

Application Value of Multivariate Integration Teaching Method in Improving Nurses' Knowledge Level of Continuous Nursing After Gastric Cancer Surgery and Its Impaction Patients' Negative Emotions, Quality of Life and Adverse Reactions

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To explore the application value of multivariate integration teaching method in improving nurses' knowledge level of continuous nursing after gastric cancer surgery and its impact on patients' negative emotions, quality of life and adverse reactions. 120 nurses were randomly divided into group A (n=60) and group B (n=60). After conducting the multivariate integration teaching to group A and the routine teaching to group B, each group was responsible for 60 gastric cancer patients admitted to our hospital from January 2019 to January 2020 to compare their knowledge level of continuous nursing after gastric cancer surgery and patients' negative emotions, quality of life and adverse reaction rates (ARR). Compared with group B, trained nurses in group A had significantly higher knowledge level of continuous nursing after gastric cancer ($P<0.001$), and patients treated by nurses in group A had significantly lower negative emotion scores ($P<0.001$), higher quality of life scores ($P<0.001$) and lower ARR ($P<0.05$). Multivariate integration teaching method can effectively improve nurses' knowledge level of continuous nursing after gastric cancer surgery, enhance their comprehensive nursing competence, and encourage them in providing continuous nursing with higher quality. Also, patients undergoing gastric cancer resection can, through communication with the trained nurses, enhance their self-nursing ability, alleviate negative emotions, and improve quality of life. Therefore, it should be promoted in clinical practice.

Keywords: multivariate integration, nursing teaching, postoperative continuous nursing, nursing knowledge level

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The early symptoms of gastric cancer are nonspecific, long-term illness will lead to the aggravation of patients' negative emotions, and surgery and chemotherapy will further deepen the confusion and fear of patients. Some patients will show a reduced sense of self-efficacy after surgery, and postoperative complications such as malnutrition occur frequently, seriously damaging their quality of life¹⁻³. Data show that our country has the highest number of patients with gastric cancer in the world, which also results in an increasing level of inpatient nursing for such patients, but nursing needs are still required after patients leaving the hospital, so the application of continuous nursing is imperative. Continuous nursing means that nurses give the corresponding health knowledge education to patients and their family caregivers when the patients are discharged from the hospital, and provide mental intervention and medication intervention to the patients through follow-up to reduce their care burden and psychological disorders, thereby enhancing the recovery effect⁴⁻⁷. In recent years, continuous nursing has been

preliminarily applied in clinical practice, but the competency of nurses who practice continuous nursing is mixed, and some nurses even place insufficient emphasis or have a low level of knowledge, leading to the inability of gastric cancer patients to obtain quality continuous nursing⁸⁻¹¹. To make a difference, this study specifically selected the multivariate integration teaching method to conduct training in continuous nursing after gastric cancer, so as to improve nurses' competency for continuous nursing, and the results are summarized as follows.

MATERIALS AND METHODS

General Information

120 nurses were randomly divided into group A (n=60) and group B (n=60), and each group was responsible for 60 gastric cancer patients admitted to our hospital from January 2019 to January 2020. No statistical difference was presented in the general information of nurses and patients between the two groups ($P>0.05$), see Table 1. The study was approved by the Hospital Ethics Committee.

Table 1.

Comparison of general information of nurses and gastric cancer patients

Group	Group A (n=60)	Group B (n=60)	X ² /t	P
Nurses				
Mean age (years old)	22.56±1.02	22.45±1.20	0.541	0.590
Education level				
College	29	28	0.033	0.855
Bachelor	30	30	0.000	1.000
Postgraduate	1	2	0.342	0.559
Patients				
Mean age (years old)	51.21±6.20	51.23±6.21	0.018	0.986
Cancer type				
Cardiac cancer	11	10	0.058	0.810
Fundus cancer	22	23	0.036	0.850
Gastric body cancer	18	17	0.040	0.841
Gastric antral cancer	9	10	0.063	0.803
Cancer staging				
I-II	45	44	0.044	0.835
III	15	16		

Inclusion Criteria

The inclusion criteria for patients of the study were as follows. (1) Patients or their family members fully understood the study process and signed the informed consent; (2) patients were diagnosis as gastric cancer after examination and treated with surgery; and (3) the cancer was

diagnosed for the first time.

