

ORIGINAL RESEARCH

Application effect of a Donabedian three-dimensional quality evaluation model in perioperative nursing of early gastric cancer male patients undergoing endoscopic mucosal dissection

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Abstract

The effect of Donabedian three-dimensional quality evaluation model is explored for the high-quality nursing during perioperative period of endoscopic mucosal dissection in early gastric cancer male patients. Seventy-eight early gastric cancer male patients were randomly grouped as 39 cases in control having received routine care, while 39 in the intervention group having received routine care combined with the three-dimensional quality evaluation model. Clinical recovery indicators including anxiety, depression, pain, life quality and complications were compared for the two groups. The intervention group's clinical nursing recovery indicator scored higher than that of the control. The scores of each the short-form 36 item health survey questionnaire (SF-36) dimension were better than those of control, and the differences were statistically significant ($p < 0.05$). The incidence of complications in intervention group was 5.12%, and that in the control was 20.5%. The intervention group experienced less complications than the control, and the difference was statistically significant ($p < 0.05$). Treating early gastric cancer male patients with endoscopic mucosal dissection using three-dimensional quality evaluation model can improve clinical recovery and life quality, and reduce anxiety, depression, pain and complications.

Keywords

Early gastric cancer male patients; Perioperative nursing; Endoscopic mucosal dissection; Three-dimensional quality evaluation model

1. Introduction

Gastric cancer (GC) is the most prevalent gastrointestinal malignancy [1]. In China, new GC cases are more than 40% of the total world cases, and mortality rates are 25% of all the deaths from malignancies [2]. Early gastric cancer (EGC) is not spread to the lymph nodes or other organs. It commonly occurs in people of above 50 years age and more likely in men than women. Early detection and treatment of EGC improves prognosis and reduces complications. Endoscopic submucosal dissection (ESD) is the common treatment for early gastrointestinal tumours and precancerous lesions. The benefits include mild minimal invasion, safety and efficacy [1]. However, ESD has postoperative complications such as pain, bleeding, perforation and delayed bleeding being the most serious [2, 3]. Patients are vulnerable to negative emotions like anxiety and depression in the perioperative period [4]. Perioperative management can be improved to reduce negative emotions, such as more preoperative preparations, postoperative monitoring, and targeted psychological guidance [5]. The Structure-Process-Results (SPR) model is a three-

dimensional quality evaluation model used to evaluate the system quality, process and service. The Donabedian 3D quality evaluation model is widely used for the medical quality evaluation of structure, process and outcome. Moreover, it guides to improve the medical care quality [6]. Recently in China, the three-dimensional quality evaluation model has been employed in treating acute myocardial infarction and Chronic obstructive pulmonary disease (COPD) with good results [6]. However, its application to endoscopic mucosal dissection in early gastric cancer patients is not reported [7]. The model needs analysis regarding patients' anxiety, depression, pain, life quality and complications. The comparison of Donabedian 3D quality evaluation model with the others depicts that it focuses on the structure, process and medical quality outcome as the three aspects of evaluation. However, the other models may only focus one of these aspects. The Donabedian 3D model provides comprehensive framework and multidimensional quality assessments. The structure and process of perioperative nursing, and patients' treatment and satisfaction can thus be evaluated [8]. It can improve the nursing quality, postoperative rehabilitation and the life quality

of patients.

2. Objectives and methods

2.1 Objectives

Seventy-eight early gastric cancer male patients being treated at a tertiary hospital were selected as the participants, and divided into 2 groups according to the random number table. There were 39 cases in control group having received routine care, while 39 in the intervention group having received routine care combined with the three-dimensional quality evaluation model. The blind trial was adopted.

Inclusion criteria: (1) no mental or cognitive impairment; (2) patients diagnosed with early gastric cancer by pathological examination and lesions on the mucosal layer; (3) provision of informed consent; and (4) patients having no contraindications to ESD.

Exclusion criteria: (1) patients withdrew from the treatment for personal reasons; (2) underwent palliative surgery in stage IV; (3) psychiatric or cognitive impairment; and (4) no mental or cognitive impairment.

The control group had 25 males and 14 females aged 31–76 years (51.24 ± 3.33) years. The intervention group included 23 males and 17 females aged 32–75 years (51.74 ± 3.38) years. Basic information of the two groups had no statistical difference ($p > 0.05$).

