

Effect of group nursing and risk management on nurse's hygiene compliance, patient's nosocomial infection rate and satisfaction with nursing.

Dong-Jie Liu¹, Jian Sun^{2*}

¹Department of Gastroenterology, Heilongjiang Provincial Hospital, PR China

²Department of Plastic and Maxillofacial Surgery, Heilongjiang Provincial Hospital, PR China

Abstract

Objective: To investigate the effects of group nursing and risk management on nurse's hand hygiene compliance and patients' Nosocomial Infection Rate (NIR) and satisfaction with nursing.

Methods: 48 nurses and 120 patients in the department were selected, and they underwent group nursing and risk management. All patients underwent surgical treatment and nursing care after admission. All of them received the questionnaire survey of postoperative nursing quality. The nurse's hand hygiene compliance, patient NIR and satisfaction with nursing between different groups were compared. t test and χ^2 test were used for count data, $P < 0.05$ was considered statistically significant difference.

Results: The nurse's hand hygiene compliance in the group with group nursing and risk management was better than that of the control group ($X^2=7.388$, $P=0.003$), the patient's NIR was lower than that of the control group ($X^2=4.520$, $P=0.034$), and the satisfaction with nursing was significantly higher than that of the control group, showing statistically significant difference $X^2=7.110$, $P=0.002$.

Conclusion: The group nursing and risk management have better effect on nurse's hand hygiene compliance and patient's NIR and satisfaction with nursing.

Keywords: Group nursing, Risk management, Hand hygiene compliance, Nosocomial infection rate (NIR), Satisfaction with nursing.

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Introduction

Nursing quality control is one of the core contents for the hospital management. It is also a core and key content of nursing management, which is associated with all aspects of nursing work. Risk management method is to identify and evaluate the potential risks that may produce harms to patients, staffs and visitors, and take correct actions [1-3]. During the work, pure management of the head nurse was difficult to achieve quality control effects of effective and direct management. In order to better improve treatment effects and caring quality for the patient, it was required to implement the grouped caring management mode, which was beneficial to reducing operational risks, guaranteeing safety, improving curative effect and form more harmonious and consonant relations among the doctor, nurse and patient, so that the nurses could better understand the conditions of the patient to guarantee smooth development of medical work [4].

The hand hygiene condition of medical staffs is closely related to the hospital infection. According to relevant statistical data, medical staff's hands, as a bacterial carrier, may cause 30% of hospital infections. To enhance the hand hygiene compliance of medical staffs is an internationally recognized simplest and

most effective way to reduce NIR [5,6]. For nurses, as the most medical workers contact with patients in the hospitals, their hand hygiene compliance is not optimistic [7].

In recent years, with the hospital infections, the patients and hospitals are subject to huge losses, resulting in prolonged hospitalization, increased medical costs, and even threatening patient's lives. The hand hygiene compliance of medical staffs especially nurses has attracted more and more attention of domestic and foreign scholars, aiming to improve the hand hygiene conditions of nurses, reduce hospital infection and protect the medical safety of patients. We reviewed the present situation of nurse's hand hygiene compliance, to raise the importance and thinking of nurses and relevant departments and put forward the corresponding countermeasures. Due to busy work, nurses cannot spend time to go to the washing basin. According to the ward environment, hand washing basins are added in appropriate positions, and the hand-touch faucets are changed to induction or foot-type faucets, and hand dryer or disposable disinfectant paper towels can be provided. Usually nurses are women. In order to prevent the dry skin and hand skin damage cause by frequent hand washing for medical staffs, which may affect the hand hygiene compliance, medical institutions should provide hot water and hand sanitizer or soap

containing skin care ingredients with mild nature, and the skin care products after hand drying. When nurses are inconvenient to have hand washing, quick dry hand disinfectants should be equipped at the bedsides, treatment carts, medical record cart or the ward doors, or independent small package of quick dry hand disinfectants can be provided for carrying, to create all convenient conditions to access to hand washing supplies and meet the safe and convenient requirements, thereby improving nurses' hand hygiene compliance [8-10].

