Original Article

Central sterile supply department (CSSD) management quality sensitive index constructed by management mode under the guidance of key point control theory and its effect on CSSD management quality: a retrospective study

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Background: The central sterile supply department (CSSD) ensures the quality of medical care and controls infection. The professional, standardized, and scientific management of the CSSD is prerequisite if a hospital is to realize sustainable development. Based on the management mode and under the guidance of key point control theory, this study developed the CSSD management quality sensitive index to analyze its effects on the management quality of the CSSD.

Methods: We conducted a retrospective analysis of 282 medical devices processed from January 2020 to June 2020 (the control group), and 280 medical devices sterilized from July 2020 to December 2020 (the observation group). The devices in the control group were cleaned and disinfected according to the conventional operation process, while the observation group used a management quality sensitive index that had been developed according to the management mode, as guided by the key point control theory, and managed by the CSSD. The sensitive indexes of the two groups before and after the intervention were recorded to evaluate the work quality of CSSD medical staff.

Results: After the intervention, the process indexes, such as the qualified rate of cleaning quality, qualified rate of assembly, qualified rate of labeling, and correct rate of sterilization, the qualification rate of the sterilization results, the rate of intact packaging, and the rate of intact instruments, the environmental status, packaging quality, cleaning quality, and equipment management scores of the observation group were significantly higher than those of the control group ($P<0.05$). The incidence of wet packaging in the observation group was significantly lower than that in the control group ($P<0.05$). The service quality indexes, such as the replenishment time, retrieval time and preparation time of goods, of the observation group were significantly shorter than those of the control group ($P<0.05$).

Conclusions: The quality sensitive index constructed under the guidance of the key point control theory can be used to guide the quality management of the CSSD, improve the processing results of key points in key control processes, and improve the work quality and service quality of the medical staff.

Keywords: Central sterile supply department (CSSD); key point control theory; quality management; sensitive index system

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Introduction

The central sterile supply department (CSSD) is an important hospital department that ensures the quality of medical care and controls infection. It is mainly responsible for the cleaning, disinfection, sterilization, distribution, recycling, and storage of clinical medical articles and equipment, and the provision of sterile articles to all hospital departments (1). In recent years, with the development of medical technology in China, the number of surgical operations has increased, and more types and quantities of instruments and equipment are used in surgery, such as respiratory devices, cardiac pacemakers, and minimally invasive instruments, which has resulted in the implementation of stricter work requirements for the CSSD (2). Improper management of CSSD may lead to the occurrence of nosocomial infections and economic losses. Many medical devices have complex structures and are difficult to clean. Poor management and technology may result in incomplete cleaning and induce nosocomial infections. Nosocomial infection will lead to the increase of medical expenses for patients and the prolongation of hospitalization time. In severe cases, it threatens the life of patients and brings huge losses to hospitals and patients. The professional, standardized, and scientific management of the CSSD is a prerequisite for ensuring medical quality and improving comprehensive strength (3).

The quality sensitive index (4) is a new index for quantitative evaluation and detection quality control. It evaluates the quality work of supply room staff using scientific and rigorous means, standardizes their operation behavior, improves their work quality, reduces the occurrence of nosocomial infection, and promotes patients' rehabilitation and postoperative prognoses.

Key point control is the key factor for solving a problem on the premise of a research purpose. To maintain the effective operation of a quality system, key items must be selected that have important links to quality management for key control (5). A management mode based on the key point control theory has the advantages of clarity, controllability, and easy evaluation. It adopts a high-quality management method to achieve the goal. With the help of the plan do, check, action (PDCA) cycle (6,7) and the T-DOC cycle (8) system (a machine data logging software which provides a direct interface for sterilizers and washer-disinfectors, enabling users to maintain a real-time overview of important cycle parameters such as cycle phases, temperature, and remaining time), the safety of medical devices is guaranteed. Based on the management mode and under the guidance of the key point control theory, this study constructed the CSSD management quality sensitive index and investigated its effect on the management quality of the CSSD to provide evidence-based guidance for the management quality of the CSSD and optimize the hospital management system. We present the following article in accordance with the STROBE reporting checklist (available at https://apm.amegroups.com/article/view/10.21037/apm-22-594/rc).

