


Effects of high-quality nursing interventions on outcomes and complication rate of elderly patients undergoing painless gastrointestinal endoscopy

Efeitos de intervenções de enfermagem de alta qualidade nos resultados e na taxa de complicações de pacientes idosos submetidos à endoscopia gastrointestinal indolor
Efectos de intervenciones de enfermería de alta calidad en los resultados y en el índice de complicaciones de pacientes mayores sometidos a endoscopia gastrointestinal indolora

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Abstract

Objective: For elderly patients, painless gastrointestinal endoscopy can easily induce adverse events. We aimed to evaluate the effects of high-quality nursing interventions on the outcomes and complication rate of elderly patients undergoing painless gastrointestinal endoscopy.

Methods: A total of 124 patients who received painless gastrointestinal endoscopy from January to December 2022 were selected, 62 of whom admitted between January and June 2022 were included into a conventional nursing group and given traditional basic nursing intervention, and the other 62 admitted between July and December 2022 were assigned into a high-quality nursing group and given high-quality nursing intervention. The intervention outcomes were compared.

Results: The Self-rating Anxiety Scale and Self-rating Depression Scale scores of the high-quality nursing group were lower than those of the conventional nursing group ($P < 0.05$). The systolic blood pressure, diastolic blood pressure, and heart rate during and after diagnosis and treatment decreased in the high-quality nursing group compared with those in the conventional nursing group ($P < 0.05$). The high-quality nursing group had a lower complication rate and a higher nursing satisfaction rate than those of the conventional nursing group ($P < 0.05$).

Conclusion: High-quality nursing intervention not only stabilizes the psychological state of elderly patients undergoing painless gastrointestinal endoscopy, but also is beneficial to maintaining stable blood pressure and heart rate.

Resumo

Objetivo: Para pacientes idosos, a endoscopia gastrointestinal indolor pode facilmente induzir eventos adversos. Nosso objetivo foi avaliar os efeitos de intervenções de enfermagem de alta qualidade nos resultados e na taxa de complicações de pacientes idosos submetidos à endoscopia gastrointestinal indolor.

Métodos: Foram selecionados 124 pacientes que receberam endoscopia gastrointestinal indolor no período de janeiro a dezembro de 2022, 62 dos quais internados entre janeiro e junho de 2022 foram incluídos em um grupo de enfermagem convencional e receberam intervenção de enfermagem básica tradicional, e os outros 62 internados entre julho e dezembro 2022 foram atribuídos a um grupo de enfermagem de alta qualidade e receberam intervenções de enfermagem de alta qualidade. Os resultados da intervenção foram comparados.

Resultados: As pontuações da Escala de Autoavaliação de Ansiedade e da Escala de Autoavaliação de Depressão do grupo de enfermagem de alta qualidade foram inferiores às do grupo de enfermagem convencional ($P < 0,05$). A pressão arterial sistólica, a pressão arterial diastólica e a frequência cardíaca durante e após o diagnóstico e tratamento diminuíram no grupo de enfermagem de alta qualidade em comparação

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com os do grupo de enfermagem convencional ($P < 0,05$). O grupo de enfermagem de alta qualidade teve uma taxa de complicação mais baixa e uma taxa de satisfação de enfermagem mais alta do que o grupo de enfermagem convencional ($P < 0,05$).

Conclusão: A intervenção de enfermagem de alta qualidade não só estabiliza o estado psicológico dos pacientes idosos submetidos à endoscopia gastrointestinal indolor, mas também é benéfica para manter a pressão arterial e a frequência cardíaca estáveis.

Resumen

Objetivo: En pacientes mayores, la endoscopia gastrointestinal indolora puede inducir eventos adversos fácilmente. Nuestro objetivo fue evaluar los efectos de intervenciones de enfermería de alta calidad en los resultados y en el índice de complicaciones de pacientes mayores sometidos a endoscopia gastrointestinal indolora.

Métodos: Se seleccionaron 124 pacientes que recibieron endoscopia gastrointestinal indolora en el período de enero a diciembre de 2022. Entre ellos, se incluyó a 62 pacientes internados entre enero y junio de 2022 en un grupo de enfermería convencional y recibieron intervenciones de enfermería básica tradicional. Los otros 62 internados entre julio y diciembre de 2022 fueron asignados a un grupo de enfermería de alta calidad y recibieron intervenciones de enfermería de alta calidad. Se compararon los resultados de la intervención.