2.2 Methods

Patients basic information was collected and compared before the surgery. Study period was 30 days after the surgery. The control group underwent routine perioperative nursing, while the intervention group was treated through Donabedian three-dimensional quality evaluation model to improve the structure, process and outcome. The consistency and standardization of the intervention was thus ensured.

2.2.1 Control group

Patients in the control group had routine care.

(1) Preoperative nursing: patients after being admitted to the hospital underwent blood tests, chest X-rays and other relevant checks by the nurses. The necessary equipment and medication for the operation were checked by the nurses and reported to doctor.

(2) Intra-operative nursing: nurse assisted the doctor to disinfect, spread sterile cloth and finish the surgery. The aseptic principles were followed.

(3) Post-operative nursing: the nurse monitored patient's vital signs, post-operative positions, anesthetic impact, abdominal signs, pain and surgical wounds. Nurses educated the patients and their families about drainage tube positioning, and reducing the complications by necessary gastrointestinal movement and blood circulation.

(4) Holistic nursing: the patients' negative feelings such as fear and anxiety before and after the operation were managed by informing them about the successful cases as examples. The general procedure with probable outcomes was narrated to the patients.

2.2.2 Intervention group

Patients in the intervention group had routine care combined with the three-dimensional quality evaluation model.

2.2.2.1 Structure

An intervention team was constituted of 1 head nurse, 3 charge nurses, 1 psychological counselor and 1 rehabilitation therapist. Head nurse had the responsibility of talking to the patients, charge nurses implemented the plans, and the therapist provided rehabilitation guidance. The intervention plan was aimed to promote the patients experience and make relevant nursing plans.

2.2.2.2 Process

(1) Plan stage: a three-dimensional evaluation team was led by the head nurse to control the nursing quality. Head nurse convened regular meetings to evaluate the current status of ESD surgery, including the nursing tasks, perioperative nursing requirements, and medication instructions. Moreover, the head nurse was engaged in process improvement. Nurses double checked the instruments and medications before surgery, and informed doctors and anaesthetists of any anomaly.

(2) Implementation stage: all relative departments worked synergistically to improve the system, responsibilities, shift arrangements, nursing tasks and human resource management for catering the nursing shortages. Nurses were further trained before ESD. The nursing measures were supervised by the head nurse and regular spot checks were made.

(3) Inspection stage: the head nurse designed, implemented and supervised the process improvements, and observed whether nurses could implement nursing measures as per the nursing plans. Regular meetings were held to summarize the problems. Documentation was completed. The head nurse managed feedback from patients and their families, and resolved issues timely.

(4) Processing stage: the head nurse scored and announced nursing quality, surgical nursing measures, patients' satisfaction and other indexes.

2.2.2.3 Results

Team collected the data and evaluated intervention effects. Team members after the intervention collected nursing results including clinical recovery indicators, patients' anxiety, depression, pain, life quality and symptoms. Upon analyzing the results, the team members proposed lacking areas and the process improvements.

2.3 Quality control

Before intervention, the trained researchers collected information according to uniform procedures to understand the study purpose, procedures and the data collection tools. Data collection forms or electronic record systems were developed to ensure the accuracy and data completeness. Blind method was employed by the medical care providers and evaluators to monitor the patients' status. The researchers followed ethical guidelines and conducted regular quality control tests. Data was reviewed for the consistency and accuracy.

2.4 Indicators

(1) Clinical recovery indicators included wake-up time and defecation time after the surgery, and length of stay at the hospital.

(2) Hospital Anxiety and Depression Scale (HAD) [9] was a common questionnaire for determining the anxiety and depression levels of the patients. It was the fourteen item scale including seven items related to anxiety (HADS-A) and seven to the depression (HADS-D). Each question was scored from zero (no impairment) to three (severe impairment). Higher scores indicated increased anxiety or depression. The Cronbach's α value was >0.7 which indicated reliability and validity of the scale.

(3) Visual Analogue Scale (VAS) [10] was used to evaluate the patients' pain levels. The simplest VAS was a straight horizontal or vertical line of fixed length, usually 100 mm long, with opposite descriptive terms (e.g., "no pain" and "most pain imaginable") marked as the endpoints. The patients' state was represented by the distance from left end of the line to the point when patient marked the pain. The distance was measured in millimeters. Higher score indicated more pain. The Cronbach's α value was 0.89, indicating the reliability and validity of the scale.

