

Effect of High-quality Nursing Care Combined with Psychological nursing on Intraoperative Stress and Postoperative Negative Emotions of Patients Undergoing General Anesthesia

Xiaohong Tao^a, Li Zha^{b*}, Qinghua Zhou^{c*}

Abstract

Objective: To evaluate the efficacy of high-quality nursing with psychological nursing on intraoperative stress and postoperative negative emotions of patients undergoing general anesthesia.

Methods: Ninety patients undergoing general anesthesia in our hospital between January 2019 and January 2020 were identified as study subjects and equally assigned to the control group and the study group based on the order of admission. The study group received high-quality nursing with psychological nursing, and the control group adopted conventional care. The relevant clinical indicators were compared between the two groups.

Results: The study group obtained significantly better intraoperative stress indicators, higher scores of the MOS 36-item short form health survey (SF-36) and higher satisfaction than control group after the intervention ($P < 0.05$). The study group outperformed the control group in the Self-Rating Anxiety Scale (SAS) and Self-Rating Depression Scale (SDS) scores ($P < 0.05$). The study group yielded superior outcomes to the control group in body temperature after intervention and at 1 hour during operation ($P < 0.05$). **Conclusion:** High-quality nursing with psychological nursing for patients undergoing general anesthesia can effectively increase nursing satisfaction, relieve patients' stress, and eliminate negative emotions, which is worthy of promotion and application.

Keywords: quality nursing care, psychological nursing, general anesthesia; intraoperative stress, negative emotions

Introduction

To further investigate the efficacy of high-quality nursing care with psychological nursing on intraoperative stress and postoperative negative emotions of patients undergoing general anesthesia, 90 patients were identified as research subjects.

Literature review

Currently, the demand for high standards of clinical care is increasing with the progress of medical technology and improvements in living quality [1, 2]. General anesthesia and its

postoperative complications are of great concern in clinical research. Previous studies have reported the effectiveness of positive nursing measures for the unexpected occurrence of intra- and postoperative conditions [3-5]. Notwithstanding the mitigation of pain and uneventfulness of surgery, the prolonged stay of anesthetic drugs postoperatively shows a propensity for symptoms such as confusion and drowsiness, and operative trauma aggravates patients' pain, which results in severe psychological and physiological stress, and hampers postoperative recovery [6-8]. It has been found that positive nursing interventions can effectively alleviate patients' negative emotions, pain, and stress response. High-quality nursing care combined with psychological nursing received extensive application in postoperative nursing and has obtained considerably desirable outcomes [9, 10].

^aSurgery department, Hai'an Peoples' Hospital, 17 Zhongba Middle Road, Hai'an City, Jiangsu Province 226600, China

^bOperating Room, Jiangyin Hospital of Traditional Chinese Medicine, Jiangyin, China

^cOperating room, Dongtai People's Hospital, Jiangsu Province, Dongtai, Jiangsu, China

*For Correspondence. Li Zha; Qinghua Zhou; E-mail: ronghanjiaopo1498@163.com

1. Materials and Methods

Ethical statement

This study was approved by the Dongtai People's Hospital ethics committee, and all methods were performed in accordance with the Declaration of Helsinki. Patients and their families were notified of the objectives and procedures of this study and signed the informed consent form.

1.1 General information

Totally 90 patients undergoing general anesthesia in our hospital between January 2019 and January 2020 were identified as study subjects and distributed to the control group and the study group based on the order of admission, with 45 cases in each group. This study used stratified sampling by capturing key population characteristics in the sample, to produce characteristics in the sample proportional to the overall population.

1.2 Inclusion criteria

① Aged ≥ 18 years old; ② With complete clinical data; ③ Patients and their families signed the informed consent form.

1.3 Exclusion criteria

① With malignancies; ② With cognitive disorders; ③ With surgical contraindications.

