Original Article
The efficacy of the problem management model based on the core concept of JCI in gastric polyp patients

Linzhen Zhu[1], Linlin Zhu[2], Xiuying Yang[1], Weifeng Zheng[3]

[1]Endoscopy Center, The Fourth Affiliated Hospital of Zhejiang University School of Medicine, Yiwu 322000, Zhejiang Province, China; [2]Beiyuan Street Community Health Service Centre, Yiwu 322000, Zhejiang Province, China; [3]Department of Digestive Medicine, The Fourth Affiliated Hospital of Zhejiang University School of Medicine, Yiwu 322000, Zhejiang Province, China

Abstract: Objective: To investigate the therapeutic effect of the problem management model based on the core concept of JCI on painless endoscopic mucosal resection (EMR) in gastric polyp patients. Methods: A total of 128 patients with gastric polyps who underwent painless EMR in the Department of Gastroenterology in our hospital from January 2019 to February 2020 were recruited as the study cohort and randomly divided into a control group and an experimental group, with 64 patients in each group. The patients in the control group underwent routine nursing intervention, and the patients in the experimental group underwent the problem management model based on the core concept of JCI. The recovery of gastrointestinal function, the stress response [the heart rate (HR) and the mean arterial pressure (MAP)], the psychological status (the SAS and SDS scores), the complications, the hospital stay durations, the nursing quality, and the nursing satisfaction levels were compared between the two groups. Results: After the intervention, the experimental group had earlier first exhaust and defecation times and shorter hospital stay durations than the control group ($P<0.05$). Both groups had increased HR and MAP, but they were lower in the experimental group than they were in the control group ($P<0.05$). The SAS and SDS scores were decreased in both groups, and were lower in the experimental group than they were in the control group ($P<0.05$). The experimental group had a lower incidence of complications than the control group, but the difference was not significantly different ($P>0.05$). The nursing quality and the nursing satisfaction levels in the experimental group were higher than they were in the control group ($P<0.05$). Conclusion: The problem management model based on the core concept of JCI has a good therapeutic effect on painless EMR in gastric polyp patients. The model is able to effectively reduce the stress response, promote the recovery of postoperative gastrointestinal function, decrease the incidence of complications, and improve the nursing quality and the nursing satisfaction levels.

Keywords: Gastric polyps, painless endoscopic mucosal resection, psychological state, complications

Introduction

Gastric polyps are tissues that grow on the surface of the gastric mucosa and protrude into the gastric cavity, and they frequently emerge in the gastric antrum and body [1]. Generally, the diameter of gastric polyps is less than 2 cm. Gastric polyps with a diameter >2 cm are considered signs of precancerous lesions, which are of great significance for the early prevention and treatment of gastric polyps [2]. As the main treatment method for gastric polyps, endoscopic mucosal resection (EMR) can remove the diseased mucosa completely endoscopically [3]. Although painless EMR brings less trauma, fewer postoperative complications, and a rapid postoperative recovery, it cannot prevent postoperative pain, nausea, vomiting, bleeding, or other uncomfortable symptoms [4, 5]. In addition, the lack of understanding of the disease and its surgery may also contribute to negative emotions, such as excessive nervousness and anxiety, leading to different perioperative stress disorders and affecting the prognosis [6].

JCI, which stands for the Joint Commission on Accreditation of Healthcare Organizations, is a world-recognized standard of medical service, with the core concept of patient-centered treat-

ment, that is to say, patient safety is the prior goal and responsibility of the hospital and the basis of each policy, and sufficient services should be provided to meet the health needs of patients, improve the therapeutic effect, and reduce risks [7, 8]. At present, there are few published studies on the application of JCI in gastroenterology. In order to improve the quality of the service, provide patients with humanized services, and promote early recovery, this study employed the problem-management model based on the core concept of JCI (hereinafter referred to as the problem management model) to analyze the therapeutic effect of painless EMR in gastric polyp patients.

