Original Article
Optimized nursing management in the Central Sterile Supply Department and Gastroenterology Department: a retrospective controlled study

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Abstract: Objective: To evaluate the impact of optimized nursing management involving the Central Sterile Supply Department (CSSD) and Gastroenterology Department on sterilization processes, nurse well-being, and patient satisfaction. Methods: This retrospective study analyzed data from 40 CSSD nurses and sterilization metrics for 1,017 gastroenterology instruments before and after implementing optimized management. The study included a control group (CG) prior to the intervention and an experimental group (EG) after. Additionally, 216 gastroenterology patients were included in the CG, while 220 were in the EG. Data were collected between January 2021 and December 2022 at the General Hospital of Central Theater Command. Indicators such as instrument sterilization performance, CSSD nurses' work stress and burnout, and patient satisfaction with cleaning, disinfection, and sterilization processes were assessed. Nurses' job satisfaction was also evaluated. Results: After implementing optimized management, significant improvements were observed in the qualified rate of instrument cleaning, reduced instrument damage, improved packaging quality, and decreased incidence of hospital-acquired infections (all P<0.05). CSSD nurses experienced lower work pressure and burnout, while both patient satisfaction with sterilization processes and nurses' job satisfaction increased significantly (all P<0.05). Conclusion: Optimizing nursing management in the CSSD and Gastroenterology Department effectively enhances sterilization outcomes, reduces CSSD nurses' work stress and burnout, and improves both patient and nurse satisfaction with medical device cleaning, disinfection, and sterilization processes.

Keywords: Optimized nursing management, combined nursing, central sterile supply department (CSSD), gastroenterology department, nosocomial infections, burnout

Introduction

With the continuous development of medical technology, the standards for infection control, including sterilization of medical devices, have become increasingly stringent, playing a crucial role in ensuring patient safety and quality of healthcare services [1, 2]. These heightened requirements reflect the healthcare industry's growing expectations for sterile supply departments. The Central Sterile Supply Department (CSSD) is a critical hospital unit responsible for cleaning, disinfecting and sterilizing medical devices, ensuring their safe use and supporting the smooth functioning of healthcare facilities [3]. In addition, the implementation of CSSD

workflow helps prevent infections from spreading among patients, healthcare workers, and the environment [4]. Therefore, strict adherence to guidelines is critical to minimizing infection risks in patients [5, 6]. However, CSSD nursing staff often face high work pressure, low job satisfaction, and significant burnout. Research indicates that CSSD nurses must manage numerous responsibilities, including equipment maintenance, handling disinfected items, and performing disinfection operations, all while strictly adhering to cleaning and disinfection standards [7]. Additionally, to maintain high-quality work, they must undergo extensive and continuous training, which can be both detailed and demanding. Furthermore, the tra-

ditional perception of CSSD nurses as performing low-skilled tasks compared to clinical nurses undermines the recognition of their vital contributions to healthcare, diminishing appreciation for their professional value [8].

The large number of patients and the frequent use of medical equipment in the Gastroenterology Department impose stringent requirements on cleaning, disinfection and sterilization. However, it is challenging for Gastroenterology Departments to independently perform all disinfection and sterilization procedures. A Romanian study highlighted the importance of adopting comprehensive and efficient machines and methods for disinfection and sterilization in Gastroenterology Departments, yet only 1/3 of the departments were equipped with the relevant machines, and fewer than half had sufficient resources and skills to meet these demands [9]. Similarly, a study in China revealed that gastroenterology nursing staff often relied on manual cleaning of instruments, with some ultrasonic cleaning equipment failing to meet standards; furthermore, only a small number of departments regularly evaluated the effectiveness of cleaning using testing methods [10]. Besides, research [11] has shown that endoscope disinfection practices for patients with infectious diseases often fall short of established requirements. For instance, in some units, the exposure time to glutaraldehyde was less than the recommended 45 minutes. Additionally, over 70% of units reused disposable materials, such as forceps and polypectomy hooks, contrary to best practices. As a result, gastroenterology patients generally report low satisfaction with the cleaning, disinfection, and sterilization of medical devices in these department [12]. Therefore, there is an urgent need to enhance the management practices for device protection, refine guidelines, and provide comprehensive staff training to ensure higher standards of care and patient satisfaction.

