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Original Article

Analysis on control of humanized nursing over surgical stress and postoperative infection in operating room nursing

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Abstract: Objective: It is aimed to analyze the influence of humanized nursing model on the occurrence rate of postoperative infection and surgical stress in operating room nursing. Methods: 80 operation patients who were admitted to our hospital were selected as objects of study and divided into 2 groups through the method of random number table, including 40 patients in control group receiving routine nursing and 40 patients in observation group receiving humanized nursing, so as to compare the changes of diastolic blood pressure, systolic blood pressure and heart rate one day before operation and before anesthesia, the scores of Zung Self-Rating Anxiety Scale (SAS) and Zung Self-Rating Depression Scale (SDS) before and after intervention, the situation of nursing satisfaction and the occurrence rate of postoperative infection in two groups. Results: (1) The diastolic blood pressure, systolic blood pressure and heart rate of observation group were lower than those of control group (P<0.05). (2) The SAS and SDS scores of observation group were lower than those of control group (P<0.05). (3) The total nursing satisfaction of observation group was higher than that of control group (P<0.05). (4) The occurrence rate of postoperative infection in observation group was much lower than that in control group (P<0.05). Conclusion: The application of humanized nursing model to operating room nursing was conducive to reducing the occurrence rate of postoperative infection, relieving the surgical stress, improving the psychological states of patients and enhancing the nursing satisfaction.

Keywords: Operating room, routine nursing, humanized nursing, surgical stress, infection control

Introduction

The operating room is not only an important place for operations, but also a key technical section in hospital [1]. Due to the particularity of operations, the patients need to suffer great physiological pain and bear great psychological stress, which will easily cause negative emotions, such as fear, disturbance and anxiety, etc. Thus, the therapeutic effect of operations will be affected to a certain extent [2, 3].

With the unceasing enhancement of social development level, people have obtained higher recognition about the pathogenesis and physiopathology of diseases and the medical model has been transformed to biological-psychological-social medical models gradually [4, 5]. Due to the emphasis of modern medical model on the influence of social and psychological factors on occurrence and development of diseases, it is believed in modern medical model that the psychological factors are closely related to physical health and may directly control the physiological activities [6]. Comparing with traditional nursing model, the humanized nursing, as a people-oriented nursing model, aims to provide humanistic and all-around nursing service for patients. It not only focuses on the nursing of somatic symptoms, but also stresses the service in culture, spirit and emotion, etc. [7]. In this study, the humanized nursing model was applied to the nursing in operating room so as to ensure the smooth development of operations and reduce the surgical stress response of patients.

In this study, the application effect of humanized nursing model on operating room nursing was analyzed in detail by comparing routine

nursing and humanized nursing in two groups in order to improve the quality of operating room nursing.

Materials and methods

Baseline data

80 patients who received the operative treatment in our hospital were selected as objects of study and divided into two groups through the method of random number table. There were 40 patients in control group to receive the routine nursing, including 28 men and 12 women, within the age of 25-70. There were 40 patients in observation group to receive the humanized nursing, including 30 men and 10 women, within the age of 26-72. (1) Inclusion criteria: Patients whose informed consent were obtained; those without operative contraindication; those in normal mental state before operation; and those approved by The First People's Hospital of Wenling Ethics Committee. (2) Exclusion criteria: Patients in abnormal mental state before operation; those quitting midway; and those with severe metabolic, neurological and circulatory dysfunctions.

Methods

The routine nursing was applied to control group. The nursing service was provided for patients in strict accordance with operation nursing procedures and nursing standards of nursing surgery. It focused more on the implementation of various nursing management systems and nursing technical specifications, such as implementation of routine health education to patients before operation, close coordination with surgeons and implementation of all ancillary tasks during operation and observation of patients' conditions, vital signs and conscious states after operation.

