

The Impact of Optimizing Details in the Operating Room on the Level of Knowledge, Attitude, and Practice of Hospital Infection Prevention and Control by Surgeons, as Well as the Effectiveness of Infection Control

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Abstract

Objective: This paper aims to explore the impact of optimizing details in the operating room on the level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons, as well as the effectiveness of infection control. **Methods:** From January 2022 to June 2023, a total of 120 patients were screened and randomly divided into a control group (routine care and hospital infection management) and a study group (optimizing details in the operating room). **Results:** Significant differences were found between the two groups in the data of surgeons' level of knowledge, attitude, and practice in hospital infection prevention and control, infection rates, and nursing satisfaction, with the study group showing better results ($P < 0.05$). **Conclusion:** The use of optimizing details in the operating room among surgeons can effectively improve surgeons' level of knowledge, attitude, and practice in hospital infection prevention and control, reduce infection occurrence, and is worth promoting.

Keywords

Optimizing Details in the Operating Room, Infection, Level of Knowledge, Attitude, and Practice, Infection Control

1. Introduction

With the continuous development of clinical medical technology, more and more diseases can be treated through surgery. However, in recent years, the lack

of infection prevention and control has seriously affected the surgical outcomes in operating rooms [1]. Therefore, hospitals have begun to pay more attention to infection prevention and control in operating rooms. In the infection prevention and control in operating rooms, the norms of operation and personal protective measures taken by surgeons during surgery can directly affect the treatment outcomes and postoperative recovery of patients, and may also affect cross-infection within the operating room to some extent. Therefore, in order to reduce the incidence of hospital infections as much as possible, improve surgical quality, and increase patient satisfaction, it is necessary to strengthen nursing management in the operating room and understand the impact of various infection management measures on the level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons, as well as the effectiveness of infection control. Based on this, in order to explore the effect of optimizing details in the operating room, the results are reported as follows.

2. Clinical Data and Methods

2.1. General Data

From January 2022 to June 2023, a total of 120 patients were screened and randomly divided into two groups. In the study group, there were 35 males and 25 females, with an average age of (33.28 ± 2.88) years. The types of surgeries included orthopedic surgery, general surgery, and gynecological surgery, with 15, 13, and 32 cases respectively. In the control group, there were 34 males and 16 females, with an average age of (32.74 ± 3.16) years. The types of surgeries included orthopedic surgery, general surgery, and gynecological surgery, with 14, 12, and 34 cases respectively. A comparison showed that the two groups were comparable ($P > 0.05$).

Inclusion criteria: All patients underwent surgical treatment; Patients were informed about the study and accepted their role as research participants.

Exclusion criteria: Patients with severe organic diseases; Poor psychological status resulting in inability to cooperate with the study.

2.2. Methods

2.2.1. Control Group

The control group received routine care and hospital infection management, including:

- 1) Routine care intervention in the operating room

The first aspect is environmental maintenance. Cleanliness and suitable environment in the operating room can help patients recover as soon as possible after surgery and effectively reduce infection rates. Therefore, nursing staff need to comprehensively maintain the environment in the operating room by cleaning the operating table, floor, and other surfaces daily to ensure the sterility of the operating room. Next is personnel management. In order to reduce infections, strict infection control training should be provided to all personnel entering the

operating room, including doctors, nurses, and assistants, and healthcare personnel should strengthen their implementation of these infection prevention measures, including changing clothes, shoes, washing hands, wearing masks and caps, etc [2]. Another aspect is equipment preparation. Before the start of the surgery, the nursing team needs to clarify the instruments and dressings required for each surgery, ensuring that they meet the surgical needs. Additionally, they need to inspect and sterilize these instruments and items to lower the infection rate [3]. Another aspect is patient preparation. Operating rooms emphasize aseptic operation, which requires not only strict adherence to aseptic techniques by doctors and nursing staff, but also necessitates that patients undergo necessary cleaning and disinfection procedures before entering the operating room to ensure the sterility of the surgical site. Finally, there is intraoperative care [4]. During surgery, nursing staff need to collaborate with the surgeon in passing surgical instruments and monitoring the patient's vital signs, assisting the surgeon in completing the operation.