Methods

Research objects

A retrospective research method was adopted in this study, and medical devices disinfected by the CSSD from January 2020 to December 2020 were the research objects. The objects comprised 282 medical devices cleaned and disinfected according to the conventional operation process from January 2020 to June 2020 (the control group), and 280 medical devices managed according to the quality sensitive index system from July 2020 to December 2020 (the observation group). In the control group, there were 23 instruments and equipment, 178 instruments, 39 diagnostic reagents and calibration substances, and 42 other materials. In the observation group, there were 23 instruments and equipment, 182 instruments, 35 diagnostic reagents and calibration substances, and 40 other materials.

The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by the Ethics Committee of Hai'an Hospital Affiliated to Nantong University (No. 20209861). Individual consent for this retrospective analysis was waived.

Management model

Control group

The routine operation process was used to clean the medical devices. The qualification of the CSSD devices was reviewed, a device archive was established, and details on the recovery, cleaning, disinfection, inspection, supply, and other relevant information were recorded. Classify all the instruments, put them in the cleaning basket and affix the identification. The staff will classify the number and identification, and issue the instruments after cooling for half an hour. The CSSD director monitored the whole

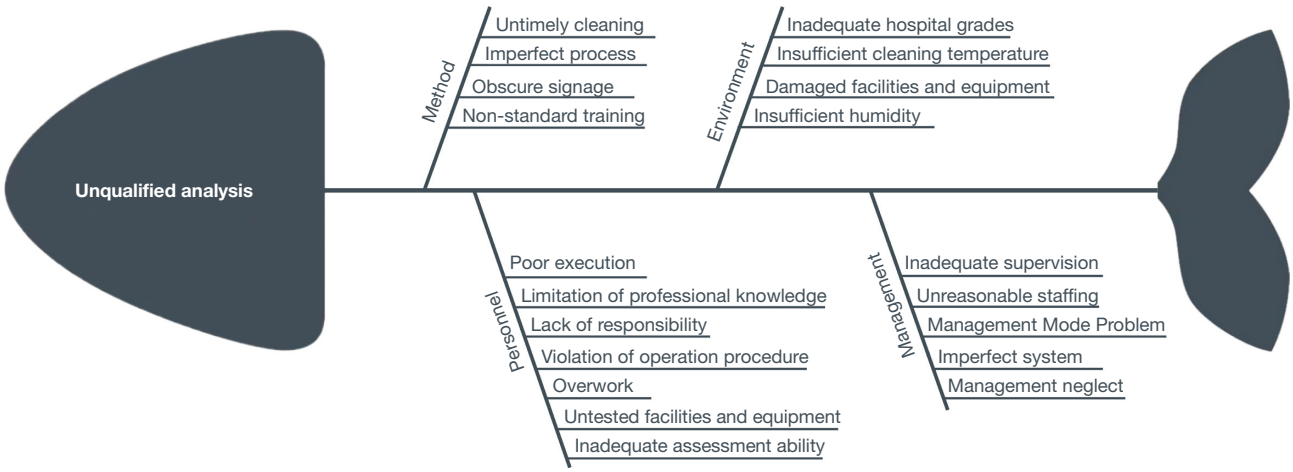

Figure 1 Fishbone diagram of the analysis of the causes of the unqualified cleaning of the CSSD devices. CSSD, central sterile supply department.

process, regularly organized the CSSD personnel to attend seminars, proposed solutions for problems that arose in the process, and implemented solutions in the work process to prevent errors.

