioperative phase, with a relatively small decrease in the postoperative phase. The results of the Friedman test also showed a significant difference (P<0.001) in the level of anxiety in various perioperative phases in the control group. However, the decrease in anxiety observed in the postoperative phase was not as strong as the decrease seen in the treatment group. The analysis of the Wilcoxon Test showed that significant differences in anxiety occurred between the preoperative phase in the treatment room and the postoperative phase (P<0.001), as well as between the intraoperative phase and the postoperative phase (P<0.001). There was no significant difference between the other phases, such as the preoperative phase in the treatment room compared to the preoperative phase in the operating room reception room and the intraoperative phase. The analysis of the Wilcoxon Test showed that significant differences in anxiety occurred between the preoperative phase in the treatment room and the postoperative phase (P<0.001), as well as between the intraoperative phase and the postoperative phase (P<0.001). There was no significant difference between the other phases, such as the preoperative phase in the treatment room compared to the preoperative phase in the operating room reception room and the intraoperative phase. Bonferroni correction was applied to reduce the risk of type I errors, and the test results showed that a significant decrease in anxiety occurred only in the transition from the preoperative phase to the postoperative phase, which could be due to the completion of the operation and the reduction of uncertainty.

The results of this study showed that the level of anxiety remained high throughout the perioperative phase in the control group that did not receive a preoperative nursing visitation

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intervention. This is in line with the findings of recent research highlighting the importance of perioperative anxiety management to reduce the risk of complications and accelerate patient recovery. This corroborates the finding that poorly managed anxiety can worsen the postoperative experience, ultimately affecting the overall patient recovery process. Another study by Johnson et al. (2023) supports the importance of nursing interventions that focus on the management of anxiety. The study showed that patients who received a comprehensive preoperative nursing intervention, including a detailed explanation of the procedure and surgical environment, showed a significant decrease in anxiety at all perioperative phases compared to the control group. The study showed a significant decrease in anxiety was only seen in the transition from the preoperative phase to the postoperative phase in the control group, indicating that preoperative nursing interventions may play a key role in reducing anxiety at critical stages. These findings indicate that without specific interventions such as preoperative nursing visitations, patient anxiety tends to remain high during the pre and intraoperative phases. Research by Brown et al. (2023) suggests that high anxiety can contribute to increased perioperative complications and slow recovery.

Differences in Intraoperative *Nausea Vomiting* scores of elective surgery patients with spinal anesthesia in the group receiving nursing visitation and the control group

Based on the results of the above study, it was found that there was a difference *in the score of Intraoperative Nausea Vomiting* (IONV) in elective surgery patients with spinal anesthesia between the group that received preoperative nursing visitation and the control group. The results of the statistical test showed that the group that received nursing visitation had a lower IONV score (*Mean* = 1.29) compared to the control group (*Mean* = 2.34). The *Mann-Whitney* test showed significant results with a value of P = 0.027 < α 0.05, which indicates a difference between the two research groups. Preoperative nursing visitation plays an important role in reducing patients' anxiety and improving their comfort during the surgical process. Preoperative nursing visitations, including education and emotional support, have been shown to be effective in reducing anxiety and nausea associated with surgery and anesthesia. Research by Wang et al. (2021) found that comprehensive preoperative education can reduce the incidence of postoperative nausea and vomiting in patients undergoing surgery with spinal anesthesia. In addition, the theory of coping stress by Lazarus and Folkman updated by Chen et al. (2020) emphasizes that interventions that reduce the perception of threat or uncertainty, such as nursing visitation, can significantly decrease physiological stress responses, including nausea and vomiting.

Differences in Postoperative *Nausea Vomiting* scores of elective surgical patients with spinal anesthesia in the group receiving nursing visitation and the control group

Based on the results of the study that has been conducted, *the Postoperative Nausea Vomiting* (PONV) score in the treatment group that received preoperative nursing visitation has a *mean* of 1.15 with a standard deviation of 0.73. Meanwhile, the control group had a *Mean* of 1.55 with a standard deviation of 1.16. Although there was a difference *in the mean* between the two groups, the results *of the Mann-Whitney* statistical test showed a value *of P* = 0.059, which was greater than α = 0.05. This means that the difference is not statistically significant, so it can be concluded that there is no significant difference in the incidence of PONV between the group that receives the preoperative nursing visitation and the control group. The results of this study are relevant to the theory of postoperative adaptation which states that after surgery, patients begin to adapt to new conditions, including a decrease in threat perception and stress. This adaptation occurs gradually and helps the patient's body and mind adjust to postoperative conditions, which can reduce physiological stress responses such as PONV. Therefore, this adaptation effect could be the reason why both groups in the study showed similar PONV results. Adaptation to the postoperative environment reduces threat perception, leading to a decrease in physiological stress responses, including PONV

(Thompson & Nowakowski, 2020). Another source mentions that once the surgery is completed, the main source of stress is significantly reduced. In the recovery phase, residual stress may not be strong enough to cause a noticeable difference in the incidence of PONV. This natural recovery process may explain why additional interventions such as nursing visitation do not have a significant impact on PONV. Reduction of postoperative residual stress minimizes the differential impact on clinical outcomes such as PONV.

Difference in postoperative pain scores of elective surgery patients with spinal anesthesia in the nursing visitation group and control group

Based on the data obtained, there was a significant difference in postoperative pain scores between the group that received nursing visitation and the control group. The group that received nursing visitation showed a lower average pain score (4.32) compared to the control group (6.47). This is supported by the results of the *Mann-Whitney test* which shows a P value of < 0.001, indicating that this difference is statistically significant. This study confirms that preoperative nursing visitation has an important influence in reducing the intensity of pain experienced by patients after elective surgery with spinal anesthesia.

The results of this study underscore the importance of preoperative nursing visitation as part of an effective pain management strategy. Based on pain management theory, this strategy not only reduces anxiety but also prepares patients mentally and emotionally for surgery, which ultimately affects their perception of pain. Furthermore, a study conducted by Nguyen et al. (2022) showed that nursing visitation conducted effectively can reduce the prevalence of moderate to severe pain in postoperative patients, suggesting that this intervention should be an integral part of preoperative protocols in hospitals. With the right support, patients can experience a more comfortable recovery process and be free from excessive pain. Therefore, investment in nurse training, further research, and technology integration should be a priority to maximize the benefits of these interventions.

CONCLUSION

Preoperative nursing visitation significantly lowered perioperative anxiety, proved to be effective in reducing the incidence of intraoperative nausea and vomiting (IONV), and proved an effective effect in reducing postoperative pain. However, in this study, there was no significant difference in the level of postoperative nausea and vomiting (PONV) between the treatment and control groups.

The recommendation is that preoperative nursing visitation may be considered as a standard protocol for reducing anxiety, IONV, and postoperative pain in patients undergoing elective surgery with spinal anesthesia. However, for PONV, more research is needed to explore other factors that may affect the results.

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