Resultados: Los puntajes de la Escala de Autoevaluación de Ansiedad y de la Escala de Autoevaluación de Depresión del grupo de enfermería de alta calidad fueron inferiores a los del grupo de enfermería convencional ($p < 0,05$). La presión arterial sistólica, la presión arterial diastólica y la frecuencia cardíaca durante y después del diagnóstico y tratamiento disminuyeron en el grupo de enfermería de alta calidad en comparación con el grupo de enfermería convencional ($p < 0,05$). El grupo de enfermería de alta calidad tuvo un índice de complicaciones más bajo y un índice de satisfacción de enfermería más alto que el grupo de enfermería convencional ($p < 0,05$).

Conclusión: La intervención de enfermería de alta calidad no solo estabiliza el estado psicológico de los pacientes mayores sometidos a endoscopia gastrointestinal indolora, sino que también es benéfica para mantener la presión arterial y la frecuencia cardíaca estables.

Introduction

Currently, patients with digestive system diseases are generally diagnosed by gastrointestinal endoscopy in clinical practice to provide targeted therapies.⁽¹⁾ Nevertheless, gastrointestinal endoscopy is invasive, which may induce fear and anxiety in patients and has a negative impact on their tolerance.⁽²⁾ With the improvement of medical technology and the diversification of diagnosis and treatment methods, painless diagnosis based on intravenous bolus injection of sedative/anesthetic drugs combined with gastrointestinal endoscopy has been widely applied, which effectively increases the safety and comfort during treatment.⁽³⁾ However, for elderly patients, painless gastrointestinal endoscopy can easily induce adverse events such as arrhythmia and respiratory disturbance, which may be attributed to the decreased tolerance of the central nervous system to sedative and anesthetic drugs due to function decline.⁽⁴⁾ The increased risk of complications in the elderly seriously affects the clinical diagnosis and treatment effects of painless gastrointestinal endoscopy and poses threats to the life safety.^(5,6)

Effective nursing after painless gastrointestinal endoscopy can reduce the incidence rate of complications and improve the treatment outcomes.⁽⁷⁾ However, effective nursing intervention modes after painless gastrointestinal endoscopy for elderly patients still need to be further explored. High-quality nursing,

as an optimized mode of conventional nursing, aims to provide complete, comprehensive, and high-quality nursing measures, thereby increasing the acceptance of patients and improving the nursing quality.⁽⁸⁾ Gastrointestinal endoscopy is invasive, during which the vagus nerve stimulated. Besides, the insufficient understanding of painless gastrointestinal endoscopy before examination seriously affects the emotional state of patients, and the generation of negative emotions is a crucial factor for the abnormal symptoms of physiological perception behaviors.⁽⁹⁾ Intervention with high-quality nursing protocols can increase the sense of security under the correct guidance of nurses, guide patients to better cooperate with clinicians, and raise the success rate of examinations.⁽¹⁰⁾

Therefore, we herein provided conventional basic nursing protocol and high-quality nursing protocol for elderly patients undergoing painless gastrointestinal endoscopy, aiming to evaluate the effects of high-quality nursing interventions on the outcomes and complication rate of elderly patients undergoing painless gastrointestinal endoscopy.

Methods

This study has been approved by the ethics committee of our hospital, and written informed consent has been obtained from all subjects.

The inclusion criteria were set as follows: (1) patients aged above 60 years old, (2) those with indications for painless gastrointestinal endoscopy, clear consciousness, and ability to cooperate with the medical staff to complete relevant diagnosis and treatment, and (3) those who had complete clinical data and signed the informed consent. The exclusion criteria included (1) patients with respiratory disturbance, (2) those with severe organic dysfunction, (3) those with surgical contraindications, or (4) those who withdrew from the study midway.

Before diagnosis and treatment, the patients were instructed to regularly fast and clean their intestines. During diagnosis and treatment, propofol, lidocaine, and fentanyl citrate were injected intravenously, and the physical signs of the patients were observed. The disappearance of eyelash reflexes and relaxation of entire muscles signified successful anesthesia, indicating the feasibility of gastrointestinal endoscopy. Moreover, bolus injection of propofol was performed according to the actual situation to maintain the depth of anesthesia, and nursing intervention was provided during diagnosis and treatment.

The conventional basic nursing protocol was adopted for intervention in conventional nursing group, relevant medical devices and drugs were prepared before diagnosis and treatment, and the basic information of the patients was confirmed. During diagnosis and treatment, the patients' conditions were closely observed, and their physical signs were monitored to confirm whether adverse reactions occur.