Materials and methods

Clinical materials

A total of 128 patients with gastric polyps who underwent painless EMR in the Department of Gastroenterology in our hospital from January 2019 to February 2020 were recruited as the study cohort and randomly divided into the control group (n=64) and the experimental group (n=64). This study was approved by the Medical Ethics Committee of the Fourth Affiliated Hospital of Zhejiang University School of Medicine. All the patients signed an informed consent.

Participant selection

Inclusion criteria: Patients who met the diagnostic criteria for gastric polyps according to "Practical Gastroenterology" [9], patients who had normal mental cognition and who could cooperate with the clinical nursing, patients who had indications for painless EMR, preoperative electrocardiograph (ECG), fasting blood glucose, and patients whose routine blood tests were normal. Exclusion criteria: patients with a history of surgical contraindications, patients with gastric cancer, patients who did not complete the study or who dropped out during the study, patients with abnormal cardiac or pulmonary function, patients with abnormal blood coagulation, and patients with abnormal immune function.

Methods

Control group: The patients in the control group underwent routine nursing. Within 24 hours of admission, they were given health education and informed of the necessity, purpose, and matters needing surgical attention. They were also informed that the surgery had a very high success rate and that they had no need to worry too much. In addition, they underwent a standardized drug administration and given a light and mild liquid diet. Once the patients had improved and stabilized, the light and digestible semi-liquid food was transitioned to conventional food, with more meals each day but less food at each meal.

Experimental group: In addition to the treatment administered to the control group, the patients in the experimental group underwent the problem management model based on the core concept of JCI. (1) A safety management team was established. The head nurse was responsible for the supervision and guidance, and the primary nurse was required to seek out hidden dangers, analyze the causes and formulate solutions. (2) The nurses' understanding of safety was strengthened. The construction of a safety culture is the basis of safety management and nursing quality. The nurses were required to have a series of training sessions on the JCI concept, professional awareness, service quality improvement, safety risks, *etc.*, thus deepening their safety awareness at the theoretical level. Furthermore, the nurses were encouraged to summarize the problems in their nursing work by themselves in order to cultivate their ability to analyze and deal with these problems and lay the foundation for implementing the problem management model later on. The implementation of the safety management was checked daily and weekly to foster continuous improvement. (3) The double verification method was used to confirm the patients' true identities. Wristbands were made for the patients, and the wrist information was scanned before the treatment and nursing work. If there was no scanning system, the patients' identification had to be verified before the treatment, such as name, medical number, *etc.* (4) One night before the surgery, the nurses were required to visit the patients in order to strengthen the communication between the medical staff and the patients, and to tell the patients about the operating room environment and the procedure and purpose of the surgery. Meanwhile, the advanced medical equipment in the hospital and the surgeons' superb surgery skills were

also explained. Moreover, the nurses paid attention to the patients' negative emotions, gave timely humanistic care, expressed empathy, helped the patients eliminate their psychological burdens and win the trust of their families. (5) The patients were told to fast 12 hours before the surgery and to stop drinking water 6 hours before the surgery. The instruments, drugs and surgical equipment were well prepared and checked before the surgery, and the operating room was disinfected. During the surgery, insulation measure were carefully performed, and placing an insulating blanket on the operating bed was recommended. The nurses closely watched the patients' vital signs. (6) The sense of accident prevention was on high alert at all times after the surgery. The nurses strengthened their inspections to prevent falls and adverse reactions such as bleeding, perforations, abdominal pain, etc. If bleeding occurred, the patient's head was tilted to one side to avoid having the blood enter the respiratory tract causing a cough. Oral cleaning was done well after the hematemesis, and the vital signs such as the heart rate, pulse, and blood pressure were closely monitored, and gastrointestinal recovery times were recorded, and the doctors were promptly informed if there was any abnormality. It was necessary to fast for 12-24 hours after the surgery. A nutrition pump inserted via a nasojejunal tube for 2-3 hours at a time was administered to the patients in a poor physical condition. If the patient did not have hematochezia symptoms or abdominal pain, he or she could stop pumping the nutrient solution and change it to liquid food. After that, the patients' diet was slowly transitioned to mild and non-irritating liquid food according to the patients' tolerance and the improvement of their clinical symptoms. Antibiotics were stopped 24 hours after the surgery. Finally, the nurses needed to regularly assist the patients in turning over, giving muscle massages, preventing pressure sores and advising the patients to get out of bed early when they became stable.