Optimizing nursing management through combined care can significantly improve the quality and professionalism of nursing services and improve nursing satisfaction. At the patient level, this approach increases patient satisfaction, enhances clinical outcomes, and improves the overall patient experience. At the system level, it also improves efficient resource alloca-

tion and operational efficiency within healthcare units [13-16]. However, research on optimizing nursing management within the combined care framework of sterile supply units and gastroenterology departments remains limited.

To address this gap, our hospital implemented a program from January 2022 to December 2022 aimed at optimizing nursing management for CSSD nurses and strengthening collaboration between the CSSD and the gastroenterology department to facilitate joint care. This study investigated the effectiveness of the optimized nursing management and the advantages of combined nursing practices in preventing infections within these departments.

Material and methods

Clinical data

This study used a retrospective controlled trial design to evaluate the impact of optimal nursing management combined care. Data were collected from 40 nurses in the CSSD who participated in the program at General Hospital of Central Theater Command between January 2021 and December 2022. The dataset also included information on 1,017 medical devices used in the Gastroenterology Department and medical records from 436 patients treated before and after the intervention. From January 2021 to December 2021, prior to implementing the joint nursing training and optimal care management, 40 CSSD nurses, 216 gastroenterology patients, and 1,017 medical devices were analyzed as the control group (CG). From January 2022 to December 2022, after introducing optimal care management, the same 40 nurses and 1,017 devices, along with an additional 220 gastroenterology patients, were included as the experimental group (EG). This study was approved by Ethics Committee of General Hospital of Central Theater Command (No. 2024-110-01).

Inclusion criteria

Nurses in CSSD: (1) Licensed nurses registered under the regulations of the People's Republic of China; (2) Nurses with more than 6 months of experience in the CSSD; (3) Nurses knowledgeable about routine medical device cleaning, disinfection, and sterilization, and willing to

undergo training; and (4) Nurses who volunteered to participate in this study.

Patients in gastroenterology department: (1) Patients aged 18 years and older; (2) Patients without any out-of-hospital infections; (3) Patients requiring the use of medical devices during hospitalization; and (4) Patients who were conscious and capable of cooperating during the treatment.

Medical devices in gastroenterology: Non-disposable, reusable devices.

Exclusion criteria

Nurses in CSSD: (1) Nurses absent during the study period due to personal leave, sick leave, or further training; (2) Nurses in training, internship, or working other shifts; and (3) Nurses with incomplete data.

Patients in the Gastroenterology Department: (1) Patients with pre-existing or concurrent infections at the time of hospitalization; (2) Patients with other infectious diseases; (3) Patients with severe functional impairment or other serious illnesses; (4) Patients with incomplete clinical information; (5) Patients with mental illness or poor compliance, unable to cooperate with nursing interventions.

Medical devices in the Department of Gastroenterology: (1) Devices lost or damaged during the study, rendering them unusable; and (2) Devices introduced from external sources or returned after being loaned to other hospitals during the study period.

Nursing programs

CG: Nurses in the CSSD were provided routine training in medical device cleaning, disinfection, and sterilization processes, along with standard communication and collaboration with the Gastroenterology Department.

EG: Nurses in the CSSD implemented the optimized nursing management combined care model, consisting of the following steps:

(1) Establishment of the disinfection supply optimization process team: a competent nurse was selected as the team leader, supported by two team members. The team coordinated personnel, developed optimization processes, identified issues in the CSSD workflow, and analyzed root causes. The team conducted literature reviews, studied disinfection processes, and assisted in designing the sterilization optimization protocol. Advanced training courses were organized for all team members, covering the latest medical device cleaning, disinfection, and sterilization technologies. Specific measures included: ① Instrument handover management: Steps for pre-processing, inventory, handover, and requisition of instruments were incorporated into the CSSD information system; Management strategies were developed based on team discussions, including clarifying handover times, personnel involved, and record-keeping protocols. ② Instrument area cleaning management: Separate cleaning areas for highly contaminated and valuable instruments were established to prevent damage from sharing cleaning pools with ordinary instruments. The quality of cleaning process was enhanced through handover cleaning quality assessments. ③ Resource optimization management: Incomplete and non-standardized cleaning processes were addressed by implementing optimized standards. The instruments were immersed in a multi-enzyme solution for 30 minutes before proceeding to subsequent cleaning steps. Manual cleaning was transitioned to machine cleaning, using loaders designed for different instrument types and sizes. ④ Decontamination area humidity management: Relative humidity was maintained below 60 in the decontamination area per industry standards, with air changes every 10 hours. Cleaning personnel was instructed to control water usage to prevent spills, use absorbent cloth pads in instrument loading frames, and employ dehumidifiers to lower room humidity.

