

## Application of a Research-Based Quality Control Circle for the Construction of a Three-Level Linkage Continuous Nursing Model of “Hospital-Cadre’s Sanatorium-Family” for Veteran Cadres

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### Keywords:

Hospital-cadre’s sanatorium-family; Three level linkage; Continuous nursing; Veteran cadres

## 1. Abstract

**1.1. Objective:** By carrying out research-based quality control circle activities, a continuous nursing model for hospitalized veteran cadres was built, which improved quality of life and compliance.

**1.2. Methods:** A “Ji Dong Circle” quality control circle group was established to analyze the current situation, survey data, mine key points, and formulate strategies from three levels (hospital-cadre’s sanatorium-family), according to the operation steps of the subject research quality control circle. The quality control circle group was implemented from three aspects: the establishment of a three-level linkage management mode of “hospital-cadre’s sanatorium-family;” the establishment of “three more” nursing training modes; and the operation of a continuous nursing service system.

**1.3. Results:** After implementation of the quality control circle, the level of relevant nursing professional knowledge among the nursing staff, the level of first aid skills among medical staff in cadre’s sanatorium, the coverage rate of telephone follow-up, nursing satisfaction, medication compliance of veteran cadres, and

the living nursing operation level of caregivers were significantly improved compared to those before implementation ( $P < 0.05$ ).

**1.4. Conclusion:** The research-based quality control circle activity constructed a new three-level linkage “hospital-cadre’s sanatorium-family” continuous nursing model for hospitalized veteran cadres that is guided by the needs of patients. At the same time, it has implemented the national medical security policy for the elderly, effectively improved the compliance and nursing satisfaction of the elderly cadres, and established the brand benefit of hospital elderly care services.

## 2. Introduction

At present, retired veteran cadres have generally entered the “double-high period” (old age and high incidence period) [1]. Due to various chronic diseases during the aging period combined with various complications and a decline in self-care ability, the demand for medical treatment, health care, nursing, and rehabilitation increases day-by-day. Thus, providing an excellent level of medical care for veteran cadres is a major issue faced by medical institutions at all levels [2]. According to the requirements of the

Notice of the General Office of the National Health Commission on Carrying out the Pilot Work of Medical Care for the Elderly (GBYH [2021] No. 560), it is proposed to practically increase the supply of medical care services for the elderly, accurately meet the needs of the elderly for diversified medical care services, and provide multi-level institutional care, community and home medical care services for the elderly [3]. Our hospital is a comprehensive tertiary first-class hospital. It undertakes the medical security task for retired cadres in more than 10 cadre's sanatoriums. In this study a research-based quality control circle was applied to the construction of a three-level linkage continuous nursing model of "hospital-cadre's sanatorium-family" to actively provide veteran cadres with convenient diagnosis and treatment, professional care, family care, and hospital-institution collaborative treatment services [4]; the report follows.

### 3. Materials and Methods

#### 3.1. Patients Information

Eighty-four veteran cadre patients with chronic diseases who were admitted to the cadre ward of our hospital between February-June 2021 were selected as the research participants. The inclusion criteria were as follows: age > 75 years; veteran cadres diagnosed with chronic diseases, such as diabetes, cardiovascular diseases, chronic obstructive pulmonary disease, and rheumatic diseases; clear consciousness and basic oral expression or writing ability; veteran cadres and their families willing to undergo follow-up evaluations; and signed informed consent and willingness to voluntarily participate in this study. The exclusion criteria were as follows: patients with severe complications, such as heart, lung, liver, and kidney dysfunction, infectious diseases, and mental diseases; patients with cognitive and memory dysfunction; and inability to participate with follow-up managers. The data on the compliance of veteran cadres to drugs and their satisfaction with nursing work before and after the implementation were collected.

#### 3.2. Methods

**3.2.1. Establishing a Quality Control Circle:** In January 2021 a quality control circle activity group (Ji Dong Circle) was established. All members of the circle participated voluntarily, including wound nurses, geriatric nurses, nursing assistants, general practitioners, nutritionists, and rehabilitation therapists. There were eight therapists and physicians in the cadre's sanatorium. The Director of the Nursing Department and the Director of the Department of Geriatrics served as counselors. All members of the circle had a bachelor's degree or above and 75% had intermediate and senior titles.

**3.2.2. Topic Selection:** All circle members listed the problems found in the clinical work by brainstorming, and together with all circle members, they listed five alternative themes. From the four dimensions of urgency, circle ability, feasibility, and superior policy, the project weight evaluation table was used to finally select

the theme of this activity, which scored the highest, "Constructing a continuous nursing model, building a new brand of military service". Through the QC Story, the activity was judged and the project was updated. The quality control circle is determined to be a research subject.