Data and Methods

General data

48 nurses in the department were selected in this study, all were women, aged from 23 to 46 y, and mean age of 25.3 ± 1.8 y, including 9 nurses-in-charge, 3 senior nurses, and 36 nurses. The department had 80 beds and 25 beds could be added. There were 120 patients received in the department from April 2016 to 2017. All patients were checked and approved by the Ethic Committee of the hospital and had signed the letter of consent. Patients underwent surgical treatment and nursing after admission, and received a questionnaire survey of postoperative nursing quality.

Group nursing method

Grouping of patients: 50 fixed beds in our wards were divided into 5 groups, about 8 patients in each group. In addition, additional beds were determined by nurses of each group when required.

Grouping of nurses: Nurses were divided into 5 groups according to the sequence of beds according to the principle of uniform distribution based on the technical titles and length of services of nurses. They were responsible for all nursing and health publicity works of patients. In addition, five nurses with solid professional knowledge, rich experience and strong responsibility were selected as the responsible nurses for each group. Two office nurses were established, mainly responsible for handling the doctor's advices, transfer of patients for admission and discharge, and inspection and check of related instruments. Nurses of the treatment shifts were established in the morning and afternoon, 3 nurses for each shift, mainly responsible for the drug dispensing, inspection tour and replacement of disinfection supplies. 3 nurses were established for the night shift, mainly responsible for the night management of patients.

Improving nursing work mode: Firstly, the transfer of morning shifts should be shortened, which should be controlled within 15 min. The drug dispensing and transfusion should be performed before treatment. The items for the treatment cart should be equipped scientifically. The items needed for clinical nursing should be provided by categories, to save time for the nurses-in-charge to do clinical nursing and health education.

Establishing a nursing patrol card system: The nursing team should include the ward inspection into the duties of each group. In the wards, the patrol cards should be hung, and the

head nurse shall implement strict supervision. Nurses should sign on time and recycle them in unified way, and preserve them periodically. Through the implementation of patrol card system, patients can be inspected according to the level of nursing, and the contact and communication between nurses and patients can be increased.

Establishing a nursing effect monitoring system: Two monitors were established in the department, who were responsible for the establishment of job responsibilities, work flow, standard and requirements, to identify and put forward the problems in a timely manner, discuss them and establish the corrective measures in the staff morning meeting. In addition, a rewards and punishments system was implemented, and star nurses were selected according to the monitoring results.

Risk management method

The Nursing Department would conduct analysis on the nursing status quo and problems constantly identify the safety risks, propose targeted preventive measures for the common problem prevention plan. The head nurse should collect the existing and potential nursing risk information of the department, identify possible security risks occurring in the nursing work and report them timely. Nurses should take active measures when discovering problems and report them for recording in a timely manner. The management objectives can be determined from the legal point of view, and the nursing risk prevention measures and plans should be formulated.

The method for improving the nurse's awareness of risk prevention: To organize the discussions on responsibility and integrity; To carry out the activities of soliciting the "nursing safety warning"; To study the regulation on the handling of medical accidents, laws and regulations; To timely report the safety-related information of other hospitals; To organize the case study of medical and nursing disputes.

Observational indexes

The effects of group nursing and risk management on nurse's hand hygiene compliance, the patient's NIR and satisfaction with nursing were observed and recorded.

Statistical analysis

The SPSS 19.0 statistical software was used; the measurement data were expressed as $\bar{x} \pm s$, and t test was used; and χ^2 test was used for count data. $P < 0.05$ was considered statistically significant difference.

Results

Hand hygiene compliance of nurses

After risk management, the hand hygiene compliance was significantly better than the effect before the intervention of the

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nurse, of which the difference was outstanding ($X^2=7.388$, $P=0.003$). The results were shown in Table 1.

Table 1. Composition of reasons of unqualified hand hygiene.