Observation group

A management mode, based on the key point control theory, was adopted. (I) A working group was set up. The CSSD director was a team leader who managed the work of the CSSD and was responsible for 20 subordinate nurses. The team leader arranged the work of the team members according to the work characteristics of the CSSD. Each team comprised 3–4 nurses who were responsible for the daily work and the collection, statistical analysis, and testing of the data. Different teams were responsible for instruments from different sources, such as the ophthalmology, orthopedics, gynecology, cardiothoracic surgery, and foreign instruments, and special teams were established to undertake work related to high- and low-temperature sterilization. The team leader formulated the working system, organized weekly meetings to evaluate the work of each group, provided feedback on problems in the intervention process, proposed solutions, and regularly assessed the training results of the group. (II) A work flow was formulated: brainstorming, a logic tree, and literature research were used to identify the risk factors affecting the qualified rate of instrument disinfection. A fishbone diagram was drawn (see *Figure 1*), and the key points for improving the cleaning quality of the instruments were confirmed. A scientific and standardized workflow for the medical devices was formulated according to the key points, and the key points were monitored, including the cleaning, packaging, sterilization, disinfection, and regular inspection, to increase the sampling rate and sampling range, and improve the cleaning quality of the devices. (III) A sensitive index monitoring system was established: As per the theory of key point control, a sensitive index system was formulated and established for quality control based on the literature retrieval results, expert correspondence, and the quality model. The experts were required to have extensive experience and enthusiasm, and the concentration and coordination of the expert opinions were good. According to the structure process result model, similar or repeated indicators were removed. After 2 rounds of expert correspondence and an optimization process, a 3-level CSSD quality control sensitive index system, including a structure index, process index, and result index, was finally formed. (IV) Expert inquiry: a total of 35 experts with >5 years of work experience in CSSD management were invited to participate in this inquiry. All the experts had a background in nursing, disinfection supply management, infection prevention and control, hygienic administration, and hospital management. The content and significance of the expert inquiry was introduced to all the experts by telephone or video. Before each letter, a consultation form was issued and feedback had to be submitted within 1 week. After the form was collected, various sensitive indicators were discussed and summarized according to the opinions of the experts that informed the next round of consultation. This process was repeated until

the results were consistent. (V) Operation process: (i) personnel: the responsibilities of the personnel in each post were clarified and their responsibilities were confirmed. Replenish experienced and highly educated staff for the Department. Planned professional training was conducted and phased learning tasks were formulated; (ii) facilities: the instructions of the device manufacturer were referred to and the appropriate sterilization method was selected to disinfect each device. During the packaging process, a double review was conducted to check whether the models, specifications, and configuration standards of various items in the instrument package were correct whether the labels were pasted outside the instrument package, and whether the label information was correct (e.g., was the name wrong, what was the packaging time and name of the item, was the time of failure clear, and were the signatures of the assembler and reviewer are available); (iii) material inspection: before the distribution of articles, consideration was given to whether the sterilization packages were wet, and the logistics, chemical, and biological monitoring results. When the reused materials were redistributed to the clinical department, the packaging integrity was checked, and the equipment was checked to determine if it was damaged during transportation. If there was deformation, fracture, defect or looseness, they were repaired or scrapped timely; (iv) regulations: regulations, including regulations related to station responsibilities, operation procedures, quality management, equipment management, occupational protection, emergency plan, and a traceability system, were implemented. The regulations were kept in a proper place, the old procedures were updated and amended regularly; (v) working conditions: the temperature, humidity, illumination, and ventilation times of the CSSD working area were monitored in real time, and the temperature and humidity of the measuring instrument, ultraviolet lamp, ventilation device, and other facilities were regularly checked. Medical staff were provided with masks, gloves, hats, goggles, eye-washing devices, isolation clothes, and other protective devices, and regularly trained on emergency measures. The low-temperature sterilization work area was equipped with a harmful gas monitoring system, a reasonable threshold was set, and an emergency plan was formulated.

Evaluating indicator

Sensitive index evaluation

The results were evaluated according to the last letter of the expert group, and the importance score and coefficient of variation (CV) of each of the 3-level indexes were calculated. The importance score of each index ranged from 1 to 5 points. The average value of the scores of all the experts was taken, and the CV was calculated using the following formula: CV = (standard deviation/average) ×100%.

Sensitive index

According to the indexes of the CSSD quality management sensitive system, the process indexes and result indexes of the 2 groups of the research objects after treatment were evaluated. The process indexes included the qualified rate of cleaning quality, the assembly qualified rate, the labeling qualified rate, and the correct rate of sterilization. The result indexes included the incidence of wet packaging, the qualified rate of sterilization, the rate of intact packaging, and the rate of intact equipment.

Service quality

The processing time of the staff in the 2 groups of the study was recorded, including the replenishment time of the items, intact rate of items., and the preparation time for the items.

Work quality

The work quality scores of the 2 groups were recorded. The hospital self-made scale was used. The scale included the following 4 dimensions: environmental status (100 points), packaging quality (100 points), equipment management (100 points), and cleaning quality (100 points). The higher the score, the higher the work quality of the research group.