(2) Strengthening communication and collaboration with the Gastroenterology Department. A regular communication mechanism was established between the CSSD and the Gastroenterology Department to enhance information sharing. Both teams collaborated to address issues related to the cleaning, disinfection, and sterilization of medical devices, and they conducted continuous follow-ups to evaluate the effectiveness of implemented improvements.

(3) Strengthening psychological guidance. Efforts were made to understand and address

the individual needs of CSSD nurses, supporting them in meeting their reasonable professional and personal goals. Health Education: Nurses received training to realign their understanding of job roles and professional value, develop self-regulation techniques for managing psychological crises, and enhance their psychological adaptability. Emotional Support: Nurses were encouraged to express their thoughts and feelings openly during daily work. A supportive work environment was fostered to provide spiritual reinforcement and reduce negative emotions. Psychological Counseling Platform: A dedicated platform offered individualized psychological counseling and group sessions to help nurses manage work-related stress and resolve psychological challenges effectively.

(4) Implementation of incentives. A relaxed, friendly, equal and relaxed environment was created to boost morale. Various incentive programs were introduced, including recognition and rewards for meeting quality work standards, and opportunities for career development to motivate nurses and enhance their enthusiasm for their roles.

Outcomes

Main outcome measures: (1) Sterilization and disinfection effect indicators. Rate of qualified instrument cleaning was determined by inspecting instruments under 5× magnification to ensure smooth, intact, and functional surfaces. Instrument damage rate was assessed based on visible defects, such as peeling surfaces or sharp parts of instruments (e.g., gastroscopes) that were misaligned, bent, or broken. Rate of qualified packaging was evaluated according to several criteria: accurate count and functionality of instruments in the package; proper packaging methods and elasticity; clear external markings and correct placement of chemical monitoring indicator cards. Incidence of nosocomial infections in patients was collected from medical records to assess infection rates before and after implementing optimized nursing management. These indicators were measured at 3 and 9 months post-intervention to evaluate both immediate and sustained effects of the optimized management approach. (2) Work pressure of nurses in the CSSD. The work pressure of nurses was assessed using the Chinese version of Nurse Job Stressors Scale (NJSS) developed by Li et al. [17]. To evaluate the work pressure of nurses before and after optimal management. The scale evaluates stress across 5 dimensions: nursing profession and work, workload and distribution, working environment and resources, patient care and management, and interpersonal relationship. A higher NJSS score indicates greater work-related stress in nurses. The reliability of NJSS is high, with a Cronbach's α coefficient of 0.98 for the overall scale and 0.83-0.95 for individual dimensions [18]. (3) Burnout among nurses in CSSD. Maslach Burnout Inventory (MBI) was used to assess the burnout levels among CSSD nurses before and after the implementation of optimal management. The MBI is a widely used instrument for measuring burnout, comprising 22 items that evaluate feelings and attitudes associated with burnout. It measures three fundamental dimensions: emotional exhaustion (9 items), depersonalization (defined as the development of cynical attitudes towards others, 5 items), and perceived lack of personal accomplishment (8 items) [19]. Each item of is scored on a 7-point Likert scale. For emotional exhaustion and depersonalization: 1-3 indicates a low burnout level, 4-5 for a moderate burnout, and 6-7 for a severe burnout. For perceived lack of personal accomplishment, higher scores indicate greater dissatisfaction with personal achievements.

Secondary outcome measures: (1) Patient satisfaction. Newcastle Satisfaction with Nursing Scale (NSNS) was used to evaluate the satisfaction of gastroenterology patients with the cleaning, disinfection and sterilization of medical devices before and after the implementation of optimal nursing management. Results were categorized into 5 levels: very satisfied, satisfied, general, dissatisfied and very dissatisfied. Higher levels of satisfaction indicated better care quality [20]. Overall satisfaction rate was calculated by (satisfied case + very satisfied cases)/total cases * 100%. (2) Job satisfaction of nurses in CSSD. Minnesota Satisfaction Questionnaire (MSQ) was used to evaluate the job satisfaction of CSSD nurses before and after the implementation of optimized management. MSQ developed by Weiss et al. [21] in 1967, has a high reliability with a Cronbach's α of 0.953. It includes 20 items