Observation indices: (1) Recovery of the gastrointestinal function and the hospital stay durations: The first exhaust and defecation times and the hospital stay durations were recorded. (2) Stress response: The heart rate (HR) and mean arterial pressure (MAP) were monitored before and after the surgery. (3) Psychological status before and after intervention (before discharge): The self-rating anxiety scale (SAS) and self-rating depression scale (SDS) [10] were used to evaluate the patients' psychological statuses before and after the intervention. The scales were rated on a 4-grade method. The standard score of the SAS is 50, in which 50-59 indicates mild anxiety, 60-69 indicates moderate anxiety, and >69 indicates severe anxiety. The standard score of SDS is 53, in which 53-62 indicates mild depression, 63-72 indicates moderate depression, and >72 indicates severe depression. Higher scores indicates a higher degree of both anxiety and depression. (4) Complications: The postoperative complications (such as bleeding, perforation, pressure sores, infections, *etc.*) were recorded. (5) Nursing quality: The nursing quality was evaluated according to the assessment standards of our hospital, including disinfection and isolation, environmental management, nursing safety, personnel training, *etc.* The scores ranged from 0-100, of which 90 or more indicates excellent, 80-89 indicates good, 60-79 indicates poor, and 60 or less indicates extremely poor. (6) Nursing satisfaction: The nursing satisfaction levels were evaluated using a questionnaire made by our hospital, which covers nursing attitudes, communication skills, nursing skills, and health education. Each item had 5 options, that is, very satisfied, satisfied, general, dissatisfied, and very dissatisfied. The total possible score of the questionnaire is 100, of which 90 or more indicates very satisfied, 80-89 indicates satisfied, 70-79 indicates general, 60-69 indicates dissatisfied, and 60 or less indicates very dissatisfied. Satisfaction indicates the proportion of patients who choose very satisfied or satisfied.

Statistical analysis

SPSS 20.0 software was used for the statistical analysis. The measurement data were expressed as ($\overline{X} \pm S$). The differences between and within the groups were compared using independent sample t tests and pared-samples t tests, respectively. Paired t tests were used for the comparisons within groups before and after the intervention. The count data were expressed as n (%), and the differences between groups were compared using χ^2 test. $P<0.05$ was considered statistically significant.

Table 1. Comparison of the general clinical data between the two groups ($\bar{X} \pm S$/%)

General materials		Control group (n=64)	Experimental group (n=64)	t/χ^2	P
Gender (Male/Female)		38/26	35/29	χ^2=0.287	0.592
Age (years)		41.84±6.06	40.07±5.73	t=1.698	0.092
Diameter of polyp (cm)		1.45±0.33	1.38±0.28	t=1.294	0.198
Pathological type	Inflammatory	23	27	χ^2=0.525	0.469
	Adenomatous	25	22	χ^2=0.303	0.582
	Hyperplastic	16	15	χ^2=0.043	0.837
Site of polyp	Antrum	29	26	χ^2=0.287	0.592
	Body	23	24	χ^2=0.034	0.855
	Fundus	1122	14	χ^2=0.193	0.66
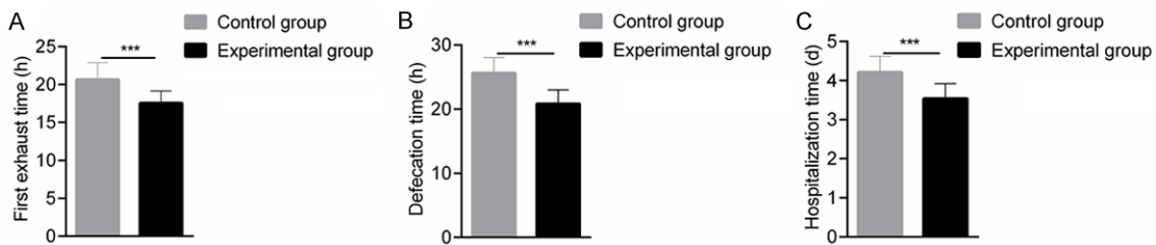
Figure 1. Comparison of the gastrointestinal function recovery times and the hospital stay durations between the two groups. Note: (A) shows that the first exhaust time in the experimental group was significantly sooner than it was in the control group; (B) shows that the first of defecation time in the experimental group was significantly sooner than it was in the control group; (C) shows that the hospital stay durations in the experimental group were significantly shorter than they were in the control group. ***indicates $P<0.001$ compared with control group.