Statistical analysis

The results of each scale were input into the computer for score conversion, and SPSS 22.0 (IBM Corp., Armonk, NY, USA) was used for the statistical analysis. The measurement data are expressed as the mean and standard deviation, and the counting data are expressed as the frequency and percentage. A *t*-test analysis and analysis of variance were used, and the counting data were analyzed by the chi-squared test. The expert coordination coefficient was analyzed by Kendall's W test, and the authority coefficient was calculated as follows: (academic attainments + judgment basis + familiarity) score/3 (9). The item-level content validity index (I-CVI) of each item in the sensitive index system was calculated as follows: the number of people/total

Table 1 Concentration and coordination of expert opinions

Consultation rounds	Degree of concentration			Kendall coordination coefficient		
	Degree of importance	Standard deviation	Coefficient of variation	W	χ^2	P
Round 1	3.612–4.833	0.271–0.942	0.051–0.239	0.291	136.126	<0.001
Round 2	4.429–5.000	0.000–0.671	0.000–0.166	0.414	101.325	<0.001

Table 2 Content validity of the sensitive index system

Consultation rounds	I-CVI	S-CVI
Round 1	0.743–1.000	0.400
Round 2	0.857–1.000	0.867

I-CVI, the item-level content validity index; S-CVI, the scale-level content validity index.

number of experts with an importance score of 4 or 5. The scale-level content validity index (S-CVI) was calculated as follows: the number of indicators with a score of 4 or 5/ the number of all indicators. Two-sided test P<0.05 was considered statistically significant.

Results

Sensitive index system

The greater the coordination coefficient (W), the more consistent the expert opinion is. After 2 rounds of Delphi expert consultation, we found that the error control rate improved. The CV refers to the fluctuation degree of the weight assignment for each index by the experts. The smaller the value, the higher the coordination degree of the experts. The CV of each index is shown in *Table 1*. The content validity of the index system is shown in *Table 2*.

According to the results of the 1st round of correspondence, any tertiary index with an expert consent rate of <75% was deleted: the proportion of personnel above the medium-grade professional title (40.0%), and the 8 process indicators were combined into 3. According to the results of the 2nd round of correspondence, the name of 1 tertiary index was modified, and the following specific changes were made: the "conformity degree of temperature, humidity, illumination, and ventilation times" was changed to the "conformity degree of the microclimate".

The sensitive index system that was established according to the key point control included 3 primary indexes; that is, the structure index, the results index, and the process index. There were 11 secondary and 15 tertiary indexes. The importance and variation coefficient of each index are shown in *Table 3*.

Comparison of process indicators

After standardized management, the process indexes (e.g., the qualified rate of the cleaning quality, the qualified rate of assembly, the qualified rate of labeling, and the correct rate of sterilization) of the observation group were significantly higher than those of the control group (P<0.05; see *Table 4*).

Comparison of outcome indicators

The incidence of wet packaging in the observation group was significantly lower than that in the control group. The qualified rate of sterilization, the rate of intact packaging, and the rate of intact instruments of the observation group were significantly higher than those of the control group (P<0.05; see *Table 5*).

Comparison of service quality

After the intervention, the service quality indexes of the observation group were significantly shorter than those of the control group (P<0.05; see *Table 6*).

Comparison of work quality

After the intervention, the work quality score of the observation group was significantly higher than that of the control group (P<0.05; see *Table 7*).

Discussion

CSSD is an important hospital department that controls infection and ensures the quality of medical care. It is also an important place for the distribution, recycling, cleaning, disinfection, packaging, and storage of medical instruments, articles, pipelines, and other facilities and equipment used in hospital medical treatment, education, scientific research,