The observation group received humanized nursing

Humanized nursing before operation: (1) The action of concern and love shall be taken with patients as the center: changing the idea of traditional nursing, regarding the patients as an open organic integrity composed of social, psychological and biological factors, etc. and providing the patients with detailed, systematized and comprehensive humanistic care with the participation of patients' family members so as to promote the self-regulation of psychological states by patients themselves and guarantee the satisfaction of all physical and mental needs of patients to the maximum extent. (2) The health education shall be strengthened based on the individual condition of patients: offering the individualized and targeted health education to patients according to their operation types, personality characteristics and educational levels, etc., explaining the knowledge about diseases to patients briefly, informing them that good psychological states are conducive to the smooth development of operations and the enhancement of operative effects and elucidating the necessity and importance of operative treatment to patients. (3) The humanized psychological intervention shall be emphasized. In general, most patients know nothing about the knowledge related to operations, so they, in a passive state psychologically, are likely to have various negative emotions, such as anxiety and tension, etc., before operation. Therefore, the nurses shall provide psychological counseling for patients in time and guide patients to face their diseases positively. Besides, the nurses shall not only inform the patients that good psychological states can help them regulate the physiological function in a better way, but also lead patients to regulate the fear, pessimism and other negative emotions by themselves so as to enhance the degree of adaptability to operations.

Humanized nursing during operation: (1) The patients shall not be sent to the operating room too early on the day of operation to avoid aggravating the negative emotions of patients before operation, such as anxiety and fear, etc. After the patients are sent to the operating room, the circulating nurses shall receive them courteously and warmly and accompany them to get familiar with the environment of operating room. The nurses shall provide psychological comfort and support for patients by holding their hands and avoid arousing the disgust of patients at the same time. (2) During the operation, the family members of patients will also become nervous with heavy psychological burden, so the nurses, in order to fully reflect the tenet of humanized nursing, shall pacify the emotion of patients' family members in time and instruct them to wait for the results outside the operating room so as to relieve the psycho-

logical pressure of family members and avoid the hidden trouble of medical disputes. The temperature and humidity of operating room shall be adjusted reasonably in advance so that the patients can feel comfortable after entering the operating room. The positive encouragement shall be provided for patients to make them face the operative treatment bravely and thus enhance the degree of adaptability to operations. If it is a non-general anesthesia operation, the nurses shall pay attention to patients and keep an eye on their needs and expression changes. (3) The soft pillow for body position can be used based on the needs of patients during operation. In the process of anesthesia, the nurses shall help patients adjust appropriate anesthesia positions. During this process, the nurses shall move gently or use the binding belt if necessary, but in order to ensure the comfort of patients, they can add a cotton cushion to the binding belt. The intraoperative exposure shall be minimized to fully respect patients and protect their privacy.

Humanized nursing after operation: (1) The patients shall get enough attention and care after they are sent to the inpatient ward upon the completion of operation. When the patients are awake, the nurses shall affirm their performance during operation and encourage and comfort them graciously and courteously. (2) The postoperative pain is a typical clinical manifestation of operation patients, so the nurses shall take analgesic measures from the people-centered perspective, which shall not only achieve the analgesic effect, but also make the measures acceptable to patients. If the patients suffer the postoperative pain, the nurses can strengthen the manual massage and instruct the patients to keep a positive and relaxed psychological state. Meanwhile, the nurses shall help the patients relax their arms and legs, chest and abdomen and head and neck to alleviate pain. Furthermore, the nurses can also distract the attention of patients by playing music to alleviate the postoperative pain. The nurses shall instruct the family members of patients to offer comprehensive care and love to patients, explain the postoperative precautions to family members, and strengthen the nursing of urinary tract, respiratory tract and digestive tract of patients. The body movements and facial expressions shall be observed carefully during the implementation of above procedures so as to judge the comfort level of patients and prevent various complications actively.

Observation targets

Stress index: The changing situations of diastolic blood pressure, systolic blood pressure and heart rate were compared in two groups one day before operation and before anesthesia.

