

Study on the Application of Quality Control Circle on Reducing the Defect Rate of Orthopedic Surgical Instruments

Feng Zhao, Fudong Chen, Xiaojing Li, Fei Qi *

China-Japan Union Hospital of Jilin University, Changchun, Jilin, 130033

* Corresponding author

Keywords: Quality Control Circle, Defect Rate, Orthopedic Surgical Instruments

Abstract: To explore the application effect of quality control circle in reducing the defect rate of orthopedic surgical instruments preparation, and analyze the effect of quality control circle activities on improving the quality of operation of nursing room, and provide theoretical basis for clinical development of quality control circle activities. The quality control circle consisted of 9 people, selected themes, analyzed the causes of orthopedic surgical instrument preparation defects and took corresponding measures. The division of labor and cooperation, after the implementation of the activity for 6 months, statistics on the preparation of orthopedic surgical instruments before and after the implementation of the activity, and analyze the data obtained. Before the quality control circle activities, 412 cases of orthopedic surgery were performed in 48 cases and the defect rate was 7.84%. After the quality control circle activities, 626 cases of orthopedic surgery were performed in November 2017-2018. In 17 cases with defects, the defect rate was 2.72%. The defect rate of orthopedic surgical instruments after the activity of the quality control circle was significantly lower than that before the activity, and the difference was statistically significant ($P < 0.05$). Applying the quality control circle method to the preparation of orthopedic surgical instruments, the defect rate of instrument preparation is significantly reduced, and the effect is remarkable. At the same time, the teamwork spirit of the operating room personnel is improved, the management consciousness of all employees is enhanced, and the enthusiasm, creativity and initiative of the nursing staff are brought into play.

1. Introduction

With the continuous development of orthopedic surgery, the instruments and instruments used in orthopedic surgery are constantly updated, requiring the nurses in the operating room to continuously learn new knowledge and new skills in order to better complete the coordination of the operation. However, orthopedic surgical instruments are complex and varied, which makes it difficult for the nurses in the operating room to prepare for work [1]. In the operation, the instruments often can affect the success or failure of the operation, and the operating room nurses have loopholes in the preparation of orthopedic surgical instruments, which will have a certain impact on the smooth operation of the operation [2].

The QCC Quality Control Circle was created by Dr. Shichuan Xin of Japan. The content refers to people in the same workplace. In order to solve work problems and break through work performance, they automatically synthesize a small group (circle). Then, according to the principle of self-inspiration and mutual enlightenment, the simple statistical method of the transportation management circle is used as a tool to analyze and solve the obstacles in the workplace, thereby improving the work quality, improving work efficiency and reducing costs. Goal [3, 4]. The introduction of the quality control circle method has a good effect on the improvement of the quality of medical care. In May 2017, the author's department applied the method of quality control circle to the preparation of orthopedic surgical instruments, and achieved good results. The summary report is as follows.

2. Information and methods

General Information In May 2017, the department set up a quality control circle group, with 9 circulators, 1 deputy chief nurse, 2 supervisors, 3 nurses and 3 nurses. There are 1 circle, 1 deputy circle secretary and 1 secretary. One counselor, served by the head nurse in charge of scientific research and teaching. The circle leader is headed by a competent nurse with leadership ability and professional ability. He is responsible for the overall activities of the circle. The deputy circle leader assists the circle leader in carrying out the work. The secretary is responsible for recording the content of each activity. All other members are divided into divisions. participate. Implementation activities began in June, 2-3 times a month, and the form of activities was carried out in a centralized-distributed-concentrated form.

Selected topics use the brainstorming method to propose a variety of implementable themes, combined with the particularity of the operating room work, and finally integrate the opinions of everyone, and use the voting score to screen out the theme: "Reducing the defect rate of orthopedic surgical instruments preparation" The reason for choosing the topic is to standardize the management system and process of orthopedic surgical instruments preparation, consolidate the results through continuous learning and personnel training, regularly check and track the preparation of surgical instruments, clarify the remaining problems and emerging problems, formulate dynamic rectification plans, and constantly improve The system and process make the management standardized, the quality improvement is a virtuous circle, and the daily work can be based on evidence and can be followed to avoid the defects of equipment preparation.

Current situation investigation and cause analysis In the total of 612 orthopedic operations in January-April 2017, 48 cases were incompletely prepared, and the defect rate was 7.84%. The cause was analyzed and the fishbone diagram was formulated. For the main reasons: (1) the system is not perfect, the supervision is not enough; (2) the nurse's sense of responsibility, work experience, communication ability is insufficient; (3) the special surgical equipment is not skilled; (4) communication with the doctor is not timely. In response to these main reasons, corresponding measures are taken: 2-3 regular meetings are held each month, countermeasures are proposed and supervision is carried out in response to problems, and investigations are conducted after 6 months.

Setting the target According to the current situation of the department and the ability of the circle, it is expected that the defect rate of the orthopedic device preparation will be reduced.