High-quality nursing group was given high-quality nursing intervention: (1) A team was established to formulate a high-quality nursing management system. The head nurse continuously summarized the clinical experience while guiding and supervising the nursing staff in the team to complete their own jobs, and then formulated a scientific and reasonable intervention protocol. The medical staff needed to comprehensively analyze and consider the clinical actual situation of the patients as well as the nursing management rules and regulations, carry out discussions to improve the nursing concept, optimize the nursing process to increase the

work efficiency, and conduct regular performance appraisal for the staff responsible for nursing work to enhance their work enthusiasm.

(2) Preoperative nursing: Health education and psychological nursing were provided before diagnosis and treatment. Specifically, the receiving nurse communicated with the patients before painless gastrointestinal endoscopy, during which the nurse should gain the patients' trust and introduce the safety of painless gastrointestinal endoscopy and the significance of preoperative preparation to the patient through standardized language. Besides, the nurse should determine the personality characteristics and psychological state of the patients during communication, perform individualized intervention based on the personality characteristics, and guide the patients to better cooperate with the treatment. In addition, the nurse should patiently answer the questions raised by the patients and communicate with the patients' families at the same time, so as to further clarify actual needs of the patients. Furthermore, the nursing staff should assist the patients' families in solving the problems, so that the patients could receive treatment in a good state.

(3) Intraoperative nursing: The optimal position for establishing intravenous access on the right limb of the patients was determined. Whether the puncture needle is indwelt was decided according to the diagnosis and treatment, and the needle was fixed after puncture to prevent discomfort due to needle detachment. During nursing, the nursing staff assisted the patients to remain in the left lateral position, guided them to bend the knees in a naturally relaxed state, and instructed the patients to place the right limb on a soft pillow placed in front of their chest to make the body lean to the left. During painless gastrointestinal endoscopy, the nursing staff should closely observe the patients' conditions and prepare for emergency treatment in advance for patients with abnormal physical signs.

(4) Postoperative nursing: The nursing staff should wake up the patients gently after diagnosis and treatment, inquire about their feelings, send them back to the ward for comprehensive assessment of their physical signs and other conditions,

and inform the patients to stay in bed for 30 min after surgery, fast for 2 h after surgery, and avoid strenuous exercise.⁽¹¹⁾

(5) Summary and improvement of work related to high-quality nursing intervention: Attention to feedback from patients receiving high-quality nursing was strengthened, and related work was summarized and improved to create a better high-quality nursing environment tailored to the patients' needs. The nursing staff needed to reflect on the shortcomings in the nursing process based on patients' feedback, and prepare relevant summary reports at each stage to better improve and optimize the nursing protocol.

Emotional state was evaluated by Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS), both of which have a total score of 80 points and 20 items, with 0-4 points for each item. Higher scores denoted higher degrees of anxiety and depression in patients.^(12,13)

The changes in vital signs [heart rate, systolic blood pressure (SBP), and diastolic blood pressure (DBP)] before, during and after diagnosis and treatment were monitored.

The occurrence of complications was observed and compared between the two groups of patients.

Nursing satisfaction = rate of very satisfied (percentage of scores >80 points) + rate of basically satisfied (percentage of scores at 60-80 points), assessed by self-made scales of the department, with a total score of 100 points.

SPSS 26.0 software was employed for statistical analysis. The measurement data were expressed by mean \pm standard deviation ($\bar{x} \pm s$) and subjected to the *t*-test, and the count data were presented as % and examined by the χ^2 test. $P < 0.05$ was of statistical significance.

Results

Baseline clinical data

A total of 124 elderly patients who received painless gastrointestinal endoscopy in our hospital from January to December 2022 were selected as the subjects. Among them, 62 patients admitted between

January and June 2022 were included into the conventional nursing group and subjected to conventional basic nursing intervention, and 62 patients diagnosed and treated during July and December 2022 were allocated into the high-quality nursing group intervened with high-quality nursing. There were 39 (62.90%) males and 23 (37.10%) females aged 65-83 years old [(73.25 \pm 4.90) years old on average] in the conventional nursing group. The number of patients undergoing gastroscopy alone, colonoscopy alone, endoscopy-assisted high-frequency electroresection of polyps, and submucosal electroresection was 14 (22.58%), 11 (17.74%), 24 (38.71%), and 13 (20.97%), respectively. As for other concomitant diseases, there were 30 cases (48.38%) of hypertension, 17 cases (27.41%) of coronary heart disease, and 15 cases (24.19%) of diabetes mellitus. The high-quality nursing group consisted of 35 (56.45%) men and 27 (43.54%) women aged 63-85 years old, with an average age of (72.32 \pm 4.86) years old. Among them, 16 (25.80%), 10 (16.12%), 22 (35.48%), and 14 (22.58%) patients received gastroscopy alone, colonoscopy alone, endoscopy-assisted high-frequency electroresection of polyps, and submucosal electroresection, respectively. In terms of other concomitant diseases, 32 cases (51.61%) of hypertension, 16 cases (25.80%) of coronary artery disease, and 14 cases (22.58%) of diabetes mellitus were observed. The baseline data were comparable between the two groups ($P > 0.05$).