(4) The Short Form Health Survey (SF-36) [11] assessed the life quality. It was designed to evaluate the health-related quality of life (HRQOL). It had 36 items grouped in 8 dimensions with each item rated from 0 to 100. Higher scores indicated better life quality. It took ~10–15 min to complete the assessment. The whole Cronbach's α value was 0.762, while those of each subscale were between 0.632 and 0.873, indicating the reliability and validity of the scale.

(5) Incidence of complications: Incidence (%) = cases of complications/total cases \times 100. It showed patients' complications such as nausea, vomiting, abdominal distension and pain, delayed bleeding, infection and venous thrombosis during patient's intervention.

2.5 Statistics

Statistical analysis was performed by SPSS 25 software (V25.0, IBM Corporation, Armonk, NY, USA). χ^2 test was adopted, and the count data were described by ratio (%). Measurement data which were normally distributed were expressed as mean \pm standard deviation. The t test was adopted. $p < 0.05$ was statistically significant.

3. Results

3.1 Comparison of clinical recovery indicators

The clinical recovery indicators of patients in intervention group were better than in the control group, and difference was statistically significant ($p < 0.05$) (See Table 1).

3.2 Comparison of anxiety and depression scores

Before the intervention, total HAD score for patients in intervention group was 22.68 ± 2.055 , and that of in control

was 23.13 ± 2.592 . Difference between the two groups was not statistically significant ($p > 0.05$). After the intervention, total HAD score for patients in intervention group was 9.51 ± 1.211 , and that of in control was 11.28 ± 1.716 . Difference between the two groups was statistically significant ($p < 0.05$) (See Table 2).

3.3 Comparison of VAS scores

Before the intervention, there was no significant difference in the VAS scores of two groups. After intervention, VAS scores from intervention group were 2.379 ± 0.421 , while those of control were 2.709 ± 0.436 . The difference was statistically significant ($p < 0.05$) (See Table 3).

3.4 Comparison of SF-36 life quality

After the intervention, quality of life scores for patients in intervention group were better than those in control, and the difference was statistically significant ($p < 0.05$) (See Table 4).

3.5 Comparison of incidence of complications

The complications incidence for patients in intervention group was lower than that in control, and the difference was statistically significant ($p < 0.05$) (See Table 5).

4. Discussion

4.1 Three-dimensional quality management model for improving the clinical recovery

The Donabedian three-dimensional quality evaluation model evaluated the medical care quality by focusing the structure, process and outcome. The model provided comprehensive evaluation framework for understanding the influencing factors of nursing quality and its outcomes [6]. The model emphasized the systematic quality evaluations. It focused on the coherence and coordination of all the aspects of medical process. The Donabedian model provided three-dimensional evaluation indexes, and covered various aspects of medical quality assessments. The model was comprehensive and systematic, which assisted in understanding the quality of perioperative care in endoscopic mucosal dissection. The model outcomes helped in locating the problems pertaining to quality, and suggested improvement measures [12]. ESD caused less damage and pain to the patients compared with the conventional surgery. For gastrointestinal patients, ESD improved the normal gastrointestinal tract function, and postoperative life quality. Moreover, it removed lesions [13]. However, it was a complex and time-consuming procedure, and might cause complications [14]. For the patients undergoing ESD, it was imperative to enhance the perioperative care, identify the causes of complications, and apply effective nursing measures [15]. This study found that the clinical recovery indicators of patients in intervention group were better than those in the control, and the differences were significant ($p < 0.05$). The Donabedian three-dimensional quality evaluation model improved the patients' postoperative recovery and the life quality by making the nursing plans at initial and

TABLE 1. Comparison of clinical recovery indicators ($\bar{x} \pm s$).

Project	Intervention group	Control group	<i>t</i>	<i>p</i>
Number	39	39		
First wake-up time (d)	1.75 ± 0.439	2.03 ± 0.545	2.474	0.016
First defecation time (d)	1.50 ± 0.751	2.05 ± 1.138	2.544	0.013
Length of stay (d)	6.03 ± 1.267	6.72 ± 1.376	2.312	0.023

TABLE 2. Comparison of anxiety and depression scores ($\bar{x} \pm s$).