Psychological state: The scores of Zung Self-Rating Anxiety Scale (SAS) and Zung Self-Rating Depression Scale (SDS) were compared in two groups before and after intervention. SAS was used to reflect the subjective feeling of mental help seekers with anxiety tendency in a better way, with 50 scores as the threshold of SAS standard scores, including mild anxiety (50-59 scores), moderate anxiety (60-69 scores) and severe anxiety (over 70 scores). SDS was used to intuitively reflect the subjective feeling of depression patients and the changing situations during treatment [8], with 55 scores as the threshold of SDS standard scores, including mild depression (53-62 scores), moderate depression (63-72 scores) and severe depression (over 73 scores) [9].

Nursing satisfaction: The questionnaire method was used to survey the nursing satisfaction of patients, with the survey contents including nursing attitude, nursing procedure skill and professional nursing knowledge, etc. There were 10 scores in total, including dissatisfaction (less than 5 scores), basic satisfaction (5-8 scores) and great satisfaction (over 8 scores) [10, 11]. Total satisfaction = basic satisfaction + great satisfaction.

Postoperative infection: The occurrence of postoperative infection was compared in two groups.

Statistical methods

The SPSS22.0 software was used for statistical analysis; the measurement data was represented by mean ± standard deviation; the independent-samples *t* test was used for the data in conformity with normal distribution; the Mann-Whitney U test was used for the data not in conformity with normal distribution; the paired-samples *t* test was used for comparison

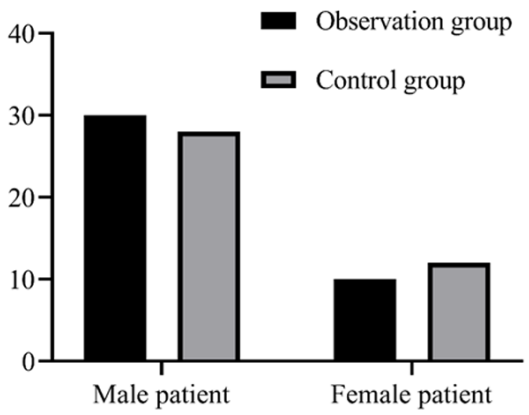

Figure 1. Comparison on proportions of male and female patients between observation group and control group. The male patients accounted for 75.00% in observation group and 70.00% in control group (P>0.05). The female patients accounted for 25.00% in observation group and 30.00% in control group (P>0.05). There were no significant differences.

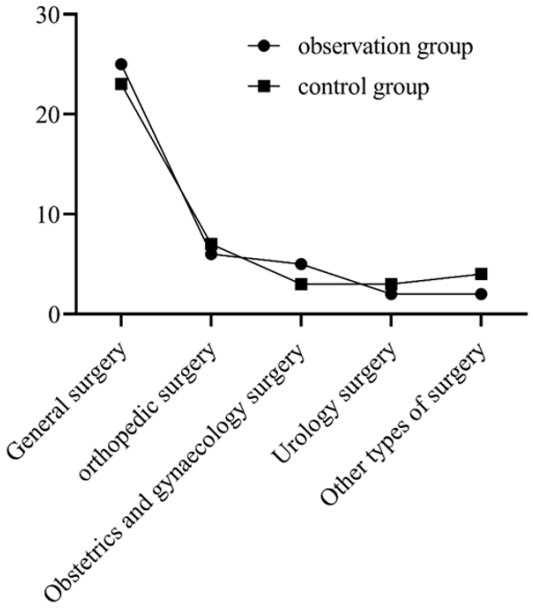

Figure 2. Comparison of operation types between observation group and control group. The constituent ratios of general surgery, orthopedic surgery, obstetrics and gynecology surgery, urology surgery and other types of surgery were respectively 62.50%, 15.00%, 12.50%, 5.00% and 5.00% in observation group and 57.50%, 17.50%, 7.50%, 7.50% and 10.00% in control group (P>0.05).

before and after operation in group; the enumeration data was represented by [n (%)]; and the X^2 test was used for comparison of enumeration data between groups. P<0.05 meant that the comparison had statistical significance.