Table 3 CSSD management quality sensitive index system

Primary index	Secondary index	Tertiary index	Meaning	Importance score, mean ± SD	Coefficient of variation
Structure index	Human resources	Number of staff/workload	The ratio of the number of people employed in the CSSD to the total number of medical devices processed each month	4.82±0.36	0.124
		Proportion of experienced managers	The ratio of managers who have worked in CSSD for 5 years to all CSSD personnel	4.42±0.35	0.154
	System	Consummation of the system	The ratio between the actual perfect management system of the CSSD and the number of management systems that the CSSD is required to formulate	4.81±0.48	0.073
	Circumstances	Microclimate compliance	The ratio of the number of indicators of microclimate in the working area that meet the specification requirements to the total number of indicators	4.99±0.83	0.001
	Occupational protection	Allocation rate of protective articles	The ratio of the type of protective equipment required by the CSSD staff to the total type of protective equipment	4.87±0.38	0.036
	Equipment	Serviceability rate	The ratio of the number of equipment in good operation to the total number of equipment in the working area	4.86±0.82	0.029
	Water security	Qualified rate of steam water	The ratio of the qualified times of cleaning and sterilization steam water to total monthly testing times	5.00	0.000
Process index	Cleaning	Qualified rate of cleaning quality	The ratio of the qualified quantity of the cleaning quality of the medical devices returned back every month to the quantity of all the medical devices processed in the current month	5.00	0.000
	Packing	Assembly qualification rate	The ratio of the qualified number of sterilization packages received each month to the total number of all sterilization packages processed in the current month	5.00	0.000
		Qualified rate of labeling	The ratio between the number of qualified medical devices and the number of medical devices processed in the current month	4.87±0.42	0.038
	Sterilization	Correct rate of sterilization	The ratio of the number of sterilization packages of the correct sterilization method selected every month to the number of all sterilization packages processed in that month	5.00	0.000
Outcome index	Sterilization quality	Incidence of wet packaging	The ratio of the number of sterilization bags with wet packaging per month to the number of sterilization bags distributed in the current month	4.92±0.58	0.004
		Qualification rate of the sterilization results	The ratio of the number of sterilization packages with unqualified sterilization results per month to the number of sterilization packages processed in that month	5.00	0.000
	Packaging quality	Rate of intact packaging	The ratio of the number of medical device packages for which feedback was received every month to the total number of medical device packages processed in that month	5.00	0.000
		Rate of intact instruments	The ratio of the number of sterilized packages in good condition to the total number of sterilized packages processed in the current month	5.00	0.000

CSSD, central sterile supply department; SD, standard deviation.

Table 4 Comparison of process indexes of the CSSD sensitive index system

Item	Control group (n=282), n (%)	Observation group (n=280), n (%)	χ^2	P
Qualified rate of cleaning quality	235 (83.33)	267 (95.36)	7.601	0.006
Assembly qualification rate	239 (84.75)	263 (93.93)	4.431	0.035
Qualified rate of labeling	224 (79.43)	260 (92.86)	7.556	0.006
Correct rate of sterilization	239 (84.75)	268 (95.71)	6822	0.009

CSSD, central sterile supply department.

Table 5 Comparison of the CSSD sensitive index system results

Item	Control group (n=282), n (%)	Observation group (n=280), n (%)	χ^2	P
Incidence of wet packaging	38 (13.48)	11 (3.93)	5.734	0.017
Qualification rate of the sterilization results	234 (82.98)	260 (92.86)	4.6415	0.312
The rate of intact packaging	221 (78.37)	257 (91.79)	7.094	0.008
The rate of intact instruments	238 (84.40)	268 (95.71)	7.141	0.008

CSSD, central sterile supply department.

Table 6 Comparison of service quality between the 2 groups

Item	Control group (n=282), mean ± SD	Observation group (n=280), mean ± SD	*t*	P
Replenishment time (min)	10.38±1.38	7.37±1.22	7.308	0.000
Pick up time (min)	6.35±1.17	3.62±0.82	8.545	0.000
Preparation time (min)	9.78±2.28	6.35±1.27	5.878	0.000

SD, standard deviation.

Table 7 Comparison of work quality scores between the 2 groups

Item	Control group (n=282), mean ± SD		Observation group (n=280), mean ± SD	
	Before intervention	After intervention	Before intervention	After intervention
Environmental state (scores)	71.89±6.65	83.72±7.76[a]	70.49±6.65	91.28±8.28[a,b]
Packaging quality (scores)	70.83±6.35	80.39±7.82[a]	70.47±7.71	92.39±8.35[a,b]
Cleaning quality (scores)	73.63±6.82	85.17±7.23[a]	73.83±6.73	95.56±8.24[a,b]
Device management (scores)	69.37±6.83	86.39±7.38[a]	69.83±6.83	95.13±8.35[a,b]

[a], compared to before intervention, P<0.05; [b], compared to the control group, P<0.05. SD, standard deviation.

and nursing. Operators are required to standardize their behavior, perform strict sterilization, and prevent cross contamination, otherwise great harm may be caused to patients and serious nosocomial infection may result (7,10,11).