Group	HAD		SAS		SDS	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Intervention group	22.68 ± 2.055	9.51 ± 1.211	11.62 ± 0.935	6.05 ± 0.826	11.38 ± 0.782	3.46 ± 0.822
Control group	23.13 ± 2.592	11.28 ± 1.716	12.00 ± 1.277	6.92 ± 1.178	11.13 ± 0.864	4.36 ± 1.203
<i>t</i>	1.425	5.260	1.517	-3.784	-1.374	4.719
<i>p</i>	0.158	<0.001	0.133	<0.001	0.173	<0.001

HAD: Hospital Anxiety and Depression; SAS: Self-Rating Anxiety Scale; SDS: Self-Rating Depression Scale.

TABLE 3. Comparison of VAS scores ($\bar{x} \pm s$).

	VAS scores	
	Before intervention	3 days after surgery
Intervention group	6.067 ± 0.346	2.379 ± 0.421
Control group	6.007 ± 0.418	2.709 ± 0.436
<i>t</i>	0.684	3.395
<i>p</i>	0.496	0.001

VAS: Visual Analogue Scale.

TABLE 4. Comparison of quality of life in SF-36 ($\bar{x} \pm s$).

Group	Physical function	Mental function	Social function	Material life
Intervention group	60.10 ± 3.455	56.64 ± 4.133	56.26 ± 3.454	67.33 ± 5.828
Control group	58.18 ± 3.203	54.33 ± 3.089	52.90 ± 4.103	64.90 ± 4.299
<i>t</i>	-2.549	-2.793	-3.911	-2.113
<i>p</i>	0.013	0.007	<0.001	0.038

TABLE 5. Comparison of incidence of complications (n (%)).

Group	Delayed bleeding	Infection	Phlebotrombosis	Nausea and vomiting	Abdominal distension and pain	Incidence
Intervention group	0	0	0	1	1	2 (5.12%)
Control group	2	1	1	2	2	8 (20.50%)
χ^2						4.319
<i>p</i>						0.038

implementation stage, determining the nursing plan steps at examination stage, checking the nursing plans at action stage and improving their quality [16]. In addition to the traditional clinical assessments, the three-dimensional quality evaluation model assessed patients' physical function, mental states and the social relationships. It also provided supportive services such as physical therapy, psychological counselling or support from social workers. This model thus improved the clinical recovery of gastric cancer patients, and shortened the hospital stay. It provided comprehensive evaluations of their health and well-being [7].

4.2 Three-dimensional quality evaluation model for alleviating the patients' negative feelings and pain after surgery

ESD was an endoscopic mucosal surgery. The patients experienced preoperative fear and depression when they were not aware of GC and ESD. This affected their postoperative recovery [17]. The results showed that before the intervention, HAD scores for patients in intervention group were 22.68 ± 2.055 , while those in control were 23.13 ± 2.592 . The difference was not significant ($p > 0.05$). After the intervention, HAD scores of patients in intervention group were 9.51 ± 1.211 , while those in control were 11.28 ± 1.716 . The difference was significant ($p < 0.05$). After the intervention, VAS scores of patients in the intervention group were 2.379 ± 0.421 , which were lower than those in control, *i.e.*, 2.709 ± 0.436 ($p < 0.05$). The Donabedian three-dimensional quality evaluation model alleviated the patients' negative feelings and helped in the better management of pain after the surgery. The model improved nursing measures, helped doctors and nurses to preempt patients' needs, addressed intraoperative issues, and improved the physical and mental states of patients when they were uncomfortable after the surgery [18]. The model also provided psychological support to the patients. Patients' bad feelings were alleviated when the health care team communicated with the patients. The model improved patients' symptom management, recovery, and life quality by addressing the non-medical needs. Gastric cancer patients experience negative emotions such as anxiety, depression and fear. The team members helped patients in reducing the negative feelings by providing timely care. The patients controlled their emotions in better ways [19]. Patients felt more supported and less isolated by alleviating the negative feelings. This model thus improved the patients' mental health and minimized the negative emotions [20]. Other studies [21] showed that systematic psychological interventions in ESD treated early gastric cancer patients alleviated the patients' anxiety and depression, which was in accordance with this study outcomes.