1.4 Methods

Conventional nursing was given to the control group. Preoperatively, patients were provided with a comfortable environment and health education and informed in detail about the precautions of surgery and the purpose of the treatment. With appropriate operating room temperature and humidity, the nursing staff assisted the anesthesiologist with intraoperative fluid infusion and closely monitored the patient's vital signs. Postoperatively, the nursing staff also formulated rehabilitation exercises regimens for patients and provided them with psychological support.

The study group adopted high-quality nursing care combined with psychological nursings. ① A detailed record of the patients' actual situation was obtained by the nursing staff to assess their psychological status and develop reasonable psychological care plans. ② Patients were given preoperative information about their disease, as well as the precautions and successful cases of cardiac surgery to improve their cognition of cardiac surgery and their diseases. ③ Clinical psychological assessment was conducted by nursing staff for patients with anxiety and

depression, and targeted psychological counseling programs were developed according to patients' conditions. Patients with severe anxiety or depression were given repeated psychological counseling to alleviate their negative emotions. ④ The nursing staff should accompany patients for preoperative physical examination to assess their anesthesia tolerance, with close attention to patients at higher anesthesia risk, and informed the anesthesiologist of clinical data. ⑤ The operation table was heated with an electric blanket 1 hour before surgery to maintain an appropriate temperature. The operating table was heated with an electric blanket 1 hour before surgery to maintain an appropriate temperature. ⑥ The patients' vital signs were closely monitored during surgery, with their body temperature maintained between 36.2°C and 37.5°C; ⑦ Patients were provided with a clean, sanitary, and tidy treatment environment after surgery, and instructed to take medicine regularly and quantitatively. Constant observation of patients' clinical manifestations was performed. ⑧ Patients were given dietary instruction to maintain balanced nutrition, with appropriate amount of protein and vitamins and no intake of spicy and cold food.

1.5 Observational indicators

Stress response indicators before and after surgery between the two groups include epinephrine, noradrenaline, and C-reactive protein.

The MOS 36-item short-form health survey (SF-36) with 100 points in total was used to assess patients' social, somatic, role, and cognitive functions. A higher score indicated better life quality.

Patients' satisfaction after nursing was investigated by using the patient's clinical satisfaction questionnaire with a total score of 100 points developed by our department. A higher score suggested better satisfaction.

The Self-Rating Anxiety Scale (SAS) was employed to evaluate the patients degree of anxiety before and after intervention, with 50 points in total. The score is proportional to the patients' anxiety.

The Self-Rating Depression Scale (SDS) with a total score of 55 points was used to assess the depression of patients before and after intervention. The score is proportional to the patients' depression.

Three variables T_0 , T_1 , and T_2 were set, corresponding to patients' conditions of each time point i.e. before treatment, 1 hour during operation, and after operation, respectively, and the

temperature of patients at different time points was monitored and recorded.

1.6 Statistical analyses

SPSS 20.0 software was used for data analysis and GraphPad Prism 7 (GraphPad Software, San Diego, USA) was used to visualize the data into figures. Measurement data and enumeration data obtained in the study were analyzed by χ^2 test, t-test, and normality test. $P < 0.05$ indicated a statistically significant difference.

2 Results

2.1 Comparison of general information

The two groups obtained comparable general information ($P > 0.05$). See Table 1.

2.2 Comparison of surgical stress indicators

The two groups presented comparable stress indicators before intervention ($P > 0.05$). The study group presented better postoperative stress indicators than the control group after intervention ($P < 0.05$). See Table 2.

2.3 Comparison of SF-36 scores

The study group had significantly better SF-36 scores after the intervention than the control group ($P < 0.05$). See Table 3.

2.4 Comparison of nursing satisfaction

Higher nursing satisfaction was witnessed in the study group in contrast to the control group ($P < 0.05$). See Figure 1.

2.5 Comparison of SAS scores

The study group obtained lower SAS scores than the control group after intervention ($P < 0.05$). See Figure 2.

2.6 Comparison of SDS scores

The study group obtained better SDS scores than the control group after intervention ($P < 0.05$). See Figure 3.