Results

General clinical data

There was no significant difference in the general clinical data (gender, age, polyp diameters, pathological types, polyp locations, *etc.*) between the two groups ($P>0.05$), so they were comparable, as shown in **Table 1**.

Recovery of gastrointestinal function and the hospital stay durations

The experimental group had earlier first exhaust and defecation times and shorter of hospital stay durations than the control group ($P<0.05$), indicating that the problem management model effectively promoted the recovery of gastrointestinal function and shortened the hospital stay durations (**Figure 1**).

Stress response

Before the intervention, there were no significant differences in the HR or MAP levels bet-

ween the two groups ($P>0.05$). After the intervention, the HR and MAP levels in both groups increased and were lower in the experimental group than in the control group ($P<0.05$), indicating that the problem management model effectively reduced the patients' stress responses (**Figure 2**).

Psychological states

The SAS and SDS scores in the two groups showed no significant differences before the intervention ($P>0.05$). After the intervention, the two groups had decreased SAS and SDS scores, and they were lower in the experimental group than they were in the control group ($P<0.05$), indicating that the problem management model effectively improved the patients' psychological states (**Figure 3**).

Complications

The incidence of complications in the experimental group was lower than it was in the control group, but the difference was not statisti-
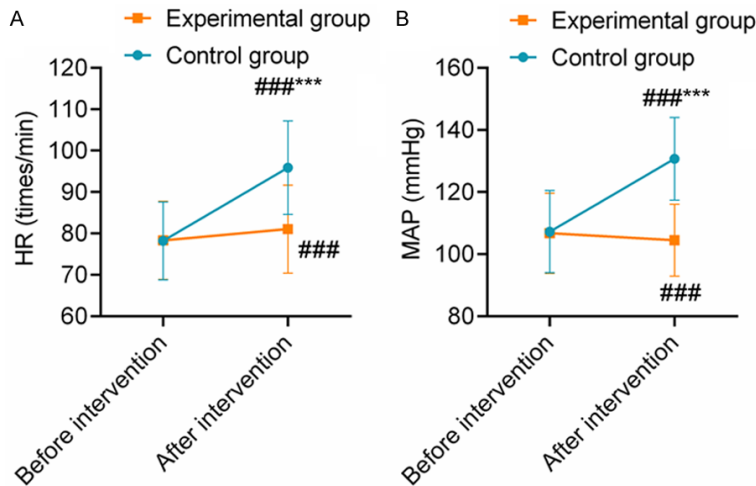
Figure 2. Comparison of stress responses between the two groups. Note: (A) shows that experimental group had significantly lower HR levels than the control group. (B) shows that experimental group had significantly lower MAP levels than the control group. ###indicates $P<0.001$ compared with before the intervention; ***indicates $P<0.001$ compared with the control group.
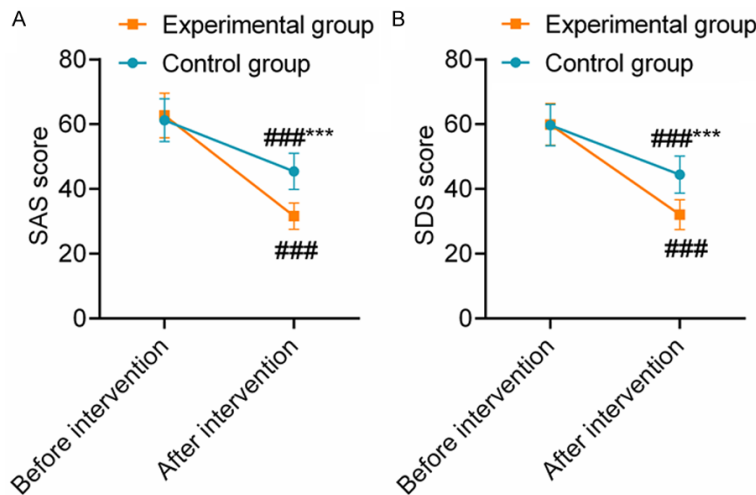
Figure 3. Comparison of the psychological states between the two groups (scores). Note: (A) shows that the SAS scores in the experimental group were significantly lower than they were in the control group; (B) indicates that the SDS scores in the experimental group were significantly lower than they were in the control group. ###indicates $P<0.001$ compared with before the intervention; ***indicates $P<0.001$ compared with the control group.