Results

Comparison of general data between two groups

There was no statistical significance in the comparison of general data between observation group and control group, including gender (**Figure 1**), average age, operation types (**Figure 2**) and educational level (P>0.05) (**Table 1**).

Comparison of stress indexes between two groups

There was no statistical difference in diastolic blood pressure, systolic blood pressure and heart rate one day before operation and before anesthesia in two groups (P>0.05). The diastolic blood pressure, systolic blood pressure and heart rate before anesthesia were higher than those of one day before operation, which indicated statistical difference (P<0.05). The diastolic blood pressure, systolic blood pressure and heart rate in observation group were lower than those in control group (P<0.05) (**Table 2**).

Comparison of psychological states between two groups

There was no statistical difference in SAS and SDS scores before intervention in two groups (P>0.05). Comparing with the scores before intervention, the SAS and SDS scores reduced obviously after intervention in two groups, showing statistical difference (P<0.05). The SAS and SDS scores in observation group were lower than those in control group after intervention, which indicated statistical difference (P<0.05) (**Table 3**).

Comparison of nursing satisfaction between two groups

The total nursing satisfaction in observation group was higher than that in control group, which indicated statistical difference (P<0.05) (**Table 4**; **Figure 3**).

Comparison on occurrence rates of postoperative infection between two groups

The occurrence rate of postoperative infection in observation group was much lower than that in control group, which indicated statistical difference (P<0.05) (**Table 5**; **Figure 4**).

Table 1. Comparison of general data between observation group and control group [n (%)]/($\bar{x}$ ± sd)

Data		Observation group (n=40)	Control group (n=40)	t/X^2	*P*
Gender (case)	Male	30 (75.00)	28 (70.00)	0.251	0.616
	Female	10 (25.00)	12 (30.00)		
Age (years old)		46.28±2.16	45.99±2.12	0.606	0.546
Operation types	General surgery	25 (62.50)	23 (57.50)	0.258	0.856
	Orthopedic surgery	6 (15.00)	7 (17.50)		
	Obstetrics and gynecology surgery	5 (12.50)	3 (7.50)		
	Urology surgery	2 (5.00)	3 (7.50)		
	Other types of surgery	2 (5.00)	4 (10.00)		
Educational levels	Primary school and below	12 (30.00)	10 (25.00)	0.085	0.927
	Middle school and high school	22 (55.00)	23 (57.50)		
	University and above	6 (15.00)	7 (17.50)		

Table 2. Comparison of stress indexes between observation group and control group ($\bar{x}$ ± sd)

Group	Diastolic blood pressure (mmHg)		Systolic blood pressure (mmHg)		Heart rate (time(s)/min)	
	One day before operation	Before anesthesia	One day before operation	Before anesthesia	One day before operation	Before anesthesia
Control group (n=40)	120.56±10.52	139.89±11.58	72.32±9.12	92.28±10.25	75.85±6.12	96.56±8.52
Observation group (n=40)	120.89±10.05	122.56±10.25	72.28±9.09	75.89±9.18	75.89±6.09	80.12±7.18
t	0.143	7.115	0.020	8.526	0.029	10.265
P	0.886	0.000	0.984	0.000	0.977	0.000

Table 3. Comparison of psychological states between observation group and control group ($\bar{x}$ ± sd, scores)

Group	SAS scores		SDS scores	
	Before intervention	After intervention	Before intervention	After intervention
Control group (n=40)	58.98±6.52	51.12±5.18	62.58±6.25	59.98±5.12
Observation group (n=40)	59.02±6.48	42.15±1.25	62.89±6.18	51.02±1.29
t	0.028	10.646	0.058	12.632
P	0.978	0.000	0.852	0.000

