

Original Article

Observation of the effects of nursing logos on nursing risk management in operation room

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Abstract: Objective: To observe the application effects of nursing logos on nursing risk management in operation room. Methods: By means of a before-after self-controlled study, 200 patients cured by surgery from January 2015 to December 2015 were set as the control group, while another 200 patients cured from January 2016 to December 2016 were set as the intervention group. Both groups were given nursing risk management in operation room and the intervention group applied nursing logos on this basis. Satisfaction questionnaires were self-designed to investigate the degree of satisfaction of patients, doctors and nurses. A checklist was made according to *Evaluation Standard of Nursing Quality in Operation Room* to assess the quality of nursing in operation room and record the occurrence of adverse events (instrumentation availability, medication accuracy and pipeline accuracy) per month. Results: Compared with the control group, the satisfaction of patients, doctors, and nurses all improved ($P=0.023$, 0.006 , 0.009 respectively), nursing quality significantly improved ($P=0.000$), instrumentation availability was up to 100% ($P=0.000$), medication errors reduced ($P=0.024$), and pipeline errors decreased ($P=0.008$). Conclusion: The use of nursing logos in operation room nursing risk management can enhance the satisfaction of patients and medical personnel, improve the nursing quality and reduce nursing adverse events.

Keywords: Operation room, risk management, nursing logos, nursing

Introduction

With the continuous development of medical science, highly-difficult new surgical procedures and new technologies are being developed and applied, and operation room is becoming increasingly a high-risk department for nursing risks [1]. Operation room nursing is characterized by fast pace, heavy task, complexity, rapid change, long time, heavy work pressure and high risk; therefore, once the risk seriously threatens to the health of patients, the normal work will be affected [2-4]. Nursing risk management refers to the existing or potential risk events in the scientific management nursing work, and it will identify and evaluate prevention methods, seek treatment measures to ensure the nursing quality, and to reduce the incidence of nursing risks and decrease medical tangles as well, which has caused widespread concern in the operation room management [3, 5, 6]. Due to the inadequate human resources and weak risk prevention awareness, risk events are prone to occur,

such as surgical site errors, instrument legacy, specimens' loss, hospital infections and so on [7-11]. Nursing logos refer to making logos with the industrial characteristics for what is worth mentioning in the nursing work by standardized patterns and texts [3, 4]. In the past, some studies have found that nursing logos can enhance the risk awareness of ICU nurses, reduce security risks and adverse events as well as improve the satisfaction degree of patients and nurses; besides, they also achieve the same effect in the nursing safety management of urinary surgery [12, 13]. However, the design and use of nursing logos in operation room are subjected to a further research. Therefore, this study aims to explore the effects of nursing logos on nursing risk management in operation room. The reports are as follows.

Materials and methods

Research design

By means of a before-after self-controlled study, 200 patients cured by surgery from January

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Table 1. Comparison of general data in two groups ($\bar{x}\pm s$)

Groups	Intervention group	Control group	T or χ^2 value	P value
Gender			0.040	0.841
Male	103	105		
Female	97	95		
Age (year)	41.9 \pm 19.2	42.2 \pm 17.8	0.165	0.896
Type of surgery			0.616	0.987
General surgery	75	76		
Orthopedics	26	25		
Urinary surgery	18	19		
Aural surgery	31	29		
Chest surgery	27	24		
Gynecology and obstetrics	23	27		
Surgical care time (h)	1.6 \pm 0.7	1.7 \pm 0.7	0.940	0.348

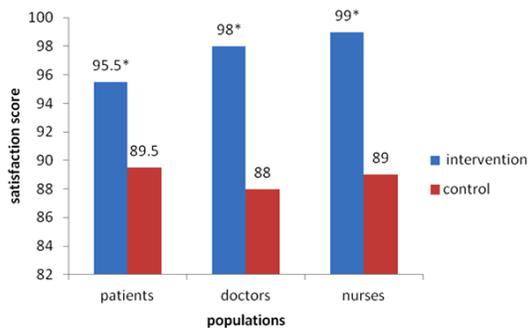


Figure 1. Effects of the application of nursing logos on the satisfaction score of patients, doctors and nurses the control group adopted the conventional nursing risk management strategy. On the basis of this, the intervention group further applied the nursing logos. Compared with the control group, *P<0.05.

2015 to December 2015 were set as the control group, while another 200 patients cured from January 2016 to December 2016 were set as the intervention group. Inclusion criteria: Patients who underwent elective surgery; patients who agreed to participate in this study and signed informed consent; patients who could complete the relevant questionnaire. Exclusion criteria: Patients who underwent emergency surgery; patients who had a complex surgery requiring multiple departmental collaboration; patients who disagreed to participate in this study.

Methods

The two groups adopted routine operation room nursing risk management methods. We established operation room risk management

system, strengthened nursing staff training, strictly implemented surgical safety verification system and process, and encouraged non-punitive reporting system of nursing adverse events [14, 15]. The intervention group further adopted the nursing logos to strengthen the management on the basis of above risk management.

Nursing logo classification and production

Nursing logos were divided into three categories; they are environmental signage, patient identification and warning signs [3, 6, 16, 17]. Environmental signage

includes partition signs, surgical instrument marking, and protection signs. Partition signs are divided into aseptic areas, clean areas and polluted areas by different colors. Different logos are used to distinguish the requirements of fire protection, waterproofing and electric prevention of different surgical instruments. The protection signs are used to identify the surgical status. Patient identification mainly covers wrist-bands logos marked with personal information and drug allergy logos. Warning signs include drug warning signs, pipeline signs and check identification.

