Effect of quality control circle in clinical pain care.

Hui-Min Zhang[1], Yong-Qin Tang[1], Min-Rong Ying[2]*

[1]Department of Interventional Vascular Pain, the Second People's Hospital of Hefei, Hefei, Anhui, PR China

[2]Department of Orthopedic, the Second People's Hospital of Hefei, Hefei, Anhui, PR China

Abstract

Objective: The aim of this study is to observe the effects of Quality Control Circle (QCC) in clinical pain care.

Methods: A total of 140 patients admitted in our hospital from September 2016 to September 2017 were selected and divided into the control group (n=70) and observation group (n=70) by the number table method. These patients had varying degrees of pain. The control group was offered with conventional clinical nursing, whereas the observation group subjected to the QCC. The two groups were compared with respect to pain improvement, nursing satisfaction, nursing quality, and work efficiency.

Results: With respect to number of pain cases, the observation group has significantly fewer cases of moderate and severe pain than the control group. There is statistically significant difference between the two groups (P<0.05). The observation group achieves higher rate of pain knowledge assessment of nurses, positive pain informing rate of patients, rate of satisfying pain nursing records, timeliness with regard to the handling of patients with pain score ≥ 4, and overall satisfaction of patients with respect to pain management than the control group (P<0.05). The control group was inferior to the observation group with respect to teamwork, confidence, enthusiasm, and communication and cooperation scores (P<0.05).

Conclusions: In clinical pain nursing, QCC is conducive to pain alleviation, increases nursing satisfaction and work efficiency, and improves nursing quality. Thus, it is worthy of clinical use and positive promotion.

Introduction

Pain nursing plays a unique role in pain diagnosis and treatment [1]. Along with the continuous development of medical nursing in recent years, employing pain nursing in clinics has attracted considerable interest [2]. Pain has been defined as the "fifth vital sign" in clinics. However, poor pain control remains prevalent in clinics. Quality Control Circle (QCC) is an activity team organized by workers from similar, identical, or complementary fields [3]. The team implements brainstorming and cooperation activities according to corresponding programs. It uses statistical tools and quality control means scientifically and flexibly to solve problems and topics related to working field culture and proper management [4]. In this study, 140 patients admitted in our hospital were selected and divided into two groups. These patients had pain due to various causes. Results are introduced in the following text.

Information and Method

General information

A total of 140 patients admitted in our hospital from September 2016 to September 2017 were selected and divided into the control group (n=70) and the observation group (n=70) by the number table method. The control group had 38 males and 23 females aged 20-86 y, with an average age of 54.8 ± 14.3 y. Specifically, the control group consisted of 20 cases of renipuncture postoperative pain, 15 cases of gout pains, 18 cases of catheterization postoperative pain, 12 cases of internal arteriovenous fistula postoperative pain, and 5 cases of pain due to other causes. The observation group had 39 males and 31 females aged 21-85 y, with an average age of 55.3 ± 14.2 y. The observation group consisted of 22 cases of renipuncture postoperative pain, 16 cases of gout pains, 15 cases of catheterization postoperative pain, 13 cases of internal arteriovenous fistula postoperative, pain and 4 cases of pain due to other causes. No statistically significant difference was observed between the groups with respect to their general information (P>0.05), indicating their comparability.

Methods

The control group was offered with conventional clinical nursing, including vital signs, disease observation, diet instruction, medication intervention, basic education, and psychological and pain nursing. The observation group adopted the QCC, mainly including organization of the QCC team, determination of topics, analysis of current situations, setting improvement goals, cause analysis, and countermeasure formulation and implementation.

Observation indexes

Pain improvement: The following VAS pain assessment standards were used: painless, 0; mild pain, ≤ 3; moderate pain, 4-6; and severe pain, 7-10. Nursing quality and work efficiency were observed and evaluated. Nursing satisfaction: satisfying, basically satisfying, and unsatisfying.

Statistical treatment

All observation data were processed in SPSS software (version 22.0). Measurement data and enumeration data were expressed in $\bar{x} \pm s$ and %, respectively. They were examined by t-test and χ^2 test, respectively. P<0.05 indicates statistically significant difference.

Results

Pain improvement

With respect to number of pain cases, the observation group had significantly fewer cases of moderate and severe pain than the control group (P<0.05). Results are shown in Table 1.

Nursing quality

The observation group achieves higher rate of pain knowledge assessment of nurses, positive pain informing rate of patients, rate of satisfying pain nursing records, timely handling rate of patients with pain score of ≥ 4, and overall satisfaction of patients over pain control than the control group (P<0.05). Results are shown in Table 2.