Table 1. Nurses' general information and its effect on satisfaction

Characteristic	x̄ ±sd, n (%)	Coefficient	SE[a]	t	P
Age (years)	35.25±4.67	0.148	0.057	0.448	0.555
Working years	10.85±2.33	-0.077	-0.084	-0.591	0.450
Gender		-0.119	-0.154	-2.069	0.041
Male	3 (7.50)				
Female	37 (92.50)				
Educational level		0.086	0.046	0.639	0.524
Junior college and below	11 (27.50)				
Bachelor's degree or above	29 (72.50)				
Title		-0.114	-0.032	-0.321	0.748
Nurse practitioner and below	19 (47.50)				
Nurse-in-charge and above	21 (52.50)				

Note: [a]SE: standard error.

divided into three dimensions: internal job satisfaction (focusing on the job itself), external job satisfaction (focusing on the working conditions) and overall satisfaction. Each item is rated on a Likert 5-point scale ranging from strongly disagree (1 point) to strongly agree (5 points), with higher scores indicating higher job satisfaction [22].

Statistical methods

SPSS Statistics 26.0 and GraphPad 9 were used for statistical analyses. Measurement data were expressed as mean ± standard deviation (x̄ ±sd) and compared between the two groups using independent t-test. Count data were expressed by number/percentage (n/%), and compared by the chi-square test. Sterilization metrics in the Gastroenterology Department at 3 and 9 months after optimal management were analyzed using repeated measures analysis of variance (RM-ANOVA). Pearson correlation analysis was used to analyze the correlation between variables. Statistical significance was defined as P<0.05.

Results

Comparison of clinical data

The general demographic and professional characteristics of CSSD nurses included in the study are summarized in **Table 1**. Comparison of baseline data of patients between two groups revealed that there were no statistically significant differences in terms of age, gender, history of smoking, history of alcohol consumption, history of previous hypertension, history of

previous diabetes mellitus, and primary disease (all P>0.05, **Table 2**).

Comparison of disinfection and sterilization effects

Before and after implementing optimized nursing management, a normality test confirmed that the disinfection and sterilization index data followed a normal distribution. The results of the sphericity test (Machly's W=0.999, P=0.845) showed that the assumption of sphericity was met. The main effect of group (F=4.423, P=0.001), and the main effect of measurement time (F=12.837, P<0.001) were statistically significant, and there was no significant interaction effect between group and measurement time (F=1.359, P=0.194), as shown in **Table 3**. Further analysis through group simple effect tests and measurement time simple effect tests showed that the differences in instrument cleaning pass rate, instrument damage rate, packaging pass rate, and nosocomial infection incidence rate were statistically significant at all three time points.

Work pressure of nurses

Following the implementation of the optimized nursing management, the NJSS scores of CSSD nurses were significantly lower compared to before management, indicating work-related stress among CSSD nurses was significantly reduced (P<0.001, **Figure 1**).

Job burnout among nurses

MBI results revealed significant improvements in job burnout among CSSD nurses after adopt-

Table 2. Comparison of general information between the two groups of patients [n (%), $\bar{x}$±sd]

Characteristics	CG[a] (n=216)	EG[b] (n=220)	χ^2/t	P
Age (years)	49.49±5.14	46.27±4.36	0.302	0.602
Gender			0.083	0.945
Male	118 (54.63)	120 (54.55)		
Female	98 (45.37)	100 (45.45)		
Smoking history			0.066	0.798
Yes	91 (42.13)	93 (42.27)		
No	125 (57.87)	127 (57.73)		
Alcohol consumption history			0.454	0.500
Yes	79 (36.57)	87 (39.55)		
No	137 (63.43)	133 (60.45)		
History of hypertension			0.255	0.744
Yes	85 (39.35)	91 (41.36)		
No	131 (60.65)	129 (58.64)		
History of diabetes			0.814	0.846
Yes	67 (31.02)	69 (31.36)		
No	149 (68.98)	151 (68.64)		
Primary disease			0.878	0.349
Gastrointestinal neoplasms	47 (21.76)	48 (21.82)		
Liver cirrhosis	36 (16.67)	35 (15.91)		
Pancreatitis	17 (7.87)	17 (7.72)		
Gastric or duodenal ulcer	24 (11.11)	26 (11.82)		
Gastrointestinal hemorrhage	29 (13.43)	28 (12.73)		
Chronic gastritis	20 (9.26)	21 (9.55)		
Chronic colitis	14 (6.48)	15 (6.82)		
Others	29 (13.43)	30 (13.64)		

Note: [a]CG: control group; [b]EG: Experimental group.