2.7 Comparison of body temperature at different time points

The two groups showed no great disparity in body temperature before intervention ($P > 0.05$). Patients in the study group were recorded with higher body temperature at 1 hour during operation and after operation than the control group ($P < 0.05$). See Figure 4.

3 Discussion

Stress response refers to psychological, physical,

and behavioral changes caused by various stressors in the social environment [11-13]. In the perioperative period, patients mostly experience negative emotions, including anxiety, depression, fear, and even sleep disorders such as early awakening and insomnia in severe cases, which are all considered stress responses. General anesthesia plays an important role in surgery, during which symptoms such as heart rate changes and increased blood pressure may occur due to an unfamiliar environment and nervousness. A low body temperature may slow down the metabolism of anesthetic drugs, which prolongs the recovery time [14-16]. Furthermore, residual anesthetic drugs may predispose the patients to adverse reactions such as respiratory distress and decreased pulmonary ventilation. Sputum suction, extubation, and other medical operations may lead to cardiovascular reactions, which can be life-threatening in severe cases after the effect of anesthetic drugs wears off [17-19]. Therefore, effective nursing measures for patients under general anesthesia during the perioperative period are of great significance. As an emerging perioperative nursing model, the main purpose of high-quality care combined with psychological nursing is to reduce patient's stress response and the impact of surgery on normal physiological functions, to further promote patients' postoperative recovery [20-22]. Patients receiving this nursing modality are provided with knowledge and precautions related to diseases and anesthesia to relieve their negative emotions, and establish their confidence in face of the disease. During the operation, the temperature and humidity of the operating room, temperature of the infusion, and the body temperature of patients were properly regulated to reduce bleeding and adverse events such as wound infection [23, 24]. Patients were given analgesic drugs timely after surgery to mitigate their pain. In addition, high-quality care combined with psychological nursing features a safety profile, with effective and rapid efficacy in shortening patients' hospitalization time, improving nursing satisfaction, and facilitating a harmonious nurse-patient relationship. The results showed better postoperative epinephrine than the control group ($P < 0.05$), which conformed to the outcomes of the study by TongYongsheng et al [25]. They noted that "the epinephrine indicators of the study group of (105.63 ± 8.27) pmol/L were significantly better than that of (174.58 ± 9.67) pmol/L in the control group after high-quality care combined with psychological nursing ($P < 0.05$)", suggesting that high-quality nursing care combined

with psychological nursing could promote postoperative recovery, alleviate their stress response, and produce a significant nursing efficiency. The limitation of this study lies in the absence of a large sample size, which will be expanded in future studies to provide more reliable conclusions.

Study implications

The implementation of high-quality nursing care combined with psychological nursing in the perioperative period of general anesthesia patients can eliminate their negative emotions, reinforce nursing satisfaction and quality of life, and facilitate a harmonious nurse-patient relationship, which merits clinical promotion.

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Table 1. Comparison of General Information [n (%)]

	Study group (n = 45)	Control group (n = 45)	χ^2 or t	P
Gender			0.044	0.833
Male	21 (46.67)	22 (48.89)		
Female	24 (53.33)	23 (51.11)		
Age (years)	30.89 ± 3.86	31.08 ± 3.67	0.239	0.811
BMI (kg/m ²)	26.14 ± 1.67	25.93 ± 1.86	0.563	0.574
Disease Type				
OB/GYN	15 (33.33)	14 (31.11)	0.050	0.822
Neurology	16 (35.56)	17 (37.78)	0.047	0.827
Orthopedic	14 (31.11)	14 (31.11)	0.000	1.000
Education Level				
Primary school or below	9 (20.00)	8 (17.78)	0.072	0.788
Junior high school	14 (31.11)	16 (35.56)	0.200	0.655
High School and Secondary School	15 (33.33)	16 (35.56)	0.049	0.824
College degree or above	7 (15.56)	5 (11.11)	0.384	0.535
Smoking			0.049	0.824
Yes	30 (66.67)	29 (64.44)		
No	15 (33.33)	16 (35.56)		
Alcohol consumption			0.177	0.673
Yes	22 (48.89)	24 (53.33)		
No	23 (51.11)	21 (46.67)		
Residence			0.182	0.670
Town	27 (60.00)	25 (55.56)		
Rural	18 (40.00)	20 (44.44)		