The inclusion criteria for nurses of the study were as follows. (1) Registered in-service nurses of the hospital; (2) presence of more than 2 years of clinical care experience; and (3) participating the study voluntarily.

Exclusion Criteria

The exclusion criteria for patients of the study were as follows. (1) Presence of mental problems or inability to communicate with others; (2) suffering from other organic diseases; (3) poor postoperative recovery; and (4) recurrent cancer.

The exclusion criteria for nurses of the study were as follows. (1) Failure to fully participate in the training; and (2) failure to join the assessment.

Methods

The multivariate integration teaching and routine teaching were conducted to nurses in group A and group B respectively, and each group was responsible for 60 gastric cancer patients admitted to our hospital from January 2019 to January 2020 with the following specific steps.

(1) Routine teaching. ① The nurses followed the corresponding teachers according to the schedule, and the teachers orally explained the knowledge of postoperative continuous nursing of gastric cancer to the nurses in combination with the patient clinical data and nursing experience. ② Teachers gave a presentation in the form of interaction with gastric cancer patients, such as providing corresponding nursing interventions before the patient was discharged, and instructing patients to return to the clinic in a timely manner at the time of discharge.

(2) Multivariate integration teaching. ① To improve the risk management ability of nurses, multimedia teaching was used to teach nurses about the knowledge of continuous nursing after gastric cancer surgery, the teachers included nutritionists, pharmacists, psychiatrists and general surgical nurses, and the teaching content included the definition, development and application value of continuous nursing, the practical problems and countermeasures of applying continuing nursing after gastric cancer surgery, the skills of communicating with patients, the postoperative psychological needs and the needs for health education, dietary and medication of gastric cancer patients, and the precautions for chemotherapy of gastric cancer patients, especially for complications and adverse drug reactions that often occur after hospital

discharge. ② The information of gastric cancer patients was handed out to nurses, and with the help of simulated case analysis, nurses combined what they learned with case to formulate corresponding continuing nursing plans for different simulated cases, which contained pre-discharge instructions for patients (health education training, chemotherapy knowledge learning, dietary interventions, and medication instructions), evaluation of patients' family members, as well as nursing interventions for patients after discharge (telephone follow-up, answering questions, psychological nursing, and medication instructions). The plans were scored by the teachers on whether they were individually different and whether they covered the entirety of continuing nursing, and those nurses with poorer evaluation scores needed to study again. ③ Teachers should give lessons by adopting an incentive teaching approach based on the actual situation of nurses. For nurses with excellent communication skills, they should be encouraged to promote the frequency of communication with patients in clinical care to enhance patients' adherence to follow-up visits after being discharged from hospital; and for nurses with poor communication or poor expressive skills, the teacher should provide detailed guidance by the way of presentation to improve their communication technique, ability and enthusiasm. Teachers needed to set the goal of continuous nursing for nurses to gradually improve their level of integrated care.

Observation Criteria

(1) Knowledge level of continuous nursing after gastric cancer. Close-book exam was conducted with the self-proposed paper of the hospital to compare the results of theoretical assessment (which was consistent with the content of multimedia training), technical assessment (the ability of formulating nursing plan and telephone follow-up, as well as the comprehensiveness of follow-up and the specific steps of continuous nursing after gastric cancer surgery), comprehensive ability assessment (the ability to explain health knowledge about gastric cancer and to provide

mental care, and the mastery of communication skills) and the total result of nurses.

(2) Patients' negative emotions. The scores of negative emotions before and after nursing were rated by the self-rating depression scale (SDS) and self-rating anxiety scale (SAS) for comparison, with higher scores indicating more severe negative emotions^{12,13}.

(3) Quality of life. It was rated by the QLQ-C30 scale in terms of the health perceptions, somesthetic sensation, sleep quality and social inclusion, with lower scores indicating lower quality of life^{14,15}.

(4) Adverse reaction rate (ARR). The adverse reactions included nausea and vomiting, diarrhea, tiredness and malnutrition, and the numbers of patients with adverse reactions were counted.