The provision of safe and sterile medical instruments to all departments of a hospital is not only the most important role of the disinfection supply room, but is also essential in ensuring the health of patients (12). A scientific and compliant quality management mode for the daily work of the CSSD needs to be established to effectively evaluate the work quality of the department personnel and facilitate the effective control of disinfection and sterilization processes.

The key point control theory is based on the important

principle of control work, uses a plan to measure the work effect, and focuses management on the main factors affecting the process. The CSSD treatment of medical devices mainly includes the recovery, cleaning, packaging, disinfection, sterilization, and supply of the devices. Brainstorming, a fishbone diagram, and other methods were used to evaluate the key factors affecting the treatment effect of each process (13-15). According to the key point control theory, the establishment of a quality sensitive index management mode in CSSD management can further increase the monitoring strength, ensure the normal operation of the CSSD, and reduce the incidence of nosocomial infection. The application of quality sensitive indicators to monitor the work flow can make the sterilization and disinfection of instruments standardized and scientific (11). Based on the management mode and under the guidance of key point control theory, this study identified the management quality sensitive indicators for the disinfection supply room, implemented targeted intervention measures to improve the management quality of the CSSD and achieved remarkable results.

After literature research and 2 rounds of expert correspondence, a 3-level sensitive index system was established that comprised 3 primary indexes, 11 secondary indexes, and 15 tertiary indexes. The index system had good reliability. Among indexes, structural indicators measured the adaptability of resource allocation, the quantity and types of equipment and articles (16).

The post core competence of management personnel has an important effect on medical quality. Managers with >5 years of working experience have a deeper understanding of the CSSD, which is conducive to their carrying out relevant work (17). The implementation of rules and regulations can ensure the code of conduct of staff to the greatest extent and reduce the incidence of risky events. The CSSD's working environment has high levels of humidity, high temperatures, and limited ventilation; thus, it is easy to breed bacteria, which can affect the cleaning of equipment and make staff uncomfortable. Thus, it is necessary to monitor the indicators, such as the ambient temperature and humidity, illumination, and ventilation times, to ensure the compliance of the microclimate in the workplace, and provide the staff with protective measures to reduce the environmental load (13).

The rate of intact equipment operation and the qualified rate of steam water are also important indicators affecting the work quality and supply guarantee of the CSSD, and have direct effects on the cleaning results. The process quality refers to the condition that the actual work operation meets the specifications. The treatment process of the CSSD for medical devices specifically includes recycling, classification, cleaning, disinfection, drying, testing and maintenance, packaging, sterilization, storage, and distribution. Cleaning, sterilization, and packaging have direct effects on patient safety. If the medical cleaning quality is inadequate or the assembly or sterilization method is incorrect, the safety risk of patients is increased. The CSSD needs to increase the amount of personnel training received by staff and standardize personnel operations (18). The indicators are affected by many factors, and are difficult to supervise. From the perspective of patient safety and risk causes, this study screened 4 outcome indicators (i.e., the incidence of wet packaging, the qualified rate of sterilization, the rate of intact packaging, and the rate of intact instruments). The CSSD carried out targeted intervention measures in combination with various sensitive quality indicators in its daily work to improve the work effect of the department.

After the targeted intervention, the process indicators and result indicators of the observation group were significantly better than those of the control group. The process indicators, including the qualified rate of the cleaning quality, the qualified rate of assembly, the qualified rate of labeling, the correct rate of sterilization, the qualified rate of the sterilization results, the rate of intact packaging, and the completion rate of instruments, were significantly higher in the observation group than the control group, and the incidence of wet packaging was significantly lower in the observation group than the control group.