cally significant ($P>0.05$), suggesting that the problem management model effectively reduced the incidence of complications, as shown in **Table 2**.

Nursing quality

The experimental group had higher nursing quality levels than the control group ($P<0.05$),

suggesting that the problem management model facilitated the improvement of the nursing quality, as shown in **Figure 4**.

Nursing satisfaction

The nursing satisfaction in the experimental group was higher than it was in the control group ($P<0.05$), indicating that the problem management model significantly improved the patients' satisfaction levels with the nursing services (**Table 3**).

Discussion

Taking JCI assessment as the medical service standard is the highest level of hospital management and service. The problem management model based on the core concept of JCI has become a key topic in improving nursing safety and quality management [11, 12]. At present, more than 20 hospitals in China have passed the JCI certification, but they are still in their infancy. In addition, few related studies have reported on the application of this standard in the safety management of various departments, so our study introduced further discussion on the core of the theory [13]. The results showed that after the intervention, the experimental group showed lower surgical stress response levels, shorter gastrointestinal function recovery times, better psychological states and a lower incidence of complications than the control group, indicating that the problem management mode is more beneficial for helping patients undergo surgery in their best state, reduce surgical stressors, promote the recovery of postoperative gastrointestinal function, and decrease the incidence of complications through a series of safety management measures. Xu et al. [14]

Table 2. Comparison of the incidence of complications between the two groups n (%)