**3.2.3. Activity Plan Formulation:** According to the 5W1H principle (six-why analysis method), the quality control circle activity schedule was drawn up, and the activity content, time, place, method, and the person responsible for the activity cycle were determined [5].

**3.2.4. The Subject was Clarified:** From the hospital, the cadre's sanatorium, and the family, the current situation was investigated and data were mined according to five aspects (personnel, methods, systems, equipment, and information). The quality control circle team determined the expected level and expected difference by referring to the literature and the actual situation. They also used brainstorming to actively discuss and select the alternative key points based on the feasibility, urgency, circle ability, and expected effect. In contrast, according to the "80/20 rule", it was determined to be a key point and merged, and a total of four combined key points were obtained, as follows: Improve the knowledge level of nurses and patients; Improve the medical compliance behavior of veteran cadres; Constructing the continuous nursing service model; Add information exchange platform.

**3.2.5. Goal setting:** A Total of 6 Target Values are Set for this Activity:

- The nursing-related professional knowledge level of nursing staff increased from 70.08 to 80.00 points.
- First aid operation level of medical staff in the cadre's sanatorium increased from 68.5 points to 80.0 points.
- The telephone follow-up was not implemented until the implementation coverage reached 90%.
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- Veteran cadre satisfaction with nursing work increased from 92.26% to 95%.
- The compliance of veteran cadres with medication increased from 41.7% to 80.0
- The caregivers operation level scores of caregivers increased from 52.26 to 70.00 points.

**3.2.6. Formulating The Strategy:** All the members of the circle jointly passed the brainstorming method and reviewed the literature. The four integrated key points were evaluated according to the "5-3-1 scoring method", and 18 strategies were finally determined according to the "80/20 rule".

#### 3.2.7. Investigation of The Best Policy

Determine the obstacles and side effects of the 18 policies, invite

geriatric and general medical experts to discuss and consult. Finally, it is integrated into three strategic groups:

- Establishing a three-level linkage management model of “hospital-cadre’s sanatorium-family”;
- Establishing “three more” nursing training mode;
- Operation of continuous nursing service system.

### **3.2.8. Implementation of Best Practices and Review**

#### **3.2.8.1. Establish a Three-Level Linkage Management Model of “Hospital-Cadre’S Sanatorium-Family”**

Build a multidisciplinary team consisting of project leaders, geriatricians, general practitioners, rehabilitation therapists, physicians, and nurses to formulate an organizational framework and clarify the division of responsibilities, determine the project leader as the multidisciplinary team leader, and the assistant of the nursing department as the liaison who was responsible for the coordination between teams and the the outpatient department of the cadre’s sanatorium. Formulate volunteer inclusion standards, set up a volunteer nursing services team, and undertake a multidisciplinary team nurse role. Convene a multidisciplinary team to formulate a plan of continuous nursing service for veteran cadres, including discharge preparation and follow-up systems for veteran cadres, and establish a discharge telephone follow-up book and a personalized health management file for veteran cadres. Hold a symposium for the leaders of the cadre’s sanatorium within the scope of medical service guarantee, and initially establish a linkage mechanism. [1]. The nurses in the hospital ward complete the discharge preparation and follow-up management. When discharged, they hand over the condition with the medical staff in the cadre’s sanatorium, including personal health files. Within one week after discharge, the hospital nurses complete the first telephone follow-up. The first, third and sixth months after discharge, they will be followed up by telephone, and then according to the needs of veteran cadres [2]. The medical staff of the cadre’s sanatorium visit the hospital twice a week to assess the patient’s disease situation, and at the same time give nursing guidance to the caregivers. After each visit, improve the health records [3]. The medical staff of the cadre’s sanatorium liaised with the multidisciplinary hospital team to clarify the time of visit and service items, such as skin, wounds, pipeline and other care, as well as dressing changes, catheter placement, and other nursing treatments. Through the above measures, a three-level linkage management model was built with the hospital at the core to provide technical support and guarantee, the cadre’s sanatorium as the bridge to ensure the coordination of the three parties, and the family as the support to standardize the behavior of patients and to provide continuous care to improve patient outcomes.