Statistical Processing

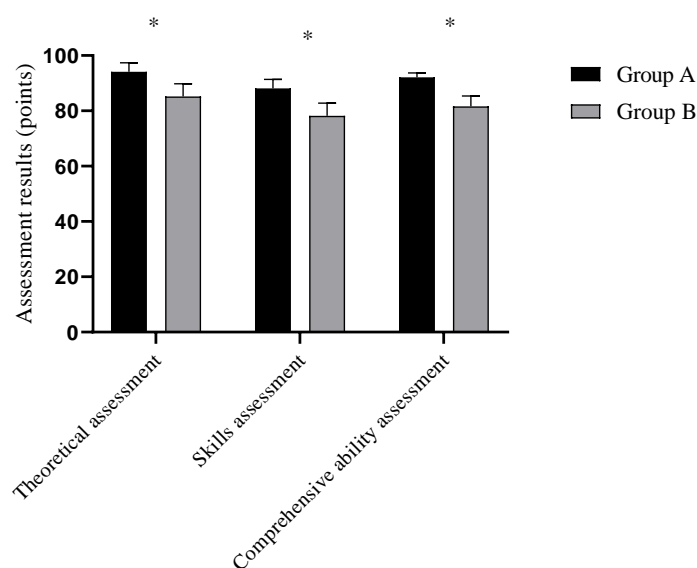
In this study, the data processing software was SPSS20.0, the picture drawing software was GraphPad Prism 7 (GraphPad Software, San Diego, USA), items included were enumeration data and measurement data, methods used were X² test and t-test, and differences were considered statistically significant at P<0.05.

RESULTS

Comparison of Nurses' Knowledge Level of Continuous Nursing after Gastric Cancer Surgery

After training, the knowledge level of postoperative continuous nursing for gastric cancer of nurses in group A was significantly higher than those in group B (P<0.001), see figures 1-2.

Figure 1.
Comparison of nurses' knowledge level of continuous nursing after training ($\bar{x}\pm s$, points)



Note: In Figure 1, the horizontal axis from left to right indicated the theoretical assessment, skills assessment and comprehensive ability assessment, and the vertical axis indicated the results (points); the black area indicated group A, and the gray area indicated group B.

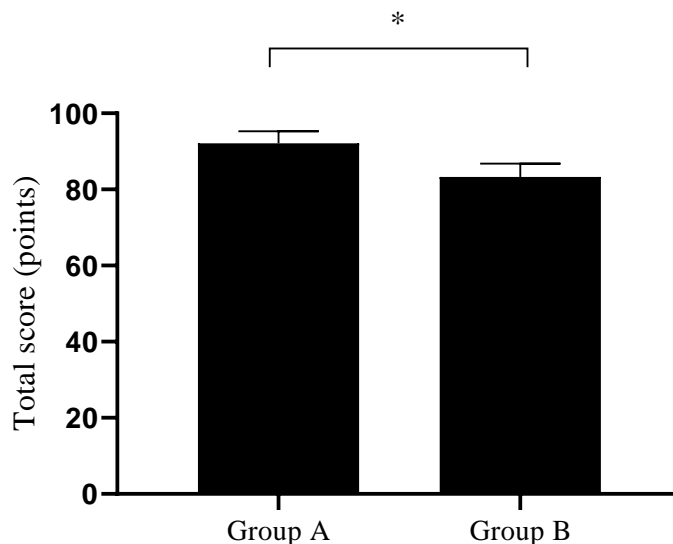
The theoretical assessment result of nurses in group A and group B was (94.12±3.22) and (85.21±4.56), respectively;

The skills assessment result of nurses in group A and group B was (88.12±3.22) and (78.21±4.56), respectively;

The comprehensive ability assessment result of nurses in group A and group B was (92.11±1.56) and (81.65±3.69), respectively; and

* indicated P<0.001.

Figure 2.
Comparison of total scores of continuous nursing knowledge level after training ($\bar{x}\pm s$, points)



Note: In Figure 2, the horizontal axis from left to right indicated groups A and B, and the vertical axis indicated the total score (points).

The total score of nurses in group A and group B was (92.11±3.15) and (83.25±3.57), respectively.