Training

A unified training for nurses is necessary before the nursing logos are used, so that they can grasp the meaning and usage of each type of nursing logos [4].

Effectiveness evaluation

We designed satisfaction questionnaires for patients, doctors and nurses. And each question included 4 grades: "great satisfaction", "satisfaction", "general satisfaction" and "dissatisfaction", with 4 points, 3 points, 2 points, and 1 point for each grade; 100 points were regarded as the highest score and 25 points as the lowest. The unified issuing and recycling of questionnaires were carried out by the Department of Nursing.

Department of Nursing developed a checklist to assess the nursing quality in the operation room every month, in accordance with *Evalu-*

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Table 2. Comparison of nursing quality in two groups ($\bar{x}\pm s$)

Groups	Nursing(score)	Instrumentation availability (%)
Intervention group	98.5±1.2	100
Control group	93.7±1.4	91.5
T or χ^2 value	9.298	17.755
P value	0.000	0.000

Table 3. Comparison of nursing adverse events in two groups

Groups	Nursing adverse events		
	Medication errors	Pipeline errors	Drug extravasation
Intervention group	0	0	1
Control group	3	5	2
T or χ^2 value	5.063	7.125	1.010
P value	0.024	0.008	0.315

ation Standard of Nursing Quality in Operation Room in the Formulation and Implementation Evaluation Criteria for Nursing Quality Management [16].

Nursing adverse events refers to the occurrence of tumble, medication errors, getting lost, aspiration or asphyxia, scald during hospitalization, and other nursing accidents related to safety of patients [18, 19]. The occurrence of adverse nursing events was recorded.

Statistical analysis

SPSS19.0 software was used to make a statistical analysis for relevant data, and the chi-square test was used for the comparison of the count data. Measurement data was presented as mean \pm standard deviation ($\bar{x}\pm s$), and the comparison between groups was expressed by t test. $P<0.05$ meant the difference was statistically significant.

Results

Comparison of general information in two groups

There was no significant difference in gender, age, operation type and operative nursing time between the two groups. See **Table 1**.

Comparison of satisfaction degree in two groups

After the use of nursing logos in operation room risk management, the satisfaction degree of patients, doctors and nurses improved appar-

ently. The difference indicated statistical significance, $P<0.05$, as shown in **Figure 1**.

Comparison of nursing quality in two groups

After the use of nursing logos in operation room risk management, the nursing quality and instrumentation availability significantly improved. The difference was statistically significant, $P<0.05$, as shown in **Table 2**.

Comparison of nursing adverse events in two groups

After the use of nursing logos in operation room risk management, medication errors, pipeline errors, drug extravasation and others significantly reduced. $P<0.05$ was assessed for statistical significance, as shown in **Table 3**.

Discussion

The results of this study showed that after the use of nursing logos in operation room nursing risk management, the satisfaction degree of patients, doctors and nurses significantly increased, nursing quality apparently improved, and incidence of nursing adverse events reduced, indicating that the use of nursing logos could improve the satisfaction degree of patients and medical personnel, improve the quality of nursing and avoid the nursing adverse events, which were similar to the previous findings [4, 6, 16, 17, 20, 21]. The probable cause is that the nursing logos simplify and regulate the complex work, making nurses know exactly how to do the job, and what should be paid attention to in every link of the job; thus, nurses feel satisfied. Nurses, with high work efficiency, can quickly deliver the equipment to the surgeons, making the corresponding auxiliary work better for the smooth operation, which increases satisfaction of doctors. Similarly, successful surgery can relieve the patients' pain, restore their health, enhance their trust for the hospital, therefore, the satisfaction of patients also increased [1]. At the same time, the nursing logos can remind nurses what to do, what should be paid attention to, and how to protect themselves and patients in right time during the work [3]. The enhanced safety awareness

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and rigorous work of nurses avoid the damage caused by the neglect of patients and medical staff, and the adverse events reduce as well [2].

Nursing logos can alleviate the workload of nurses to a certain extent, avoiding the errors in work brought by poor communication [2], which is helpful to make nurses focus on intra-operative care and other aspects, as well as have a positive influence on ensuring the smooth progress of the operation [16]. This study, based on the different colors of machine-typed wrist-bands logos, was convenient for nurses to identify the critical patients at the first time; check logos prompted nurses to strictly check the system, to ensure the correct treatment of patients [22]. Different colors of drug labels made nurses understand the correct use of drugs, reducing the medication errors [3, 23]. The medication errors were avoided successfully by the use of nursing logos in this study. Environmental signage reminded the medical staff to perform strict aseptic operation and avoid hospital infection in the aseptic area of operation room [3]. Pipeline signs made it easier for nurses to identify a variety of pipelines, provided appropriate piping care, and improved the efficiency of pipeline maintenance [16]. Piping nursing errors in this study were avoided after the application of nursing logos. The surgical instrument marking reminded nurses of the correct use and maintenance of equipment to make it perform well and keep its availability up to 100%; thereby, it ensured that all aspects of the operation were precisely right [6]. That is to say, nursing logos can enhance the nursing quality.

In conclusion, the use of nursing logos in the operation room nursing risk management can strengthen the awareness of risk prevention of medical personnel, which can make nursing work in order, improve the quality of nursing, reduce the incidence of adverse events and enhance the satisfaction of patients, doctors and nurses. However, this is a single center study with small sample size. In the future, multicenter studies should be conducted and the sample size should be expanded to explore the operation room nursing risk management methods, thus making the nursing service in the operation room more secure.

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Disclosure of conflict of interest

None.

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