Work efficiency

The control group is inferior to the observation group in terms of teamwork, confidence, enthusiasm, as well as communication and cooperation scores (P<0.05). Results are shown in Table 3.

Nursing satisfaction

The observation group reports far higher nursing satisfaction than the control group (P<0.05). Results are shown in Table 4.

Table 1. *Comparison of pain improvement between the two groups (n (%)).*

Groups	Painless	Mild pain	Moderate pain	Severe pain
Observation (n=70)	32 (45.7)	34 (48.6)	3 (4.3)	1 (1.4)
Control (n=70)	19 (27.1)	22 (31.4)	20 (28.6)	9 (12.9)
χ^2	5.2126	4.2857	15.0353	6.8923
P	0.0224	0.0384	0.0001	0.0086

Table 2. *Comparison of nursing quality between the two groups ($\bar{x} \pm s$, %).*

Groups	Rate of pain knowledge assessment of nurses	Positive pain informing rate of patients	Rate of satisfying pain nursing records	Timely handling rate of patients with pain score ≥ 4	Overall satisfaction of patients over pain control
Observation	80.1 ± 0.7	86.7 ± 0.2	62.5 ± 0.6	90.7 ± 0.7	89.4 ± 0.1
Control	99.7 ± 0.5	97.1 ± 0.5	98.9 ± 0.6	99.1 ± 0.5	99.8 ± 0.3
t	190.6291	161.5784	358.9088	81.6981	275.1581
P	0.0000	0.0000	0.0000	0.0000	0.0000
P	0.0000	0.0000	0.0000	0.0000	

Table 3. *Comparison of work efficiency between the two groups ($\bar{x} \pm s$, scores).*

Groups	Enthusiasm	Confidence	Communication and cooperation	Teamwork
Observation (n=70)	8.5 ± 1.5	8.6 ± 1.6	7.6 ± 1.2	8.7 ± 1.8
Control (n=70)	4.3 ± 0.7	5.1 ± 0.5	5.7 ± 1.1	5.3 ± 0.5
t	21.2286	17.4688	9.7651	15.2270

Table 4. *Comparison of nursing satisfaction between the two groups (n (%)).*

Groups	Satisfying	Basic satisfying	Unsatisfying	Satisfaction
Observation (n=70)	42 (60.0)	26 (37.1)	2 (2.9)	68 (97.1)
Control (n=70)	35 (50.0)	24 (34.3)	11 (15.7)	59 (84.3)
χ^2				6.8686

P	0.0087

Discussion

QCC, one important link of comprehensive quality management, requires the participation of the entire staff. It realizes the goal of self-enlightening and mutual enlightening through the flexible use of various quality-controlling means. Thus, it can be used for the maintenance and improvement of activities and jobs in job sites. Specific contents include the following.

Organizing QCC team: 11 circle members were selected from the nursing staff in the department through autonomous enrolment [5]. The leader was assumed by the head nurse, and the instructor was assumed by the assistant head nurse. The rest of the members were circle members. According to discussion and voting results of the circle members, this QCC was named "Win-Win Circle."

Determination of topics: Existing problems in the department are proposed through brainstorming. After all opinions were collected, the topics were screened by classification method [6]. The QCC topic was determined to be "Improving Pain Nursing Quality for Patients." The activity plan was made, and the program term was set four times a month for a period of 6 months. Specific principals and steps of the program were set.

Analysis of current situations: Existing pain nursing quality was examined from perspectives of the patients, management, and medical care [7]. Influences of pain nursing quality are mainly manifested by the following: the nursing staff's lack of knowledge about the pain nursing responsibilities; the nursing staff's lack of knowledge on pain; unsatisfying pain education; patients are passive in the pain nursing and choose to bear their pain; and patients have less knowledge or misunderstanding on painkiller.

Setting improvement goals: according to quality index, actual needs of patients, self-actualization, and probability of goal realizing, the activity goals of this QCC were determined as follows: positive pain informing rate of patients, >95%; rate of pain knowledge assessment of nurses, 100%; timely handling rate of patients with pain score of $\geq$ 4, >95%; overall satisfaction of patients over pain control, >98%; and rate of satisfying pain nursing records, 100% [8].

Cause analysis: QCC members must discuss problems that will influence pain nursing quality and determine reasons from the management, methods, patients, and nurses [9].