Table 3. Comparison of sterilization effectiveness before and after the implementation of optimized nursing management [n (%)]

Sterilization and disinfection indicators	Control group (t_1)	Experimental group		F	p
		3 months after (t_2)	9 months after (t_3)		
Instrument cleaning pass rate[a]	869 (85.45)	964 (94.79)	998 (98.13)	3.507	0.031
Instrument damage rate[a]	44 (4.33)	14 (1.38)	4 (0.39)	6.059	0.002
Qualified rate of packaging[a]	862 (84.76)	953 (93.71)	987 (97.05)	3.706	0.018
Incidence of hospitalized infection[b]	73 (33.8)	21 (9.55)	10 (4.55)	8.154	<0.001

Note: a: indicator of medical device compliance, total number of 1,017. b: indicator of occurrence of nosocomial infections in gastroenterology patients, total number of cases in the control group is 216, and total number of cases in the experimental group is 220.

ing the optimized nursing management model, as indicated by significantly decreased scores in emotional exhaustion and depersonalization but significantly increased score in perceived lack of personal accomplishment (**Figure 2**). Further analysis using Pearson correlation demonstrated a significant positive correlation between job stress and job burnout among CSSD nurses after optimized management (all P<0.001, **Figure 3**).
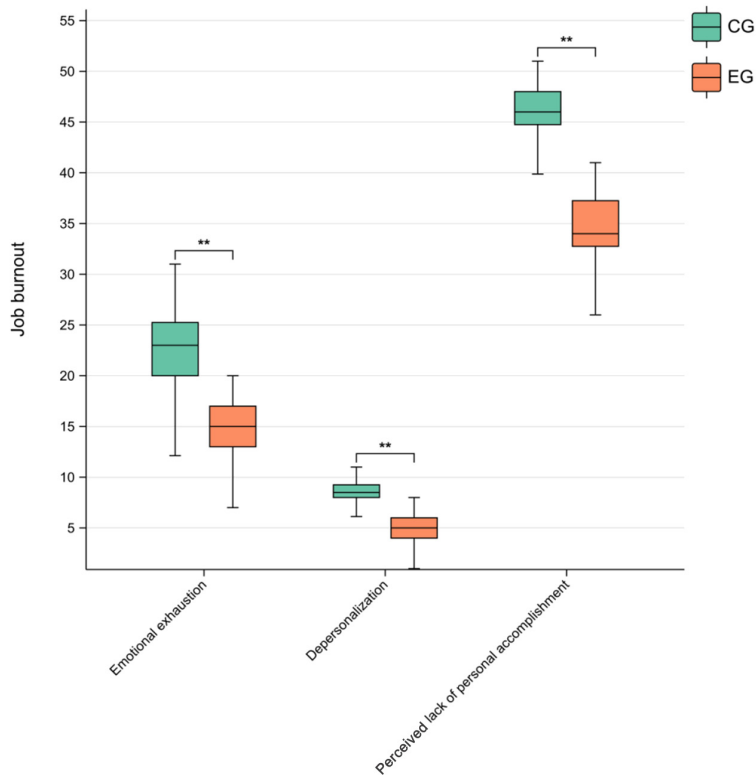
Patient satisfaction