4.3 Three-dimensional quality evaluation model for improving patients' life quality

Gastric cancer patients felt isolated from others and took it as a stigma. The three-dimensional quality evaluation model provided high-quality nursing support to the patients for being more confident about the treatment. This helped in alleviating the negative feelings caused by uncertainty. In this study,

the life quality scores of patients in intervention group were higher than those in control. The difference was significant ($p < 0.05$). The three-dimensional quality evaluation model improved the nursing measures and nursing system by developing a care plan. The model avoided blind nursing measures and thus made fewer nursing mistakes [22]. Strengthening the inspection and supervision of nursing measures were conducive in timely finding the problems and providing rectifications. There was overall improvement in the quality of nursing management [23]. The model improved the expertise and nursing quality. It also preserved the patients' privacy. Protecting patients and providing professional and standardized nursing services enhanced their life quality [24, 25]. Studies [26] pointed out that 22–58% malignant patients had depression, anxiety and other psychological disorders. These patients were two to three times more likely to attempt suicide [26]. Patients knowing about the need of gastric ESD might become vulnerable to psychological disorders in perioperative period because of the fear of unknown disease and surgery [27]. Gastric cancer was the most studied psychosomatic disorder, and caused number of physical symptoms such as pain, nausea and fatigue [23]. This model helped in identifying these symptoms and provided interventions for their better management [28]. The Donabedian model did not directly address the anxiety and depression of gastric cancer patients. However, it indirectly promoted the mental health by improving overall nursing quality. By planning the structure, process, and results of high-quality nursing model, nurses and doctors reduced patients' anxiety and depression, and improved overall life quality [29].

4.4 Three-dimensional quality management model for reducing the complications

The Donabedian three-dimensional quality evaluation model was a tool for the health team members to evaluate and improve the nursing quality of patients. The health care team reduced complications after the surgery by planning high-quality nursing model's structure, process and result. In this study, the complications incidence was 5.12% in patients of intervention group, and 20.5% in the control. The model thus reduced the complications incidence. This might be attributed to the model where teamwork, working efficiency and motivation of the nurses were improved. Moreover, it increased the sense of achievement in clinical care, prevented the potential risks in nursing process, protected patient privacy and increased the nursing integrity and service quality [30, 31]. Upon evaluating the results by team members, they reflected improvements in adjusting the nursing measures [32]. For example, undergoing chemotherapy or radiotherapy according to the carefully planned schedule reduced side effects and complications. Patients were more satisfied when they felt about the timely treatment with effective nursing measures. Patients had optimistic attitude. The psychological factors had less impact on disease, and patients' satisfaction was enhanced. Post-operative complications were reduced when nurses provided timely, accurate and effective care. By tracking the incidence, patients recovered well with fewer complications. They had higher satisfaction levels [32].

4.5 Limitation and prospects of this study

The application of Donabedian three-dimensional quality evaluation model in perioperative nursing of early gastric cancer male patients undergoing endoscopic mucosal dissection may have a positive impact on improving the nursing quality and reducing the risk of complications. However, because of lacking body data, some key physiological indexes such as patients' nutritional status, muscle mass and fat distribution are not fully assessed. Besides, the patient's nutritional status may not be assessed accurately due to a lack of nutritional data, which has important influence for both preoperative preparation and post-operative recovery. Thirdly, the lack of clear blood and biochemical parameters limits the in-depth understanding of patients' overall health status.

Therefore, more comprehensive data including the body composition, nutrition and biochemical indexes should be collected in future studies to make up for the shortcomings of current studies. It helps to more accurately evaluate the application effect of Donabedian model in perioperative nursing of endoscopic mucosal dissection, and provide a more powerful basis for optimizing nursing programs and surgical results. In addition, longer-term follow-up observations should be taken into consideration to assess the impact of this model on patients' long-term health status and survival. Thus, the researchers can fully understand its practical value in clinical cases.

5. Conclusions

In conclusion, the three-dimensional quality evaluation model helped patients to recover from surgery, shortened the stay time in hospital, decreased HAD and VAS scores, alleviated negative feelings and improved SF-36 scores. The model helped healthcare team in reducing the patients' incidence of post-operative complications and negative feelings. Moreover, it improved the recovery and life quality. The study had limitations as it was a single-centered study with small sample size.

AVAILABILITY OF DATA AND MATERIALS

The authors declare that all data supporting the findings of this study are available within the paper and any raw data can be obtained from the corresponding author upon request.