#### **3.2.8.2. Establishing “Three More” Nursing Training Mode, As Follows:**

“Multi-disciplinary” teacher training: Through discussions in the Nursing Department, geriatrics, rehabilitation, general medicine,

and other disciplines, and develop a training plan, train teachers, and determine the training content, including common chronic disease knowledge, specialized nursing, nursing operation skills, communication, and etiquette;

“Multi-level” full-staff training: Individualized training for multi-disciplinary team nurses, nursing staff in the cadre’s sanatorium and caregivers [1]. Team nurses had monthly theoretical training focusing on geriatric nursing, knowledge of common elderly diseases, communication etiquette, participation in various activities of the hospital geriatrics group, and improvement in nurse awareness of chronic diseases [2]. Organize hospital nursing operation teachers to conduct emergency nursing training for them, organize operation demonstration in a single month, and conduct assessment and acceptance in two months, so as to improve the pre-hospital first aid ability of medical staff in the cadre’s sanatorium, and actively encourage the nurses in the cadre’s sanatorium to participate in the hospital’s monthly continuing education, and improve the level of nursing knowledge of the nurses in the cadre’s sanatorium [3]. Through group activities in the cadre’s sanatorium, carry out disease science education and basic nursing operation guidance, including home care and emergency response measures, improved the ability of caregivers at home; “Multi-channel” comprehensive training: The training methods are online and offline theoretical teaching, special lectures, on-site teaching, group activities, door-to-door guidance, etc; At the same time, after the completion of each training and demonstration course, the on-site assessment and acceptance shall be carried out to ensure the participation rate and effectiveness of the training.

#### **3.2.8.3: Operation of Continuous Nursing Service System**

[1]. Home based nursing service. Home nursing shall be carried out according to the medical staff’s inspection tour in the cadre’s sanatorium and the needs of veteran cadres, so as to meet the needs of veteran cadres for disease recovery after discharge, and extend the time for veteran cadres to be hospitalized again [2]. Add communication platform. Establish staff communication group and nurse patient communication group, and use WeChat platform to realize information exchange among hospital, cadre’s sanatorium and family. Understand the health indicators, physical conditions, medical needs and existing problems of veteran cadres after discharge, and assist in solving them together [3]. Establish diversified health education channels. a. Establish a WeChat video number, make a health science video and push it regularly to promote the scientific guidance of diseases; b. develop health education manuals in graphic format to help individuals read and understand; and c. carry out volunteer group activities, and let veteran cadres and caregivers benefit from and actively participate in through on-site popular science teaching and manual activities [4]. The evaluation index for the health education implementation rate incorporated the quality control assessment system. The nursing quality control team regularly supervised and guided the health

education for the department. Strengthen the implementation rate of health education for nurses. Most of the veteran cadres are in advanced age, and their memory is impaired. Nurses should educate the veteran cadres and caregivers through multiple ways and diversified forms. At the same time, they should pay attention to repeated education, and investigate their mastery, so as to improve the mastery rate of disease knowledge and drug compliance of the veteran cadres or caregivers.

**3.3: The Observation Indicators were as Follows:**

- Statistical nursing staff score of professional knowledge level before and after implementation;
- The first aid skill level of medical staff before and after implementation;
- Implementation of the discharge telephone follow-up of senior cadres before and after implementation;
- Evaluate the patient satisfaction questionnaire before and after implementation;
- Medication compliance questions (MMAS-8) [6] were used to evaluate the medication compliance of research subjects before and after implementation, which was proposed by Morisky, and the Cronbach’s coefficient was 0.825, which has been widely used in [7];
- Nursing operation level of caregivers before and after implementation.

**4. Statistical Methods**

Data processing was performed using SPSS 22.0 statistical software, and measurement data are represented as the mean ± standard deviation ( $\bar{x} \pm s$ ). T-tests were used to determine differences between groups. Percentages were used to express the data counting rate, and comparisons between groups were performed using a  $\chi^2$  test.  $P < 0.05$  was considered as a statistically significant.

**5. Results**

**5.1: Visible Achievement**

The quality control circle group was implemented according to the three-square policy groups, as follows:

After implementation, the data showed that the knowledge of caregivers was higher than before implementation, as shown in Table 1. After implementation, the first aid operation level of medical staff in the dry rest center was higher than before implementation (Table 2). After implementation, telephone follow-up with senior cadres was not higher, and the coverage rate reached 92.85%. After implementation, patient satisfaction at the time of hospital discharge was higher than before implementation (Table 3). After implementation, the medication compliance of senior cadres was higher than before implementation (Table 4). After implementation, the caregivers’ life care operation level score was higher than before implementation (Table 5), and the two groups differed before and after the quality loop activity ( $P < 0.05$ ).