The NSNS results demonstrated a significant improvement in patient satisfaction with the cleaning, disinfection and sterilization of medi-
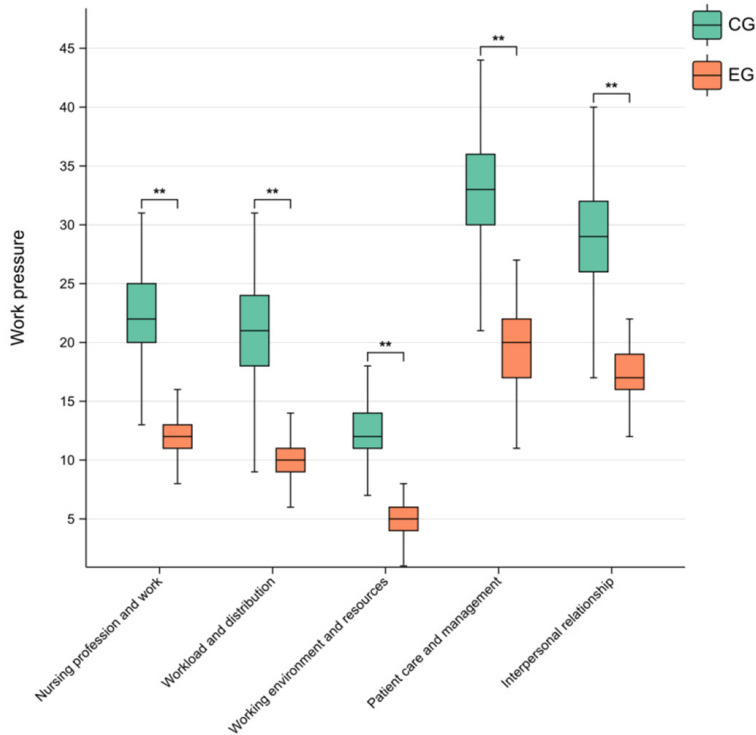
Figure 1. Comparison of work pressure in CSSD nurses before and after optimal management. Note: CSSD: central sterile supply department; **P<0.001.

Figure 2. Comparison of job burnout among CSSD nurses before and after optimal management. Note: CSSD: central sterile supply department; **P<0.001.

cal devices in the Gastroenterology Department following the implementation of optimized nursing management combined care (96.36% vs. 75%, P=0.001), as shown in **Table 4**.

Nurse job satisfaction

The MSQ results showed a significant increase in job satisfaction across all three dimensions (internal job satisfaction, external job satisfaction, overall satisfaction) among CSSD nurses after the implementation of optimized nursing management (P=0.006) (**Figure 4**). However, job satisfaction analysis across different nurses (**Table 1**) revealed a significant difference in job satisfaction based on gender, suggesting that gender may influence job satisfaction levels in CSSD nurses.

Discussion

The sterilization supply center holds a crucial role in hospitals, acting as a pivotal link in ensuring medical safety, safeguarding patient well-being, and optimizing resource allocation [23]. Despite its importance, nurses at this center often face high work pressure, which diminishes their sense of professional identity and satisfaction [24]. Additionally, in the Gastroenterology Department, challenges persist in the use, cleaning, disinfection and sterilization of medical devices, leading to a certain risk of infection [25, 26]. Optimizing care management combined with integrated care has been shown to significantly enhance care quality, improve patient outcomes, and increase satisfaction levels [27, 28]. Through this study, we found that optimized nursing management in the disinfection

Figure 3. The correlation between work stress and job burnout in CSSD nurses after implementtion of optimized management. Note: CSSD: central sterile supply department; all P<0.001.

supply center and Gastroenterology Department significantly reduced the incidence of nosocomial infections, alleviated nurse burnout, and enhanced patient satisfaction.

The results showed that all sterilization metrics were significantly improved after the application of optimized CSSD and Gastroenterology care management, with more pronounced effects over time. This finding align with a meta-analysis by Lv et al., which demonstrated that optimizing nursing management can effectively reduce patient infection rates and complications. A cross-sectional study similarly supported that optimal care management decreases infection incidence [29]. The reason for these improvements lies in the meticulous implementation of detailed processes in daily disinfection and sterilization management. Regular training sessions enhanced the operational proficiency of CSSD staff and their mastery of workflows and medical devices. Furthermore, optimized nursing management effectively mitigated nosocomial infections stemming from suboptimal medical device disinfection and sterilization quality, highlighting its vital role in improving overall hospital safety and performance.

NJSS and MBI scores showed that nurses participating in this study experienced high levels of occupational stress and burnout before the implementation of optimized management. This finding aligns with the study by Zheng and Zhou [30], which identified several factors contributing to occupational stress, including low income, heavy workloads, susceptibility to occupational exposure, and repetitive inspections and examinations. Following the application of optimized nursing management, there was a significant reduction in work stress and burnout among our nurses. Correlation analysis revealed a positive relationship between NJSS and MBI scores, indicating that reductions in job stress were associated with decreased burnout. An observational study similarly confirmed that, after implementing optimized nursing management in joint departments, including the establishment of the process team, enhanced psychological guidance, and incentive programs, nurses experienced significantly reduced work stress and notable improvements in mental health [31]. These findings underscore that optimized nursing management is a critical intervention for alleviating work stress and burnout, ultimately enhancing the quality of nurses' work and fostering a healthier and more effective work environment.