Group	Case	Compliance	Rate	X^2	P
Before intervention	48	20	0.417	7.388	0.003
After intervention	48	41	0.854		

NIR of patients

From the analysis for NIRs of patients in different groups, it can be seen that, after the nursing detail management has been done for the observation group, the nursing quality score of the research group was obviously improved while compare with the control group and the inter-group difference was of obvious significance ($P<0.05$). The failure rate and wound infection rate were much lower than those of the control group ($P<0.05$). The specific results obtained were summarized in Table 2.

Table 2. Infections of patients in different groups.

Group	Study group	Control group	X^2	P
Number of people	60	60		
Score of nursing quality	97.2	85.1	5.223	0.022
Nursing failure rate	0	6	4.113	0.042
Incision infection rate	0	8	4.52	0.034

Note: Compared with the control group, $P<0.05$.

As shown from the table above, after implementation of management of operating room nursing in the observation group, its nursing quality was improved significantly, and the nursing failure rate and incision infection rate were decreased significantly.

Patient's satisfaction with nursing

Patient's satisfaction is an important evaluation content of hospital management and it is the most objective and impartial evaluation on nursing work. From September 2014 to July 2015, a questionnaire survey of inpatients was conducted every 10 d, and the patient's satisfaction with nursing was increased from 83.8% to 95.6% ($X^2=7.110$, $P=0.002$). Before the implementation of a new management model, the patient's awareness rate of the responsible doctor was about 90%, but the awareness rate of the responsible nurse was only 50% to 60%, after group nursing, the awareness rate was increased to about 90%. According to the register data of Complaints Office and Functional Department, the number of complaints about the nursing in the hospital was decreased to 5 in 2015 from 13 in 2014.

Discussion

The standard for the number of nurses according to the bed/nurse ratio implemented in china is not applicable to staffing of

nursing any longer. The allocation of nurses is closely related to the nursing quality. If the nurses are allocated according to the bed/nurse ratio, it may cause inadequate nurses in the department with high utilization of beds that will affect the quality of nursing. While the nurses in the department with low utilization of beds are excessive, this leads to waste of human resources. It is proposed to allocate the nurses according to the nursing workload in different departments, strengthen the hospital logistics support system, optimize the working environment of nursing, so as to make effective use of nursing human resources and improve the hand hygiene compliance of nurses [11,12].

Study results have shown that, the group nursing and risk management have a good effect on nurse's hand hygiene compliance, and patients' NIR and satisfaction with nursing, which can be applied to hospital care. At present, although most hospitals set up a hospital infection management department in China, which is responsible for the supervision and guidance of the hospital infection management, the regulations and management requirements for the hand washing are not complete. Nurses have not formed a good hand washing atmosphere, without intensive awareness of hand hygiene. The routine monitoring and management measures on hand washing behaviours cannot reflect the actual condition and enhance the hand washing rate, resulting in low hygiene compliance of nurses. In order to complete the clinical work, nurses may conduct continuous operations during the peak period of treatment without paying attention to hand washing, especially in the emergency department, surgery and ICU, there are many critically ill patients, with many sudden rescue events. Most nurses do not wash hands according to the regulations during the treatment nursing for different patients, and they often wash hands after all works are done, mainly because there are inadequate nurses, and nurses have high workload with tight time, and even nurses have an awareness of hand washing, they have no time to wash hands, affecting the nurse's hand hygiene compliance [13-16].

At present, in terms of the survey mode for the studies on nurse's hand hygiene compliance, usually the internationally popular on-site observation mode formulated by Yale University School of Public Health is adopted, which focuses on the on-site observation of hand washing process, to evaluate the compliance of hand-washing indications, but it fails to focus on whether the hand-washing effect meets the relevant microbiological indexes. This kind of study mode that focuses on the process may be the key point for the infection control research in the future [17,18]. "Clean health care, safe healthcare" is the medical quality improvement objective in 21st century proposed by WHO [19]. Hand hygiene has become an important measure to control hospital infection. To improve the hand hygiene compliance of medical personnel, especially nurses is of great significance for promoting the improvement of hospital infection control level in china.

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*Correspondence to

Jian Sun

Department of Plastic and Maxillofacial Surgery

Heilongjiang Provincial Hospital

PR China