2) Hospital Infection Management and Control Methods

Firstly, it is necessary to establish an infection prevention and control system. The hospital can set up an infection prevention and control team, whose members must receive comprehensive and thorough infection prevention and control training and undergo evaluation before taking up their positions. Once the team is established, they should develop and implement infection prevention and control strategies based on the actual situation of the hospital to ensure the smooth operation of infection prevention and control work. Secondly, strengthening hand hygiene management is important. Hand hygiene can effectively prevent cross-infection, so hospitals must enhance education on hand hygiene promotion and provide convenient hand hygiene facilities in appropriate locations in hospital operating rooms. Furthermore, environmental cleanliness and disinfection are crucial. In order to ensure that nursing staff can enhance the cleaning and disinfection of the surrounding environment, strict management is required. Nursing staff should regularly thoroughly clean and disinfect the operating room and its surroundings, especially the surfaces that healthcare workers frequently come into contact with [5]. Next is medical equipment management. Team members need to strictly clean, disinfect, and sterilize all medical equipment every day to ensure that the use of medical equipment during each surgery is sterile. Additionally, isolation and protective measures are important. For patients who are infected or suspected of being infected, the team needs to take isolation measures, as well as appropriate protection measures for healthcare workers who have been in contact with the source of infection. Finally, monitoring and evaluation. In order to ensure the effectiveness of hospital infection management, the team needs to regularly monitor and evaluate its results, and promptly identify and address potential issues.

2.2.2. Study Group

The study group implemented operating room detail optimization intervention

based on the control group, with the specific methods as follows:

1) Organizing Training

In order to ensure the effective implementation of operating room detail optimization intervention, a reasonable training program must be conducted. The training content includes professional knowledge of operating room nursing, awareness and skills in infection prevention and control, professional ethics, etc. Specific measures are as follows:

Firstly, hospitals need to regularly conduct training on operating room nursing professional knowledge to effectively enhance nursing staff's understanding of the requirements and operational norms of operating room nursing. This enables nursing staff to implement related nursing operations more systematically during surgery. Secondly, strengthening infection prevention and control awareness and skills training is essential. Nursing staff need to fundamentally improve their implementation of infection prevention and control measures by increasing their awareness of the importance of infection prevention and control. Therefore, emphasis should be placed on infection prevention and control, such as developing strict requirements for standardization. Additionally, enhancing training on relevant skills is necessary to improve the nursing staff's ability to carry out infection prevention and control nursing operations effectively [6]. Finally, conducting training on professional ethics education is crucial to reinforce nursing staff's sense of responsibility and professional ethics, in order to provide high-quality nursing services to patients [7].

2) Detail management

Firstly, hospitals need to establish and improve the management system and operating procedures for operating rooms, clearly defining the responsibilities and work requirements of nursing staff, so that nursing staff can follow a set protocol in their actual nursing practice. Secondly, it is essential to enhance the management of the operating room environment. Nursing staff should be required to regularly clean and disinfect the operating room and its surroundings according to set regulations and frequency, and maintain air circulation and cleanliness in the environment when no surgeries are being performed. Additionally, strengthening the management of surgical instruments based on rules and regulations is important. Nursing staff should strictly adhere to cleaning, disinfection, and sterilization procedures to ensure that the instruments remain sterile at all times. Specialized personnel should be assigned to conduct periodic inspections to minimize the occurrence of non-compliance situations as much as possible [8]. Focus on nursing staff providing detailed care for patients, especially in areas such as positioning management, warming, and privacy protection, to enhance patient comfort and satisfaction as much as possible. Lastly, strengthen communication and collaboration with doctors, anesthesiologists, and other operating room team members. For example, team management can be implemented where different types of surgeries correspond to different team members, allowing the surgical team to work in harmony through long-term cooperation [9].

3) Quantitative Assessment

In order to ensure the effective implementation of the aforementioned operating room detail optimization intervention, the hospital also needs to establish a quantitative assessment system for management. By setting detailed assessment indicators and standards to quantitatively evaluate the specific quality of nursing care in the operating room and the level of infection prevention and control, regular assessment results allow nursing staff to understand their own work situation and continuously improve their nursing skills. The assessment content includes norms of nursing operations, infection prevention and control measures, patient satisfaction, and other aspects [10]. Next, the hospital needs to conduct regular quantitative assessments to objectively and comprehensively evaluate the infection prevention and control work in the operating room. Through in-depth analysis and feedback on the assessment results, issues and shortcomings in the organization's infection prevention and control work in the operating room can be identified. Prompt measures can be taken to rectify and improve these issues and shortcomings, further reducing the risk of infections and enhancing the level of infection prevention and control in the operating room. Additionally, regular assessments help the hospital discover new infection prevention and control methods and techniques, continually refining and optimizing prevention and control strategies. Finally, regular evaluation of the implementation effectiveness of detail optimization interventions is necessary to summarize experiences and lessons learned, and continuously improve and enhance management methods.

2.3. Observation Indicators

1) The level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons was assessed using a self-made questionnaire based on the investigation and research in relevant literature. It includes control knowledge, control attitude, and control behavior. The maximum score for control knowledge is 50 points, with a higher score indicating a higher level of understanding. Control attitude (8 items) and control behavior (30 items) are scored between 0 and 4 points, with a higher score indicating a higher level. 2) Nursing satisfaction includes categories such as very satisfied, satisfied, and dissatisfied.