Establishing a quality sensitive index system for key processes in CSSD work and carrying out targeted intervention measures for quality sensitive indexes are conducive to improving the management effect of departments, improving work quality and reducing risks. In this study, the fishbone diagram was used to sort out the factors. It was found that management mode, personnel allocation, facilities and equipment, cleaning methods and other factors can affect the treatment effect of surgical instruments, including cleaning, packaging and sterilization processes. In this study, a fishbone diagram was used to determine the factors. We found that management mode, personnel allocation, facilities and equipment, cleaning methods, and other factors affect the treatment effect of surgical instruments, including the cleaning, packaging, and sterilization processes. The correct cleaning and disinfection

method is the premise of maintaining the sterilization quality. Any organic matter left on an instrument will affect the contact between the sterilizer and microorganisms and directly affect the disinfection and sterilization quality of the instrument (1,19).

Additionally, pretreatment and classification before cleaning should also be carried out. Different rust removers and descaling agents should be selected according to the types of instruments and the types of materials. Special instruments should be cleaned and sterilized in full accordance with the product instructions. Separate or combined cleaning methods, such as manual cleaning and automatic spray cleaning, should be selected as appropriate. Disinfection methods, such as dry heat sterilization, damp heat sterilization, and gas sterilization, should be selected, and a physical, chemical, biological monitoring method should be used to monitor the sterilization effect and quality sampling inspections should be conducted regularly (20). Medical instruments used in emergencies at night should be cleaned timely. If they cannot be treated immediately, moisturizers can be used to maintain relative humidity to prevent drying and pollution. Different classified instruments can be set with special positions and standardized labels can be used to ensure quality tracking through the whole process of the quick response (QR) code system monitor process (16). Hospitals can introduce a T-DOC circulation system to monitor the temperature, pressure, time, and other microenvironment indicators of the CSSD workshop, manage abnormalities and deviations in time, maintain files and records, and strengthen the supervision of key processes.

The work quality and service quality of the CSSD staff in the observation group were also significantly higher than those in the control group, which indicates that the construction of sensitive indicators for the management quality of the disinfection supply room based on the management mode under the guidance of key point control theory significantly improved the management quality of the CSSD.

At present, conventional quality management has certain limitations. For example, it can alleviate the pollution risk to a certain extent, but it lacks control focus for the management of the whole process of the CSSD, and it is easy to ignore the key influencing factors that will reduce the disinfection and sterilization effect of instruments. The quality supervision work of the key parts of the quality management structure, process, and results at each stage needs to be scientifically analyzed, the role of experienced management personnel in the disinfection supply room needs to be determined, the division of responsibilities needs to be confirmed, the construction of the talent team needs to be strengthened, and training needs to be regularly and continuously conducted to improve the professional ability of medical staff. Additionally after the standardized management process, the CSSD also needs to regularly hold summary and discussion meetings, continuously evaluate the clinical satisfaction, identify problems timely, propose solutions, and implement them in the management process, so that the medical staff can master and be familiar with the optimized operation process as soon as possible, integrate the safety awareness and standardized operation into their daily work, implement the monitoring measures at key points (e.g., cleaning, packaging, and sterilization), and conduct regular sampling inspections and verifications to maximally improve the work quality and efficiency of the CSSD personnel.

Conclusions

Based on the management mode and under the guidance of the key point control theory, disinfection supply room management quality sensitive indicators were developed to guide the quality management of the CSSD. These indicators significantly improved the service quality and work quality of the staff and optimized the work process and processing results of the CSSD. This management mode has important clinical application prospects.

This study had a number of limitations. First, the sample size was small. Second, the targeted intervention measures were not carried out for each index in the sensitive index system to improve the qualified achievement rate of each sensitive index. In the future, targeted intervention strategies should be conducted for each index to solidify the established process, and reduce the error rate and risk event rate in the daily work of the CSSD.

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Footnote

Reporting Checklist: The authors have completed the STROBE reporting checklist. Available at https://apm.

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Data Sharing Statement: Available at https://apm.amegroups.com/article/view/10.21037/apm-22-594/dss

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at https://apm.amegroups.com/article/view/10.21037/apm-22-594/coif). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work, including ensuring that any questions related to the accuracy or integrity of any part of the work have been appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by the Ethics Committee of Hai'an Hospital Affiliated to Nantong University (No. 20209861). Individual consent for this retrospective analysis was waived.

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