Complications	Control group (n=64)	Experimental group (n=64)	X^2	P
Bleeding	3 (4.69)	1 (1.56)	1.038	0.308
Perforation	1 (1.56)	0 (0.00)	1.008	0.315
Pressure sores	0 (0.00)	1 (1.56)	1.008	0.335
Infection	2 (3.13)	0 (0.00)	2.032	0.154
Total incidence	6 (9.38)	2 (3.13)	2.133	0.144
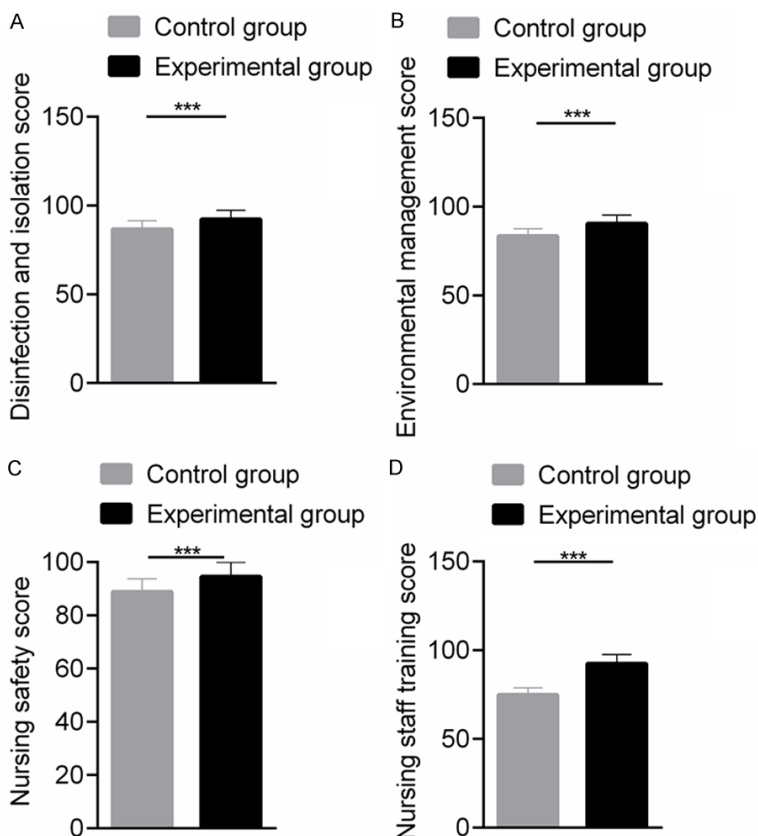
Figure 4. Comparison of the nursing quality between the two groups (scores). Note: (A) shows that the disinfection and isolation scores in the experimental group were significantly higher than they were in the control group; (B) shows that the environmental management scores in the experimental group were significantly higher than they were in the control group; (C) shows that the nursing safety scores in the experimental group were significantly higher than they were in the control group; (D) indicates that the training score of the nursing staff in the experimental group was significantly higher than that in the control group. ***indicates $P<0.001$ compared with control group.

pointed out that the perioperative nursing based on the concept of JCI can alleviate anxiety, shorten postoperative recovery times, reduce complications and improve patient coordination. Liu et al. [15] pointed out that the

JCI standard can effectively stimulate the learning enthusiasm and subjective initiative and fully improve the job satisfaction and professional quality of the nurses in the operating room, which was also consistent with the results of this study.

"Patient-centered" is the essence of the JCI standard. Through systematic training on the nursing safety management model, nurses could fully understand the definition of the JCI core concept and the purpose of this study, subjectively enhance their awareness of JCI safety management, define their own responsibility goals and objectively make the work more in line with the JCI standards, so as to improve the nursing quality and disease outcomes [16, 17]. Using the double verification method to identify the true identification of the patients is the basic procedure of the JCI security objectives. Assigning convenient and obvious wristbands for the patients can help the nurses quickly identify the patients so that they receive the correct treatment and avoid mistakes [18]. The nurses also need to conduct a preoperative visit to inform the patients about the general situation of the upcoming surgery, giving them a general understanding of the surgery. Due to the lack of surgical awareness in most patients, negative emotions (such as excessive anxiety, tension and fear) and psychological resistance can easily occur before the surgery, and the subsequent excessive stress response may impede the surgical progress [19, 20]. Through immediate preoperative communication, the patients have an understanding of the surgery, so that they can make a reasonable self-adjustment

Table 3. Comparison of the nursing satisfaction levels between the two groups n (%)

Nursing satisfaction	Control group (n=64)	Experimental group (n=64)	X^2	P
Very satisfied	34 (42.55)	48 (68.09)		
Satisfied	18 (36.17)	13 (25.53)		
General	9 (14.89)	2 (4.26)		
Dissatisfied	2 (4.26)	1 (2.13)		
Very dissatisfied	1 (2.13)	0 (0.00)		
Total satisfaction	52 (76.60)	61 (93.62)	6.117	0.013