Table 4. Comparison of nursing satisfaction between observation group and control group [n (%)]

Group	Number of cases	Great satisfaction	Basic satisfaction	Dissatisfaction	Total satisfaction
Observation group	40	25 (62.50)	13 (32.50)	2 (5.00)	38 (95.00)
Control group	40	20 (50.00)	11 (27.50)	9 (22.50)	31 (77.50)
X^2					5.165
P					0.023

Discussion

Operation is a traumatic procedure, which will not only cause traumatic stimulation physically, but also produce different degrees of psychological reactions. If these reactions are too intense, they will affect the circulatory system, endocrine system and nervous system of human body and thus influence the safety of operation and anesthesia [12, 13]. It is necessary to seek for an appropriate nursing model to reduce the physiological and psychological stress reactions of patients.

The humanized nursing, as a nursing model with integrality, validity and creativity, empha-

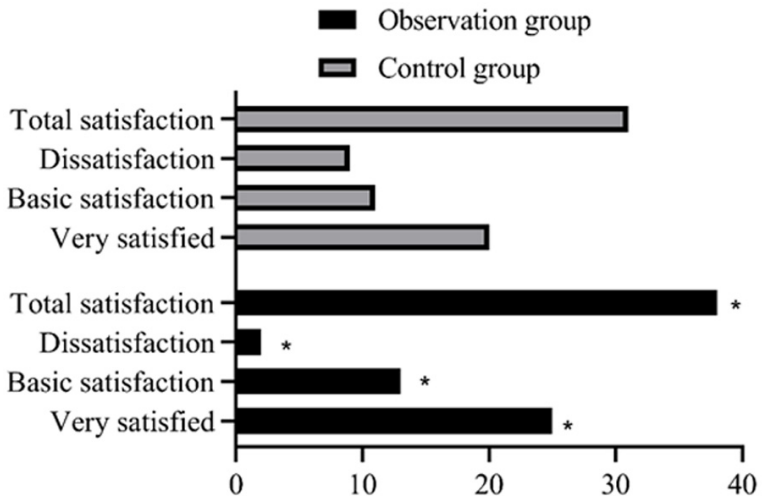

Figure 3. Comparison of nursing satisfaction between observation group and control group. The patients with great satisfaction accounted for 62.50% in observation group, which was higher than 50.00% in control group ($P<0.05$); those with basic satisfaction accounted for 32.50% in observation group, which was higher than 27.50% in control group ($P>0.05$); and those with dissatisfaction accounted for 5% in observation group, which was lower than 22.50% in control group ($P<0.05$). The total nursing satisfaction was 95.00% in observation group, which was higher than 77.50% in control group ($P<0.05$). *P<0.05.

Table 5. Comparison on occurrence rates of postoperative infection between observation group and control group [n (%)]

Group	Number of cases	Occurrence rate of postoperative infection
Observation group	40	1 (2.50)
Control group	40	8 (20.00)
X^2		6.135
P		0.013

sizes the central position of patients in the process of nursing and provides the humanistic and high-class nursing service based on patients' operation habits, life styles, educational levels, hobbies and interests and disease types, etc. [14, 15]. This nursing model can strengthen the nursing intervention in patients and help nurses integrate the responsibility and love into every nursing procedure, which will not only improve the disease state and minimize the discomfort, but also ensure the satisfaction of all psychological needs in patients. Thus, the patients can achieve the most comfortable state mentally, socially, psychologically and physiologically [16, 17]. The operation patients will suffer great physiological pain caused by diseases and have such negative emotions as tension and fear, etc. when they are in an unfamiliar diagnosis and treatment environment. In addition, different patients have different cognitive abilities and educational levels, so the nursing needs in operating room are different accordingly. Therefore, the humanized nursing model was used in the process of operating room nursing to ensure the smooth development of operations, reduce the degree of surgical stress and control the postoperative infection effectively.