AUTHOR CONTRIBUTIONS

TTC and QYW—designed the study and carried them out; supervised the data collection, analyzed the data, interpreted the data, prepared the manuscript for publication and reviewed the draft of the manuscript. All authors have read and approved the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethics Committee of The First Affiliated Hospital of Soochow University (Approval no.

2021013). Patients and their families were informed of the study and signed the informed consent form.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- [1] Liu Q, Ding L, Qiu X, Meng F. Updated evaluation of endoscopic submucosal dissection versus surgery for early gastric cancer: a systematic review and meta-analysis. *International Journal of Surgery*. 2020; 73: 28–41.
- [2] Ishihara R, Arima M, Iizuka T, Oyama T, Katada C, Kato M, *et al.* Endoscopic submucosal dissection/endoscopic mucosal resection guidelines for esophageal cancer. *Digestive Endoscopy*. 2020; 32: 452–493.
- [3] Tanaka S, Kashida H, Saito Y, Yahagi N, Yamano H, Saito S, *et al.* JGES guidelines for colorectal endoscopic submucosal dissection/endoscopic mucosal resection. *Digestive Endoscopy*. 2015; 27: 417–434.
- [4] Li H, Feng L, Bian Y, Yang L, Liu D, Huo Z, *et al.* Comparison of endoscopic submucosal dissection with surgical gastrectomy for early gastric cancer: an updated meta-analysis. *World Journal of Gastrointestinal Oncology*. 2019; 11: 161–171.
- [5] Gu L, Khadaroo PA, Chen L, Li X, Zhu H, Zhong X, *et al.* Comparison of long-term outcomes of endoscopic submucosal dissection and surgery for early gastric cancer: a systematic review and meta-analysis. *Journal of Gastrointestinal Surgery*. 2019; 23: 1493–1501.
- [6] Donabedian A. Evaluating the quality of medical care. 1966. *The Milbank Quarterly*. 2005; 83: 691–729.
- [7] Jiang X, Chang T, Wang J, Xie J, Miao Q, Zhang X, *et al.* Construction of nursing quality evaluation index system for kidney transplant patients: a Delphi method. To be published in *BMC Medical Informatics and Decision Making*. 2022. [Preprint].
- [8] Gong S, Dong J, Wang L, Zhao X, Zheng L, Xi X. Significance of constructing quality of care sensitive indicators based on Donabedian structure-process-outcome three-dimensional quality model in quality control of pediatric endoscopy. *Archives of Clinical Psychiatry*. 2022; 49: 55–60.
- [9] Wu Y, Levis B, Sun Y, He C, Krishnan A, Neupane D, *et al.* Accuracy of the hospital anxiety and depression scale depression subscale (HADS-D) to screen for major depression: systematic review and individual participant data meta-analysis. *BMJ*. 2021; 373: n972.
- [10] Shafshak TS, Elnemr R. The visual analogue scale versus numerical rating scale in measuring pain severity and predicting disability in low back pain. *Journal of Clinical Rheumatology*. 2021; 27: 282–285.
- [11] Alisherovna KM, Erkinovna KZ, Jamshedovna KD, Toshemirovna EM. Study of quality of life indicators in patients with coronary heart disease using the SF-36 questionnaire. *Web of Scientist: International Scientific Research Journal*. 2022; 3: 558–564.
- [12] Li J, Kang G, Liu T, Liu Z, Guo T. Feasibility of enhanced recovery after surgery protocols implemented perioperatively in endoscopic submucosal dissection for early gastric cancer: a single-center retrospective study. *Journal of Laparoendoscopic & Advanced Surgical Techniques*. 2023; 33: 74–80.
- [13] Chinda D, Shimoyama T. Assessment of physical stress during the perioperative period of endoscopic submucosal dissection. *World Journal of Gastroenterology*. 2022; 28: 4508–4515.