and early adaptation. Meanwhile, accepting the background of both the hospital and the knife-wielding surgeons can help the nurses to give timely psychological intervention and humanistic care, eliminating their adverse emotions and enhancing their confidence in the treatment. As the patients are under anesthesia during the surgery, their throat and cough reflexes will disappear, and they may develop aspiration if there is food in the stomach [21]. Therefore, reasonable fasting and drinking before surgery can prevent accidental aspiration. The instruments and drugs should be checked carefully before the surgery to avoid adverse events. Besides, disinfection in the operating well room can also prevent exogenous infections [22]. Perioperative hypothermia can be avoided through thermal insulation measures. Since surgical resection may impair the blood vessels and cause bleeding, strengthening postoperative the inspection may help find problems in time to implement corresponding measures [23]. Eating immediately after surgery may stimulate the gastrointestinal tract and induce bleeding, while enteral nutrition is able to provide nutrients, it can not only avoid stimulating gastrointestinal tract, but it can also promote the recovery of the digestive system [24]. Helping patients turn over and giving massages can also promote blood circulation, prevent thrombosis and bedsores, and assist in an early postoperative recovery.

Under the guidance of the JCI standards, the problem management model can control the nursing quality in all aspects and designate relevant solutions in accordance with the principle of "patient-centered", so as to continuously improve service quality and reduce the treatment risk. A previous study found that the problem management model based on the core concept of JCI can effectively improve patients'

satisfaction with the nursing [25]. The results of this study showed that after the intervention, the nursing quality and the patients' satisfaction levels with the service in the experimental group were significantly higher than they were in the control group, indicating that the problem management model has good benefits for improving the service quality of the nursing staff and establishing a good medical-patient relationship, which is conducive to forming positive and correct values among the nurses, ensuring safe and efficient nursing quality, and thus improving the patients' recognition of the nursing services. However, it is worth noting that the results of this study cannot be used as a unified standard due to the small sample size and the limited number of studies on the JCI standards. Therefore, longer-term and larger-scale studies will be desperately needed in the future.

To conclude, the problem management model has an ideal therapeutic effect on painless EMR in gastric polyp patients. The model can effectively reduce the stress response, promote the recovery of postoperative gastrointestinal function, decrease the incidence of complications, and improve the nursing quality and the nursing satisfaction levels.

Disclosure of conflict of interest

None.

Address correspondence to: Linzhen Zhu, Endoscopy Center, The Fourth Affiliated Hospital of Zhejiang University School of Medicine, No. N1, Shangcheng Avenue, Yiwu 322000, Zhejiang Province, China. Tel: +86-15958902187; E-mail: linzhenzhu187@163.com

References

[1] Castro R, Pimentel-Nunes P and Dinis-Ribeiro M. Evaluation and management of gastric epithelial polyps. Best Pract Res Clin Gastroenterol 2017; 31: 381-387.

[2] Argüello Viúdez L, Córdova H, Uchima H, Sánchez-Montes C, Ginès À, Araujo I, González-Suárez B, Sendino O, Llach J and Fernández-Esparrach G. Gastric polyps: retrospective analysis of 41,253 upper endoscopies. Gastroenterol Hepatol 2017; 40: 507-514.

[3] Zhao Y and Wang C. Long-term clinical efficacy and perioperative safety of endoscopic submu-

cosal dissection versus endoscopic mucosal resection for early gastric cancer: an updated meta-analysis. Biomed Res Int 2018; 2018: 3152346.

[4] Zhang L and Wang H. Prognostic analysis of gastric mucosal dysplasia after endoscopic resection: a single-center retrospective study. J BUON 2019; 24: 679-685.

[5] Cheesman AR, Greenwald DA and Shah SC. Current management of benign epithelial gastric polyps. Curr Treat Options Gastroenterol 2017; 15: 676-690.

[6] Corral JE, Keihanian T, Diaz LI, Morgan DR and Sussman DA. Management patterns of gastric polyps in the United States. Frontline Gastroenterol 2019; 10: 16-23.

[7] Frost K, Stafos A, Barbay K and Henderson K. Achieving disease-specific care joint commission certification: the impact of clinical nurse specialist practice. Clin Nurse Spec 2019; 33: 273-278.