Emotional state of patients at different time points

The scores were comparable before intervention ($P > 0.05$), which declined after intervention in both groups, and they were lower in the high-quality nursing group [(23.95 \pm 3.36) points and (25.36 \pm 5.61) points] than those in the conventional nursing group ($P < 0.05$) (Table 1).

Changes in vital signs of patients before and after nursing intervention

The vital signs were not statistically different before diagnosis and treatment ($P > 0.05$). The levels of SBP, DBP, and heart rate in the high-quality nursing

Table 1. SAS and SDS scores (points, $\bar{x} \pm s$)

Group	SAS score		SDS score	
	Before intervention	After intervention	Before intervention	After intervention
High-quality nursing (n=62)	49.74±4.33	23.95±3.36*	53.24±6.71	25.36±5.61*
Conventional nursing (n=62)	50.61±3.12	38.44±3.40*	52.92±6.22	38.06±6.02*
t	1.284	23.868	0.275	12.152
P	0.202	<0.001	0.783	<0.001

*P<0.05 vs. before intervention

group were (123.71±9.02) mmHg, (78.05±8.33) mmHg, and (78.04±7.63) beats/min during diagnosis and treatment, and (120.56±8.65) mmHg, (75.28±7.21) mmHg, and (6.06±8.40) beats/min after diagnosis and treatment, respectively, lower than those in the conventional nursing group (P<0.05). The levels of these indicators reached the peaks in both groups during diagnosis and treatment, while they were significantly lowered after diagnosis and treatment compared to those during diagnosis and treatment (P<0.05). However, the high-quality nursing group had more stable SBP, DBP, and heart rate than those of the conventional nursing group throughout diagnosis and treatment (Table 2).

Occurrence of complications in patients

The complication rate of the high-quality nursing group was lower than that of the conventional nursing group (8.06% vs. 29.03%) (P<0.05) (Table 3).

Nursing satisfaction rate

The high-quality nursing group had a higher nursing satisfaction rate than that of the conventional nursing group (95.16% vs. 75.81%) (P<0.05).

Discussion

As a commonly used method for clinical diagnosis and treatment of digestive system diseases, gastrointestinal endoscopy can be applied to assist clinicians in accurately diagnosing and evaluating diseases, and corresponding treatment can be carried out through endoscopy.⁽¹⁴⁾ Gastrointestinal endoscopy is certainly invasive in practical application, causing discomfort to the patients and affecting their tolerance. Some patients also experience negative emotions due to invasive examination, thus reducing their compliance and impacting the efficacy of examination and treatment.^(15,16) Painless gastrointestinal endoscopy is able to improve patients' tolerance to examination by administering sedative/anesthetic drugs and relieve dysphagia, vomiting, and other adverse physiological behaviors of patients to some extent, with preferable clinical efficacy.^(17,18) Notably, the body of elderly patients has to recover in the perioperative period after painless gastrointestinal endoscopy because of the decline in body functions, and the risk of complications such as bradycardia and respiratory tract obstruction after anesthesia is substantially increased due to the

Table 2. Changes in vital signs of patients before and after nursing intervention ($\bar{x} \pm s$)

Group	SBP (mmHg)			DBP (mmHg)			Heart rate (beat/min)		
	Before diagnosis and treatment	During diagnosis and treatment	After diagnosis and treatment	Before diagnosis and treatment	During diagnosis and treatment	After diagnosis and treatment	Before diagnosis and treatment	During diagnosis and treatment	After diagnosis and treatment
High-quality nursing (n=62)	121.35±9.44	123.71±9.02*	120.56±8.65	75.12±7.59	78.05±8.33*	75.28±7.21	75.45±7.02	78.04±7.63*	76.06±8.40
Conventional nursing (n=62)	122.03±9.23	135.17±9.50*	127.55±8.37#	75.46±7.73	85.07±8.79*	82.49±8.90#	75.37±6.89	85.83±8.26*	82.94±8.11#
t	0.606	6.888	4.573	0.247	4.564	4.956	0.064	5.455	4.640
P	0.686	<0.001	<0.001	0.805	<0.001	<0.001	0.949	<0.001	<0.001