Develop countermeasures (1) Develop orthopaedic equipment preparation process, make orthopaedic equipment preparation process, and institutional preparation management system; (2) strengthen the management of nurses, and the team leader is responsible for tracking, while the head nurse regularly checks and Implement the reward and punishment system to strengthen the responsibility of nurses. (3) Regular training, especially for new nurses to strengthen the use of orthopedic devices; for new equipment, teaching and maintenance methods by specialists; (5) Making "Special Instruments for Orthopaedics", drawing special instruments Form a card, and attach a photo to the back of the card to facilitate the preparation of the equipment room for reading; (6) Establish the "Orthopedic Surgery Equipment Manual", register the bottom according to the doctor's different surgical habits, prepare the device according to this manual when preparing the device .

Observation indicators A comparative analysis of the defects in orthopedic surgical instrument preparation 4 months before and 4 months after the adoption of the quality control circle activity.

Data processing The collected data were analyzed and analyzed, and SPSS19.0 statistical software was used for data analysis. The χ^2 test was used, and the difference was statistically significant at $P < 0.05$.

3. Results

Before the quality control circle activity, 612 cases of orthopedic surgical instrument preparation defects in 48 cases from January to April 2017, the defect rate was 7.84%. After the event, from

November 2017 to February 2018, 626 cases of orthopedic surgical instruments were prepared for defects in 17 cases. The rate was 2.72%, and the difference in orthopedic device preparation defect rate before and after the quality control circle was statistically significant ($\chi^2=14.72, P<0.05$), as shown in Table 1.

Table 1 Comparison of orthopedic device preparation defect rate (%) before and after QTL activities

Gr	Case	Number of defects	Defect rate	χ^2	P
Control group	612	48	7.84	14.72	<0.05
Observation group	626	17	2.72		

4. Discussion

Significance of implementing quality control circle activities Quality control circle activities are an effective method to improve the readiness and perfection rate of orthopedic equipment in operating rooms [5]. Surgical instruments are important tools for surgery. In particular, orthopedic surgical instruments are complex and varied. Sometimes the proper use of surgical instruments can determine the progress and success of the operation. Therefore, the preparation of surgical instruments is an important part of completing the surgical cooperation. The quality control circle activity is a part of comprehensive quality management. Through all cooperation, brainstorming, and using scientific statistical tools and management techniques in accordance with certain activity procedures, problems arising from work site management and culture are solved. The true participation of the circlers, especially in the analysis of the status quo, the reason why the circlers use the brainstorming method to analyze the cause of the high defect rate of orthopedic equipment preparation, and the various diagrams are never understood to be skilled in the application process, so that the circler's own value is obtained. Best to play. Only through the participation of all departments in the quality of each link to ensure the quality of the link, interlocking, to ensure the quality of management, and effectively improve the efficiency and improvement rate of orthopedic surgical equipment preparation.

Promote the preparation of orthopedic surgical instruments The improvement of nursing work methods can significantly improve the efficiency of nursing work [6]. Before the quality control circle activities, the following main problems exist in the preparation of orthopedic equipment: (1) the system is imperfect and the supervision is not enough; (2) the nurses have the responsibility, work experience and communication ability; (3) the special surgical instruments are not skilled; (4) Communication with the doctor is not timely. In response to these problems, the quality control circle activity team uses scientific analysis methods to formulate implementation measures: (1) to develop orthopaedic equipment preparation processes, to make orthopedic equipment preparation process, and equipment preparation management institutionalized; (2) to strengthen the management of nurses, The team leader is responsible for tracking, and the head nurse regularly checks and implements the reward and punishment system to strengthen the responsibility of the nurses. (3) Regular training, especially for new nurses to strengthen the use of orthopedic devices; for new equipment, teaching and maintenance methods by specialists; (5) Making "Special Instruments for Orthopaedics", drawing special instruments Form a card and attach a photo to the back of the card to facilitate reading when the device is prepared for surgery; (6) Establish a "Orthopedic Surgery Device Manual", register the bottom according to the doctor's different surgical habits, and prepare the device according to this manual when preparing the device. . Through the quality control circle activity, the defect rate of orthopedic surgical instrument preparation decreased from 7.84% before the activity to 2.72% after the activity, indicating that after the implementation of the quality control circle activity, the defect rate of orthopedic surgical instrument preparation was significantly reduced, and the operation room nursing was improved. Quality of work.

Problems in the implementation of quality control circle activities In the application process of quality control circle, the following aspects should be noted: (1) In the quality control circle activities, the training work of nursing staff should be emphasized, and the quality control circle should be carried out for nursing staff. The training of relevant knowledge allows everyone to fully understand the knowledge of the quality control circle and the advantages of applying the quality control circle to solve the problem. Conduct multi-level and multi-form training for nurses, discuss issues related to past management and processes, propose practical and feasible improvement measures, and enable everyone to participate, so that everyone can participate spontaneously in the activities, fully discuss and share Learning, asking questions, analyzing problems and proposing their own improvement measures, so that each circle's problem-solving, communication, and expression skills are improved. Only by improving the ability of individuals to master new knowledge and new technologies, and giving full play to the initiative of each nurse can we truly improve the quality of operating room care. (2) Change the concept. The nurse's work changed from passive to active, stimulating the awareness of nursing staff to participate in management, and fully mobilized the enthusiasm of the quality management of the circle. The quality control circle gives the circle members a real sense of participation, so that the circle's own value can be best played, so that they can get satisfaction and sense of accomplishment in the work. The activities of the quality control circle have spurred the ability of each member to improve the execution and compliance of management measures.

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