Patient satisfaction was also assessed in this study, and the results showed improved patient satisfaction with the cleaning, disinfecting and sterilizing medical devices in the Gastroenterology Department. On the one hand, optimized nursing management enhanced standardization of disinfection and sterilization processes by CSSD nurses, and improving the overall quality of care. On the other hand, the joint care enabled nurses in the Gastroenterology Department to receive standardized disinfection and sterilization training, ensuring patients were treated and cared for under uniform and high-quality disinfection practices. These findings are consistent with other studies [32], which have demonstrated that forming quality nursing teams and implementing stratified, effective patient management significantly improves patient satisfac-
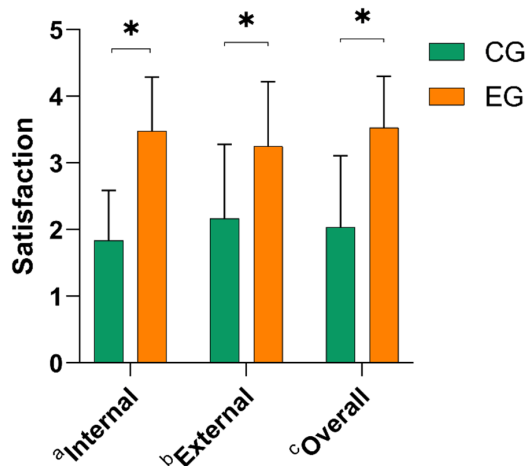
Table 4. Comparison of patient satisfaction with device cleaning, disinfection and sterilization [n (%)]

Groups	Very satisfied	Satisfied	General	Dissatisfied	Very dissatisfied	Overall
CG[a] (n=216)	97 (44.91)	65 (30.09)	20 (9.26)	12 (5.56)	22 (10.19)	162 (75.00)
EG[b] (n=220)	155 (70.45)	57 (25.91)	4 (1.82)	4 (1.82)	0 (0)	212 (96.36)
X^2						3.373
P						0.001

Note: [a]CG: control group; [b]EG: Experimental group.

Figure 4. Comparison of the nurse satisfaction. Note: [a]Internal: internal job satisfaction; [b]External: external job satisfaction; [c]Overall: overall satisfaction; CG: control group; EG: experimental group; *P<0.05.

tion. Standardized care processes not only enhance the quality of care but also foster trust and confidence among patients.

Our study demonstrated that optimized nursing management effectively alleviated adverse psychological symptoms among nurses, reduced their psychological pressure, and significantly improved their job satisfaction. These findings align with the study by Davies et al., which utilized the Lean Six Sigma (LSS) methodology to optimize nursing hours and improve the work environment, leading to enhanced service performance and staff satisfaction [33]. Furthermore, sufficient nursing staffing has been identified as a critical factor in boosting job satisfaction among nursing staff [34]. Through optimized nursing management implemented in the CSSD and Gastroenterology Department, nurses experienced greater trust in the institution as their physical and mental health received more attention, with a relaxed and harmonious work atmosphere reducing work pressure, allowing nurses to handle their workload more effectively; and a more supportive environment encouraged nurses to work with greater enthusiasm and emotional investment [35, 36]. Incorporating psychological care into optimized nursing management further strengthened these outcomes by implementing humanistic measures such as facilitating emotional expression and providing outlets for channeling stress, meeting nurses' reasonable expectations to boost morale, and fostering teamwork and communication to reduce workplace conflicts [37]. For CSSD nurses, optimizing nursing management coupled with a focus on talent development plays a pivotal role in reducing psychological pressure caused by skill gaps. By addressing these challenges, the management approach enhances nurses' professional identity and compliance, ultimately creating a more engaged, motivated, and resilient workforce.

This study still has a few limitations. First, as a retrospective study, all data was obtained from electronic medical records, limiting the analysis to previously collected data. Second, non-random sampling may have introduced a non-representative population, potentially biasing the results. Although statistical analyses were conducted to ensure the comparability of the two groups, some residual bias may remain.

In summary, optimized nursing management in the CSSD and Gastroenterology Department is an effective strategy with multiple benefits. For patients, it significantly reduces the incidence of nosocomial infections and improves patient satisfaction with the cleaning, disinfection, and sterilization of medical devices. For nurses, it alleviates work pressure and burnout among CSSD staff and enhances their job satisfaction.

Disclosure of conflict of interest

None.

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