Table 2. Comparison of Surgical Stress Indicators ($\bar{X} \pm s$)

Group	N	Epinephrine (pmol/L)		Norepinephrine (pmol/L)		C-reactive protein (ng/L)	
		Before surgery	After surgery	Before surgery	After surgery	Before surgery	After surgery
Study group	45	52.33 ± 5.84	101.26 ± 14.33	139.98 ± 19.65	150.32 ± 20.11	5.81 ± 1.42	54.33 ± 9.67
Control group	45	52.55 ± 5.75	169.32 ± 16.99	140.21 ± 19.11	172.25 ± 26.58	5.76 ± 1.49	95.11 ± 15.23
T		0.180	20.541	0.056	4.413	0.162	15.163
P		0.857	< 0.001	0.955	< 0.001	0.870	< 0.001

Table 3. Comparison of SF-36 Scores ($\bar{X} \pm s$)

Group	N	Cognitive function	Social function	Mental function	Physical function	Overall Function
Study group	45	81.35 ± 6.9	83.27 ± 6.3	82.66 ± 7.9	83.61 ± 8.1	82.33 ± 9.2
Control group	45	64.31 ± 5.3	64.12 ± 4.9	66.11 ± 6.3	66.22 ± 5.8	67.25 ± 6.8
T		13.137	16.095	10.987	11.709	8.842
P		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

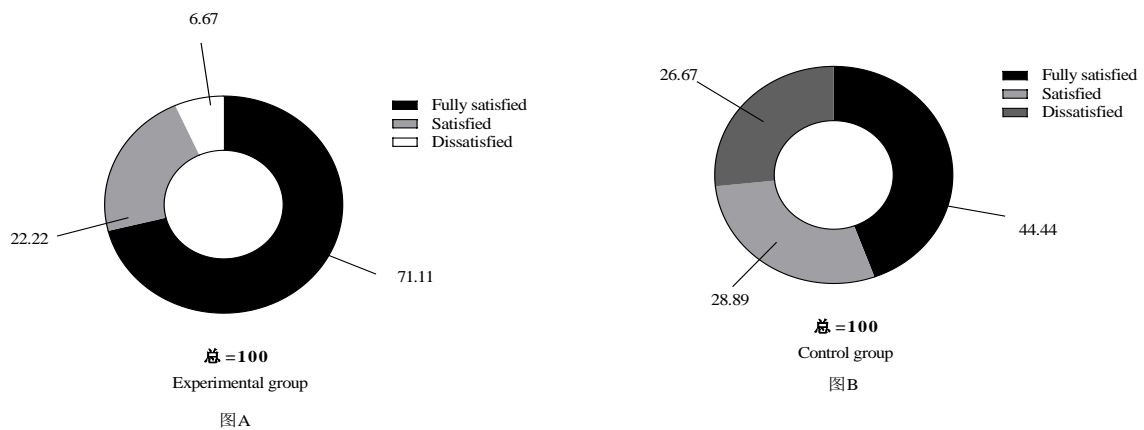


Figure 1. Comparison of Nursing Satisfaction [n (%)]

Note: Figure A is the expression of nursing satisfaction of study group; Figure B is the expression of nursing satisfaction of control group;

In study group, the rate of being fully satisfied was 71.11% (32/45), the rate of being partially satisfied 22.22% (10/45), dissatisfaction rate 6.67% (3/45), and the overall satisfaction rate was 93.33% (42/45);

In control group, the rate of being fully satisfied was 44.44% (20/45), the rate of being partially satisfied 28.89% (13/45), the dissatisfaction rate 26.67% (12/45), and the overall satisfaction rate was 73.33% (33/45);

There was a significant difference between the two groups after care ($\chi^2 = 6.480, P = 0.011$).