*P<0.05 vs. before diagnosis and treatment; #p<0.05 vs. during diagnosis and treatment

Table 3. Occurrence of complications in patients

Group	Respiratory disturbance	Nausea n(%)	Vomiting n(%)	Reflux/coughing n(%)	Total incidence rate n(%)
High-quality nursing (n=62)	1(1.61)	1(1.61)	2(3.23)	1(1.61)	5(8.06)
Conventional nursing (n=62)	6(9.68)	3(4.84)	4(6.45)	5(8.06)	18(29.03)
χ^2	-	-	-	-	9.021
P	-	-	-	-	0.003

complication of chronic diseases in such patients, so nursing intervention is particularly important for patients undergoing painless gastrointestinal endoscopy.^(19,20) Before painless gastrointestinal endoscopy, specialist nursing staff should perform targeted assessment and provide predictive nursing for the patients, thus significantly decreasing and preventing the incidence of relevant complications after examination.^(21,22)

In this study, both groups had decreased scores of adverse psychological state, and high-quality nursing group had a better psychological state after nursing. The possible reason is that the implementation of high-quality nursing protocols can provide comprehensive nursing preoperatively, intraoperatively, and postoperatively, offer targeted counseling, and take corresponding measures in a timely manner based on the actual situation of patients, which is similar to the findings of Guzman *et al.*⁽²³⁾ Moreover, the levels of SBP, DBP, and heart rate in high-quality nursing group were significantly lower than those in conventional nursing group during and after diagnosis and treatment. Intragroup comparison showed that the levels of these indicators reached the peaks in both groups during diagnosis and treatment, while they significantly declined after diagnosis and treatment compared to those during diagnosis and treatment ($P < 0.05$). The main reason is that with targeted intervention in high-quality nursing before diagnosis and treatment, relevant precautions can be fully propagandized and explained, patients' questions can be answered, and targeted guidance can be provided after clarifying the psychological state of patients to relieve abnormal emotions. On the day of diagnosis and treatment, the nursing staff should actively communicate with patients and share other cases of painless gastrointestinal endoscopy, thus improving the enthusiasm and cooperation of patients during diagnosis and treatment. Furthermore, the human body can produce stress responses in an unknown environment or in the face of sudden events, and such stress responses can lead to changes in related body functions and biochemical systems, including blood pressure and heart rate. Additionally, a long-term maintenance of this state is detrimental to health and poses a threat to the safety of patients.

Therefore, reducing stress responses is also the key to ensuring the development and progression of gastrointestinal endoscopy. As revealed by the present study, the patients receiving high-quality nursing intervention had better and more stable indicators of blood pressure and heart rate, and the levels of those indicators were superior to those subjected to conventional nursing intervention. These results also confirm that the application of high-quality nursing can mitigate stress responses in the human body during gastrointestinal endoscopy, mainly because the application of high-quality nursing can not only closely monitor the vital signs of patients, but also provide intervention based on related indicators, thereby making these indicators more stable. In addition, we herein found that the complication rate in high-quality nursing group was remarkably lower than that in conventional nursing group, which is probably associated with the mild impact on stress responses in patients. It further confirms that the implementation of high-quality nursing protocols is of positive significance for maintaining stable vital signs and reducing the risk of adverse reactions in patients. In this study, the higher nursing satisfaction in high-quality nursing group corroborated its clinical advantages. The possible reason is that the high-quality nursing protocol is continuously optimized from the perspectives of early planning, improvement, implementation, and summary, and it can enhance the work enthusiasm and the sense of responsibility of nursing staff by clarifying job responsibilities with the patient-centered concept. Ultimately, the patients are provided with high-quality services meeting their physical and mental needs, thus increasing their acceptance and satisfaction with medical services.^(24,25)

Nevertheless, this study is limited. First, the sample size is small. Second, the results are from the experience of a single medical center. Therefore, further multicenter studies with larger sample sizes are still needed in order to prove our findings.

Conclusion

In conclusion, painless gastrointestinal endoscopy is of positive significance for high-quality nursing for

elderly patients, with prominent intervention effects and extensive acceptance by patients. Therefore, it is worthy of further clinical application and promotion.

Collaborations

Wu Z and Han Q study design, analysis and interpretation of data, writing of the article, critical review of intellectual content and approval of the final version to be published.

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