[8] Azmi H, Cocoziello L, Harvey R, McGee M, Desai N, Thomas J, Jacob B, Rocco A, Keating K and Thomas FP. Development of a joint commission disease-specific care certification program for parkinson disease in an acute care hospital. J Neurosci Nurs 2019; 51: 313-319.

[9] Yu J, Shen Z and Luo H. Practical gastroenterology. World Chin J Digestol 2000; 8: 523.

[10] Chen MJ, Wu W, Pan S, Lin CJ, Dong LM, Chen ZF, Wu JS and Huang ZM. Sedated gastroscopy improves detection of gastric polyps. Exp Ther Med 2018; 16: 3116-3120.

[11] Olmez S, Sayar S, Saritas B, Savas AY, Avcioglu U, Tenlik I, Ozaslan E, Koseoglu HT and Altiparmak E. Evaluation of patients with gastric polyps. North Clin Istanb 2018; 5: 41-46.

[12] Zhang S, Zheng D, Yang Z, Hong L, Ng SC, Li M, Huang S, Wang S, Li L, Li M, Zhang H, Lin J, Zhong B, Cui Y and Chen M. Patients with gastric polyps need colonoscopy screening at younger age: a large prospective cross-sectional study in China. J Cancer 2019; 10: 4623-4632.

[13] Nishizawa T and Yahagi N. Endoscopic mucosal resection and endoscopic submucosal dissection: technique and new directions. Curr Opin Gastroenterol 2017; 33: 315-319.

[14] Xu J, Qi H, Liu d and Chang B. Study on optimization of nursing mode during perioperative period of symptomatic internal carotid artery occlusion interventional opening guided by the concept of Joint International Committee. Chin J Pract Nurs 2018; 34: 2081-2085.

[15] Liu L, He L, Peng Y and Shao L. Evaluation of layered training for operating room nurses based on magnetic management concept and JCI standard. J Nurs 2018; 25: 24-27.

[16] Alférez-Andía J, Benites-Goñi H and Palacios-Salas F. Focal intramucosal adenocarcinoma occurring in gastric hyperplastic polyps treated with endoscopic mucosal resection. Case Rep Gastrointest Med 2018; 2018: 7431290.

[17] Jeong CY, Kim N, Lee HS, Yoon H, Shin CM, Park YS, Kim JW and Lee DH. Risk factors of multiple gastric polyps according to the histologic classification: prospective observational cohort study. Korean J Gastroenterol 2019; 74: 17-29.

[18] Ye X, Zhang L and Ji N. Improvement and practice of hospital health education model based on JCI concept. Chin J Pract Nurs 2017; 33: 41-43.

[19] Mattox AK and Lowenthal J. The JCI Scholar experience: perspectives from young physician-scientists. J Clin Invest 2019; 129: 941-943.

[20] Dunstan DA, Scott N and Todd AK. Screening for anxiety and depression: reassessing the utility of the Zung scales. BMC Psychiatry 2017; 17: 329.

[21] Xu L, Pan Q and Lin R. Prevalence rate and influencing factors of preoperative anxiety and depression in gastric cancer patients in China: preliminary study. J Int Med Res 2016; 44: 377-388.

[22] Helander EM, Webb MP, Menard B, Prabhakar A, Helmstetter J, Cornett EM, Urman RD, Nguyen VH and Kaye AD. Metabolic and the surgical stress response considerations to improve postoperative recovery. Curr Pain Headache Rep 2019; 23: 33.

[23] Crippa J, Mari GM, Miranda A, Costanzi AT and Maggioni D. Surgical stress response and enhanced recovery after laparoscopic surgery - a systematic review. Chirurgia (Bucur) 2018; 113: 455-463.

[24] Steinthorsdottir KJ, Kehlet H and Aasvang EK. Surgical stress response and the potential role of preoperative glucocorticoids on post-anesthesia care unit recovery. Minerva Anestesiol 2017; 83: 1324-1331.

[25] Malfertheiner P, Kandulski A and Venerito M. Proton-pump inhibitors: understanding the complications and risks. Nat Rev Gastroenterol Hepatol 2017; 14: 697-710.