The results of this study showed that the diastolic blood pressure, systolic blood pressure and heart rate in observation group were lower than those in control group before anesthesia; the SAS and SDS scores of observation group were lower than those of control group after intervention; and the total nursing satisfaction in observation group was higher than that in control group, which implied that the application of humanized nursing model to operating room nursing will reduce surgical stress, improve negative emotions and accordingly enhance the satisfaction of patients. The reason may be that the humanized nursing model can provide considerate and meticulous nursing service for patients before, during and after operation and offer emotional support and encouragement to make them feel loved and respected all the time. This will help patients build a positive psychological defense mechanism and thus enhance the subjective initiative so that they can face the operative treatment positively and optimistically [18, 19]. Meanwhile, the humanized nursing intervention in patients can also help them accomplish the role change successfully, enhance their confidence in treatment, relieve all kinds of negative emotions and stabilize the heart rate and blood pressure. Hmwe N T T [20] and other scholars also applied the humanized nursing model to operating room nursing and found that compared with the patients in routine nursing group, those in humanized nursing

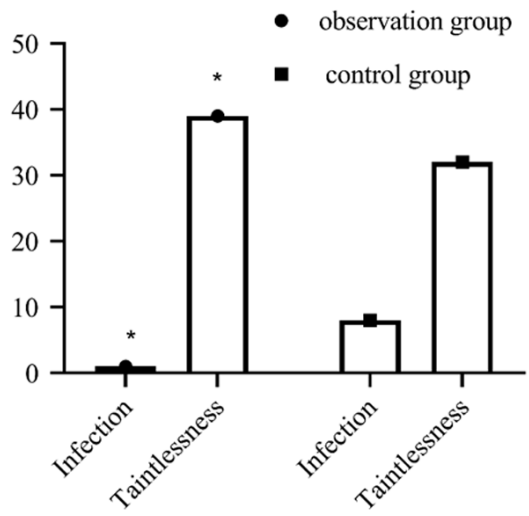

Figure 4. Comparison on the occurrence of postoperative infection between observation group and control group. The occurrence rate of postoperative infection was 2.50% in observation group, which was lower than 20.00% in control group (P<0.05); and the occurrence rate of postoperative taintlessness was 97.50% in observation group, which was higher than 80.00% in control group (P<0.05). *P<0.05.

group had lower degrees of depression and anxiety and higher nursing satisfaction after nursing. Their results were highly similar to those in this study, which fully proved the effectiveness of humanized nursing model. As researches showed, the negative emotions, with obvious influence on the treatment and regression of diseases, will hinder the smooth development of operations, reduce the body immunity and increase the occurrence rate of postoperative infection [21, 22]. In this study, the occurrence rate of postoperative infection in observation group was much lower than that in control group (P<0.05), which implied that the humanized nursing intervention in patients was conducive to the effective control over postoperative infection. The reason may be that the humanized nursing not only emphasizes the body nursing service, but also stresses the influence of psychological, mental and social factors on treatment and regression of diseases. By strengthening the psychological counseling, the humanized nursing can provide adequate psychological support and encouragement for patients to reduce their negative emotions and thus control the postoperative infection effectively. Senanayake E L [23] and other scholars provided the humanized nursing service for operation patients and discovered that the occurrence rate of postoperative infection in humanized nursing group was lower than that in routine nursing group, which was highly similar with the results in this study.

In conclusion, the application of humanized nursing model to operating room nursing could reduce the occurrence rate of postoperative infection, relieve the surgical stress, improve the psychological states of patients and enhance the nursing satisfaction, so the humanized nursing model deserved the promotion.

But due to the small number of objects involved in this study, the results were not representative enough. Therefore, the sample size shall be further expanded in future studies to achieve the intensive study and further discuss the effect of humanized nursing on operation patients.

Disclosure of conflict of interest

None.

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