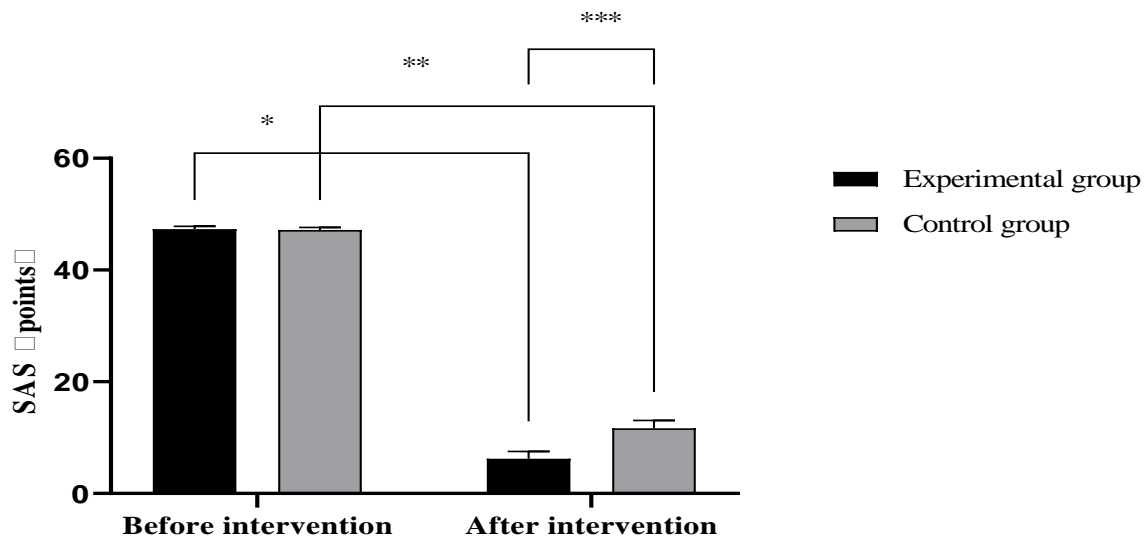


Figure 2. Comparison of SAS Scores before and after Intervention ($\bar{X} \pm s$)

Note: The abscissa indicates study group and control group after intervention, and the ordinate indicates SAS scores;

The SAS score of study group before intervention was (47.33 ± 0.51) points and (6.21 ± 1.33) points after intervention.

The SAS score of the control group before intervention was (47.17 ± 0.48) points and (11.66 ± 1.43) points after intervention.

* indicated that there was a significant difference in SAS scores of study group before and after intervention ($t = 193.650, P = 0.000$);

** indicated that there was a significant difference in SAS scores of control group before and after intervention ($t = 157.920, P = 0.000$);

*** stated that there was a significant difference in SAS scores after intervention between the two groups ($t = 18.720, P = 0.000$).