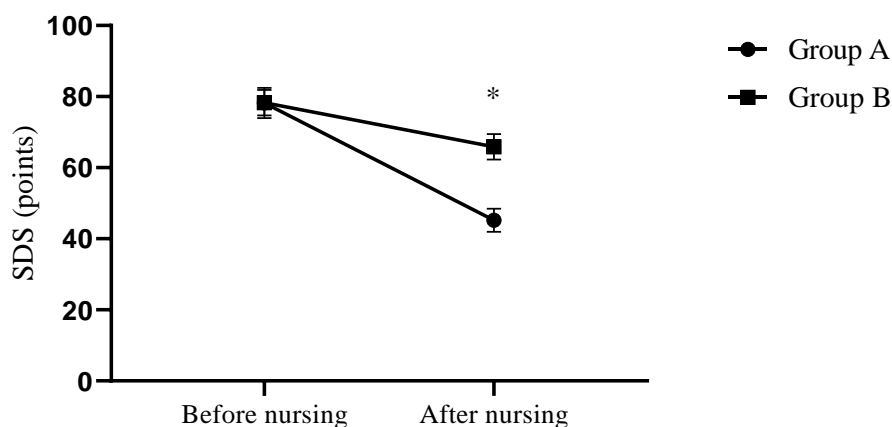
* indicated P<0.001.

Comparison of Patients' Negative Emotions

After nursing, the negative emotion scores of

patients in group A were significantly lower than those in group B (P<0.001), see figures 3-4.

Figure 3.
Comparison of patients' SDS scores before and after nursing ($\bar{x}\pm s$, points)



Note: In Figure 3, the horizontal axis from left to right indicated before and after nursing, and the vertical axis indicated the SDS score (points); the line with dots indicated group A, and the line with blocks indicated group B.

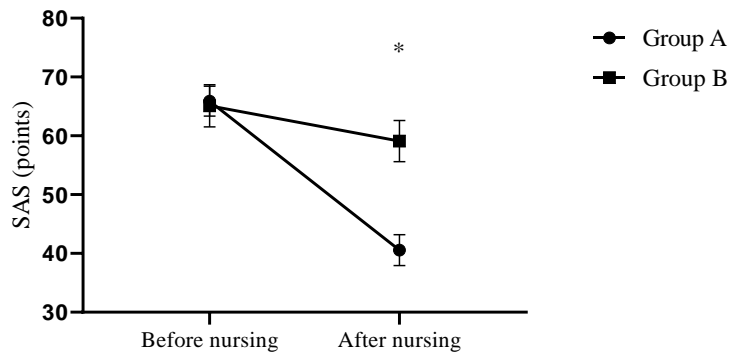
Before nursing, the SDS score of patients in group A and group

B was (78.21±4.25) and (78.26±3.59), respectively;

After nursing, the SDS score of patients in group A and group B was (45.21±3.22) and (65.89±3.58), respectively; and

* indicated P<0.001.

Figure 4.
Comparison of patients' SAS scores before and after nursing ($\bar{x}\pm s$, points)



Note: In Figure 4, the horizontal axis from left to right indicated before and after nursing, and the vertical axis indicated the SAS score (points); the line with dots indicated group A, and the line with blocks indicated group B.

Before nursing, the SAS score of patients in group A and group B was (65.89±2.54) and (65.11±3.58), respectively;

After nursing, the SAS score of patients in group A and group B was (40.56±2.61) and (59.10±3.50), respectively; and

* indicated P<0.001.

Comparison of Patients' Quality of Life

patients in group A were significantly higher than

After nursing, the quality of life scores of those in group B (P<0.001), see Table 2.

Table 2.
Comparison of patients' quality of life scores ($\bar{x}\pm s$, points)

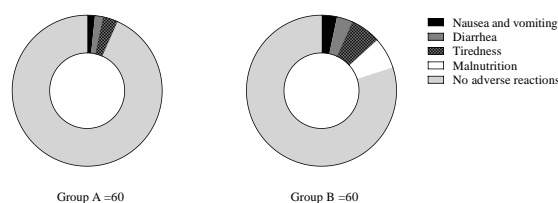
Group	Health perceptions	Somesthetic sensation	Social inclusion	Sleep quality
Group A	92.54±3.11	92.48±3.14	93.78±3.10	90.58±4.10
Group B	85.69±3.56	84.51±3.56	85.41±3.12	83.69±2.78
t	11.225	13.005	14.741	10.774
P	0.000	0.000	0.000	0.000

Comparison of Patients' ARR

significantly lower than those in group B ($X^2=4.615$,

The ARR of patients in group A was P<0.05), see Figure 5.