2.4. Statistical Method

Using SPSS 23.0 software, quantitative data and count data were analyzed with mean \pm standard deviation and rates. The t-test was conducted, and a P-value $<$ 0.05 was considered statistically significant.

3. Results

3.1. Comparison of the Level of Knowledge, Attitude, and Practice of Hospital Infection Prevention and Control by Surgeons

There was a significant difference in the level of knowledge, attitude, and prac-

tice of hospital infection prevention and control by surgeons ($P < 0.05$) between the two groups, as shown in **Table 1**.

Table 1. Comparison of the level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons between the two groups (\pm s, score).

Group	No.	Infection prevention and control knowledge	Infection prevention and control attitude	Infection prevention and control behavior
Study group	60	41.34 \pm 4.36	32.47 \pm 3.14	90.14 \pm 5.47
Control group	60	37.11 \pm 4.43	28.17 \pm 5.42	84.42 \pm 5.17
T	-	3.447	4.289	4.933
P	-	<0.05	<0.05	<0.05

3.2. Comparison of Infection Rates

There was a significant difference in the data on infection rates between the two groups ($P < 0.05$), as shown in **Table 2**.

Table 2. Comparison of the infection rates between the two groups (n, %).

Group	No.	Number of infections	Infection rate
Study group	60	1	1.67%
Control group	60	13	21.67%
χ^2	-		13.448
P	-		<0.05

3.3. Comparison of Nursing Satisfaction

There was a significant difference in the data on nursing satisfaction between the two groups ($P < 0.05$), as shown in **Table 3**.

Table 3. Comparison of nursing satisfaction between the two groups (n, %).

Group	No.	Very satisfied	Satisfied	Unsatisfied	Nursing satisfaction
Study group	60	36	22	2	58 (96.67%)
Control group	60	25	24	11	49 (81.67%)
χ^2	-				6.412
P	-				<0.05

4. Discussion

In recent years, through investigations and analyses of domestic and international research, it has been found that the focus has gradually shifted from overall hospital infection prevention and control to the specific aspect of operating room infection prevention and control. Analysis of various studies has shown that details such as the hand hygiene compliance of nursing staff during surgery, correct use of protective equipment, and cleanliness and disinfection of the op-

erating room environment can directly impact the effectiveness of infection prevention and control [11]. However, based on the practical operational circumstances, it is observed that clinical nursing staff often lack knowledge of infection prevention and control, operate non-standardly, and their personal protective measures are not adequately enforced. This leads to management problems in the operating room, subsequently affecting the overall hospital infection prevention and control, significantly increasing the infection rate. This not only increases the treatment time and economic burden on patients to a certain extent but also severely impacts the overall quality of medical services in the hospital. Therefore, in order to address this issue, both the clinical medicine and research fields have started focusing on the impact of optimizing details in the operating room on the level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons and the effectiveness of infection control [12]. Currently, in clinical practice, enhancing training on surgeon hand hygiene, promoting standard preventive measures, and improving the cleanliness process of the operating room environment are commonly used to optimize details. These measures significantly enhance the awareness of infection prevention and control among surgeons and their practical operating capabilities, effectively reducing the risk of hospital infections [13].

In this research study, there was a significant difference in the level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons, the infection rates, and nursing satisfaction between the two groups, with the study group performing better ($P < 0.05$). The reasons are as follows: Firstly, in terms of knowledge, attitude, and practice, the study group enhanced infection prevention and control through detailed optimization interventions in routine care, including organizing training, detail management, and quantified assessment. This led to a deeper understanding of infection prevention and control among surgeons, more comprehensive knowledge, a stricter attitude, and more standardized behavior. As a result, the scores on specific indicators were higher in the study group. Secondly, in terms of infection rates, the implementation of detailed optimization interventions by the study group significantly reduced the risk of infections during surgical procedures, therefore leading to a noticeable decrease in infection rates. Lastly, in terms of nursing satisfaction, detailed optimization interventions focus more on patient experience and needs compared to routine care and management. This results in patients feeling more professionally and personally cared for throughout the entire surgical process, thereby improving their satisfaction with the nursing services. Detail management emphasizes the importance of nursing staff paying attention to every detail in their nursing work in the operating room and using scientific management tools and methods to enhance the quality of care and infection prevention and control level.

5. Conclusion

In conclusion, the use of optimizing details in the operating room among

surgeons can effectively enhance the level of knowledge, attitude, and practice of hospital infection prevention and control by surgeons, reduce the incidence of infections, and is worth promoting.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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