**Table 1:** Relevant knowledge of nursing staff before and after the implementation of countermeasures (points,  $[x \pm s]$ ).

Time	Number of Nurse	Knowledge level of nursing staff
Before the implement	72	70.08±5.69
After the implement	72	85.06±4.31
t		17.799
P		0

**Table 2:** First aid skill level of medical staff before and after the implementation of countermeasures (points,  $[x \pm s]$ ).

Time	Number of medical staff	First aid skills level of nursing staff
Before the implement	36	68.50±5.26
After the implement	36	81.03±7.65
t		-8.100
P		0.000

**Table 3:** Satisfaction of discharged patients before and after the implementation of countermeasures (percentage, %).

Group	Number of Example	Very Satisfied	Satisfied	Normal	Discontent	Total Satisfacti Rate
Before the implement	84	63	17	3	1	92.26
After the implement	84	78	6	0	0	97.91
$\chi^2$						10.384
P						0.004

**Table 4:** Compliance of veteran cadres with medication before and after the implementation of countermeasures (percentage, %).

Group	Number of Example	Fully Compliant	Basically Compliant	No Compliant	Total Compliance Rate
Before the implement	84	21 (25)	14 (16.7)	49	35 (41.7)
After the implement	84	46 (54.8)	30 (35.7)	8	76 (90.5)
$\chi^2$					44.635
P					0

**Table 5:** Life care operation level of the caregivers before and after the implementation of countermeasures [points, ( $\bar{x} \pm s$ )].

Time	Number of caregivers	Life care operation level of the caregivers
Before the implement	84	52.26±10.67
After the implement	84	80.79±6.88
<i>t</i>		-20.593
<i>P</i>		0.000

## 5.2: Invisible Achievements

After the implementation of quality control circle activities, the members improved their personal quality training, mastery of quality control circle techniques, teamwork, communication and coordination, problem solving abilities, enthusiasm, responsibility, and self-confidence.

## 5.3 Standardization through Improvement

Six standardized operation books have been created, including a hospital-cadre's sanatorium-family three-level linkage management system; veteran cadres discharge preparation system; multidisciplinary team operation mechanism; multidisciplinary team nursing training norms; volunteer service team management norms; and personalized health file management system for veteran cadres.

## 6. Discussion

### 6.1 Establishing a Three-Level Linkage Management Model of Hospital, Cadre's Sanatorium and Family will help Improve Medical Services for Veteran Cadres

Through the development of quality control circle activities, eighty-four veteran cadres underwent interventions in the linkage management mode of a "hospital-cadre's sanatorium-family," and all-round on-door service, 24-hour waiting service, whole process tracking service and zero distance accompanying service [8]. On the basis of regular telephone follow-up, on the one hand, we should strengthen close medical contact with the cadre's sanatorium, do a good job of timely outpatient visits for veteran cadres suffering from chronic diseases, and at the same time, establish patient health files as soon as possible, so as to realize the sharing and management of patient health information. On the other hand, to go out of the hospital, the patients home family follow-up work, really formed by the three-level general hospital was responsible for management and guidance, the cadre's sanatorium was responsible for the specific implementation, veteran cadres family members to participate in management service medical model [9]. The results of this study showed that the adherence to medication and knowledge of disease were significantly improved.

### 3.2. The Quality Management Circle was Conducive to the Construction and Development of a Continuous Nursing System

In 2016, the National Quality Control Circle Competition was the first special research project, and developed its evaluation standards to promote the development of scientific studies to solve prob-

lems encountered in medical processes [10]. During this period we needed to complete the work and complete the project. Through the implementation of the subject, the three-level "hospital-cadre's sanatorium-family" nursing continuity system was built. Further improve and enrich the connotation of holistic nursing and high-quality nursing, strengthen the comprehensive management of patients after discharge, provide humanized and individualized nursing services for patients from rehabilitation exercise, home nursing and other aspects, and ensure that patients can still receive continuous and scientific nursing services when transferring in different places [11]. In conclusion, the effect of applying a research-based quality control circle for continuous care following discharge was significant. This study combined hospital, cadre's sanatorium, and family, and used the technical advantages of tertiary hospitals that were fully integrated and utilized the medical resources of cadre's sanatorium, and realized the entire process and dynamic continuation management of retired cadres. Through the quality management activities of the clinical nursing staff enhanced team cohesion, and It has improved the overall image of the hospital, which is of great significance for creating a new service guarantee mode that meets the needs of retired cadres before the hospital [12], and worthy of widespread use.

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