Countermeasure formulation and implementation: (1) Update painkilling concept to nurses and increase their sense of responsibility significantly. Enhance learning and training of pain knowledge, further increasing their abilities in pain assessment, education, and handling, as well as change their original wrong concepts and attitudes of pain treatment [10]. Nurses shall master indications, usage, specific pharmacologic actions, and common complications of painkillers, fulfil pain relieving measures positively, and instruct pain nursing to patients and their family members. (2) Nurses shall help

patients to comprehend relevant information of painkiller comprehensively and accurately, tell patients and their family members about risks of pain and important role of painkilling, explain to them about pain assessment and treatment thoroughly, and try to eliminate misunderstanding of patients on painkillers, so as to relieve and eliminate pains effectively and improve living quality. (3) Improve pain assessment methods: The department must improve pain assessment tools. The FLACC and NRS are optional according to specific conditions of the department. (4) Implement and enhance pain nursing and perform relative records. Assess pain degree accurately. Assist patients with mild pains to find a comfortable body position, create a comfortable environment, and give specific psychological intervention for pain relief. Nurses also can relieve pains of patients significantly through distraction, respiratory control, musicotherapy, and autosuggestion. In addition, naturopathy and traditional Chinese medicine therapy also can relieve pains. Patients with severe pains can follow doctor's advice to take painkillers and observe and record medication effects and untoward effect. (5) Enhance supervision and the leader is responsible for regular examination. The QCC members shall supervise mutually, implement different nursing measures positively, discover and provide feedback problems during examination, and fulfil analysis and reform.

Conclusion

In this study, the observation group achieves significant progresses in pain improvement, nursing quality, work efficiency, and nursing satisfaction compared to the control group (P<0.05). These demonstrate that in clinical pain nursing, the QCC is conducive to relieve pains, increase nursing satisfaction and work efficiency, and improve nursing quality significantly. Thus, it is worthy of clinical use and positive promotion.

References

1. Lin L, Chang P, Xie J, Li Z, Zhang H, Lu F, Zhao Y. Sustained accuracy improvement in intraocular lens power calculation with the application of quality control circle. Sci Rep 2017; 7: 14852.

2. Liu S, Luo X, Zhang N, Gao M, Luo L, Luo Y. New formulation of simethicone emulsion: optimization, preparation and quality evaluation. Lat Am J Pharm 2016; 35: 2132-2141.

3. Chen P, Yuan T, Sun Q, Jiang L, Jiang H, Zhu Z, Tao Z, Wang H, Xu A. Role of quality control circle in sustained improvement of hand hygiene compliance: an observational study in a stomatology hospital in Shandong, China. Antimicrob Resist Infect Control 2016; 5: 54.

4. Khanehmasjedi M, Miresmaili A, Jafari S, Khanehmasjedi S. Comparison of the soft tissue orthodontic analysis measurements between conventional lateral cephalograms and CBCT derived lateral cephalograms. Biomed Res India 2017; 28: 1087-1090.

5. Wunderley L, Leznicki P, Payapilly A, High S. SGTA regulates the cytosolic quality control of hydrophobic substrates. J Cell Sci 2014; 127: 4728-4739.

6. Khan SM, Nisar-ur-Rehman, Hanif M, Abbas G. Matrix tablets of isosorbide mononitrate for controlled release drug delivery by central composite response surface design. Lat Am J Pharm 2017; 36: 2071-2080.

7. Hopper AK, Huang HY. Quality control pathways for nucleus-encoded eukaryotic tRNA biosynthesis and subcellular trafficking. Mol Cell Biol 2015; 35: 2052-2058.

8. Senthil KTK, Ganesh EN, Umamaheswari R. Lung nodule volume growth analysis and visualization through auto-cluster k-means segmentation and centroid/shape variance based false nodule elimination. Biomed Res India 2017; 28: 1927-1934.

9. Goldschneider KR, Good J, Harrop E, Liossi C, Lynch-Jordan A, Martinez AE, Maxwell LG, Stanko-Lopp D. Pain care for patients with epidermolysis bullosa: best care practice guidelines. BMC Med 2014; 12: 178.

10. Martinez KA, Aslakson RA, Wilson RF, Apostol CC, Fawole OA, Lau BD, Vollenweider D, BassEB, Dy SM. A systematic review of health care interventions for pain in patients with advanced cancer. Am J Hosp Palliat Care 2014; 31: 79-86.

*Correspondence to

Min-Rong Ying

Department of Orthopedic

The Second People's Hospital of Hefei

PR China