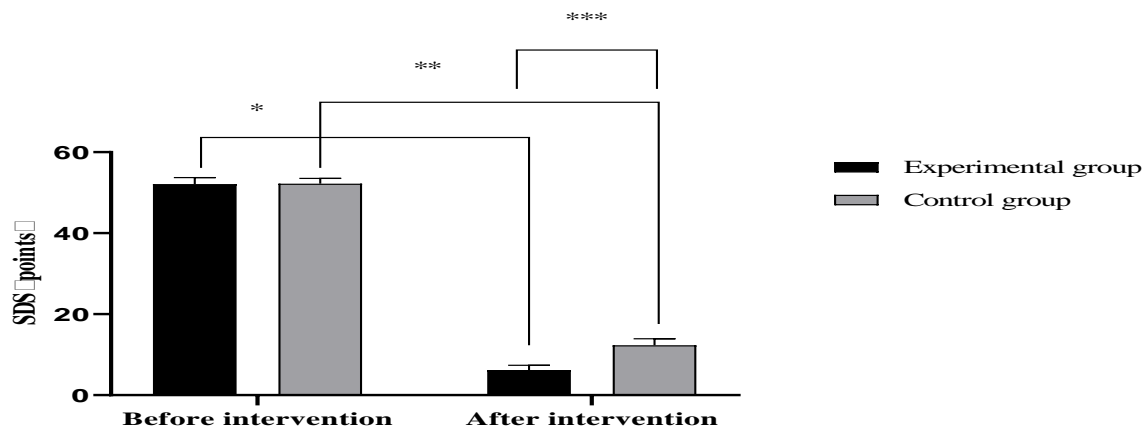


Figure 3. Comparison of SDS Scores before and after Intervention ($\bar{X} \pm s$)

Note: The abscissa indicates study group and control group after the intervention, and the ordinate indicates the SDS score;

The SDS scores of study group before intervention was (52.13 ± 1.6) points and (6.18 ± 1.2) points after intervention.

In control group, the SDS score before intervention was (52.21 ± 1.3) points and (12.33 ± 1.6) points after intervention;

* indicated that there was a significant difference in SDS scores of study group before and after intervention ($t = 154.120$, $P = 0.000$);

** indicated that there was a significant difference in SDS scores of control group before and after intervention ($t = 129.767$, $P = 0.000$);

*** indicated that there was a significant difference in SDS scores after intervention between the two groups ($t = 20.627$, $P = 0.000$).

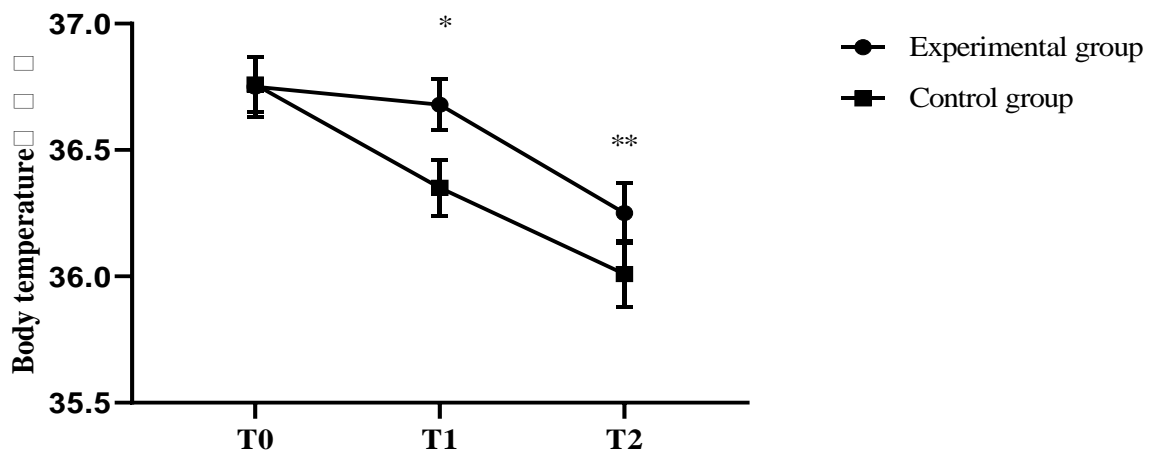


Figure 4. Comparison of Body Temperature at Different Time Points ($\bar{X} \pm s$)

Note: The abscissa respectively represents time points T_0 , T_1 and T_2 , and the ordinate represents the body temperature, °C;

The body temperatures at T_0 , T_1 and T_2 in study group were respectively (36.75 ± 0.12) °C, (36.68 ± 0.10) °C and (36.25 ± 0.12) °C.

In control group, the body temperatures at T_0 , T_1 and T_2 were respectively (36.76 ± 0.11) °C, (36.35 ± 0.11) °C and (36.01 ± 0.13) °C.

* indicated that there was a significant difference in body temperature at T_1 between two groups ($t = 14.891$, $P = 0.000$);

** stated that there was a significant difference in body temperature at T_2 between two groups ($t = 9.100$, $P = 0.000$).