- [14] Pimentel-Nunes P, Libânio D, Bastiaansen BAJ, Bhandari P, Bisschops R, Bourke MJ, *et al.* Endoscopic submucosal dissection for superficial gastrointestinal lesions: European society of gastrointestinal endoscopy (ESGE) guideline—update 2022. *Endoscopy*. 2022; 54: 591–622.
- [15] Han C, Sun Y. Efficacy and safety of endoscopic submucosal dissection versus endoscopic mucosal resection for superficial esophageal carcinoma: a systematic review and meta-analysis. *Diseases of the Esophagus*. 2021; 34: doaa081.
- [16] Xu H, Cao X, Zhang Y, Chen Z. Continuous improvement of quality management in the fall prevention process for inpatients: a historically controlled study. To be published in Research Square. 2021. [Preprint].
- [17] Draganov PV, Wang AY, Othman MO, Fukami N. AGA institute clinical practice update: endoscopic submucosal dissection in the United States. *Clinical Gastroenterology and Hepatology*. 2019; 17: 16–25.e1.
- [18] Liu BB, Liu YL, Ge X. Evaluation on the efficacy of nursing intervention based on the self-efficacy theory model in elderly patients undergoing total laparoscopic hysterectomy. *European Journal of Gynaecological Oncology*. 2023; 44: 93–97.
- [19] Xia R, Zeng H, Liu Q, Liu S, Zhang Z, Liu Y, *et al.* Health-related quality of life and health utility score of patients with gastric cancer: a multi-centre cross-sectional survey in China. *European Journal of Cancer Care*. 2020; 29: e13283.
- [20] Religioni U, Czerw A, Budzik MP, Deptała A, Badowska-Kozakiewicz AM. Assessment of pain, acceptance of the disease, adaptation to life and strategies for coping with the disease among patients with ovarian cancer. *Iranian Journal of Public Health*. 2021; 50: 833–834.
- [21] Li T, Xiang PLB. Therapeutic effects of endoscopic mucosal resection on the recovery and prognosis of early gastric cancer. *Journal of BUON*. 2019; 24: 1087–1091.
- [22] Li Y, Hong M, Liu G. Changes in the quality of life, psychological status, medication compliance, and prognosis of patients with acute myocardial infarction after PCI by applying PDCA cycle management model. *Evidence-Based Complementary and Alternative Medicine*. 2021; 2021: 7318653.
- [23] Wei J, Fang X, Qiao J, Liu H, Cui H, Wei Y, *et al.* Construction on teaching quality evaluation indicator system of multi-disciplinary team (MDT) clinical nursing practice in China: a Delphi study. *Nurse Education in Practice*. 2022; 64: 103452.
- [24] Ikenoyama Y, Iri A, Imai H, Nakagawa H. Endoscopic submucosal dissection of an early-stage gastric tumor with minimal bleeding using full-time red dichromatic imaging. *Endoscopy*. 2022; 54: E1001–E1002.
- [25] Tae CH, Shim KN, Kim BW, Kim JH, Hong SJ, Baik GH, *et al.* Comparison of subjective quality of life after endoscopic submucosal resection or surgery for early gastric cancer. *Scientific Reports*. 2020; 10: 6680.
- [26] Wu Y, Zhang Y, Zou L. Effects of anxiety, depression, and fatigue on quality of life in early esophageal cancer patients following endoscopic submucosal dissection. *Annals of Palliative Medicine*. 2020; 9: 3766–3775.
- [27] Cao X, Wang X, Li P, Ju W. Psychological effects of advanced care on patients received endoscopic gastric cancer resection. *Medicine*. 2019; 98: e17497.
- [28] Wang Y, Zhou Q. The effect of accelerated rehabilitation nursing on postoperative recovery, nutritional status, and psychological status in patients with gastric cancer. *American Journal of Translational Research*. 2021; 13: 3666–3673.
- [29] Lee KE, Lim KH. Mediation effect of adaptation on the quality of life in patients with gastric cancer undergoing gastrectomy: a structure equation model. *Asian Nursing Research*. 2019; 13: 38–46.
- [30] Hekmatpou D, Nasiri A, Mohaghegh F. Investigating the effect of self-care training on life expectancy and quality of life in patients with gastrointestinal cancer under radiotherapy. *Asia-Pacific Journal of Oncology Nursing*. 2019; 6: 198–205.
- [31] Lin Y, Docherty SL, Porter LS, Bailey DE. Symptom experience and self-management for multiple co-occurring symptoms in patients with gastric cancer: a qualitative study. *European Journal of Oncology Nursing*. 2020; 49: 101860.
- [32] Chen XB, Jiang MM, Gu WJ, Wang Y, Ye JH, Liu J, *et al.* Construction of quality control evaluation system for community diabetes management in different disease stages. *Chinese General Practice*. 2020; 23: 837–843.

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