Figure 5.
Comparison of patients' ARR



Note: In Figure 5, the black area indicated nausea and vomiting, the dark gray area indicated diarrhea, the grid area indicated tiredness, the white area indicated malnutrition, and the light gray area indicated no adverse reactions.

The number of patients with nausea and vomiting in group A and group B was 1 and 2, respectively;

The number of patients with diarrhea in group A and group B was 1 and 2, respectively;

The number of patients with tiredness in group A and group B was 2 and 4, respectively;

The number of patients with malnutrition in group A and group B was 0 and 4, respectively; and

The number of patients with no adverse reactions in group A and group B was 56 and 48, respectively.

DISCUSSION

Continuous nursing, which usually refers to the continuation of care from the hospital to the family, is a model of nursing designed to provide patients with an efficient and coherent care in an all-round way, so that the comprehensive rehabilitation effect of patients is enhanced. Patients with gastric cancer usually need to undergo radical surgery such as total or subtotal gastrectomy, and will experience postoperative physical and functional changes that affect their psychological condition and body condition, and some patients even have severe negative emotions that accompanied by different degrees of malnutrition, so it is extremely important to conduct diet guidance and psychological intervention for them. In addition, long-term chemotherapy is also required in treating the disease, which can cause adverse drug reactions in patients and seriously affect their daily life. For all of these reasons, the application of continuation nursing is imperative¹⁶⁻¹⁹.

Nurses are the subject of administering continuity nursing, and the competency level of their nursing skills directly affect patients' quality of life and psychological condition after surgery. However, nurses' level in clinical practice leads to uneven quality of continuous nursing received by patients, so it is essential to teach nurses specially for the knowledge of continuous nursing after gastric cancer surgery²⁰⁻²². At present, no relevant training rules have been introduced in our country. In this study, by using the multivariate integration teaching as a medium, knowledge of continuous nursing after gastric cancer surgery including diet, psychological care, medication interventions and adverse reactions were systematically taught to the

nurses in group A, and it was concluded that those nurses had significantly higher level of knowledge about continuous nursing after gastric cancer surgery when comparing with group B ($P < 0.001$), indicating that nurses received formal and scientific re-education from pharmacists and psychiatrists and substantially increased their knowledge level.

As the standards for postoperative continuous nursing of gastric cancer had been quantified, and nurses in group A also provided patients with quality continuous nursing, the negative emotion scores of patients in this group after nursing were significantly lower than those in group B ($P < 0.001$), and their quality of life scores were significantly higher than those in group B ($P < 0.001$), showing that a correct follow-up modality could enhance patients' compliance as well as their self-healing ability. At the same time, nurses could also direct patients according to the actual situation, thereby improving their psychological condition, way of living, and quality of life^{23,24}. In addition, "postoperative medication precautions for gastric cancer" taught by pharmacists enhanced nurses' medication intervention ability and made nurses and patients had better control over adverse effects, so the ARR of patients in group A was significantly lower than that in group B ($P < 0.05$).

In the scholar Putten M's study, the teaching of postoperative continuous nursing for gastric cancer patients and the routine teaching were given to nurses in the experimental group and the control group respectively, and the experimental group obtained (93.56 ± 2.78) points for the theoretical assessment and (87.12 ± 2.15) points for the skills assessment, which were significantly higher than the control group ($P < 0.001$)²⁵, indicating that the

multivariate integration teaching method could effectively increase nurses' knowledge reserves and strengthen their continuous nursing ability.

To sum up, multivariate integration teaching can effectively improve nurses' knowledge level of continuous nursing after gastric cancer surgery, so that they can provide continuous nursing with higher quality. Also, patients undergoing gastric cancer resection can, through the communication with nurses, alleviate negative emotions and improve the quality of life. Therefore, multivariate integration teaching method should be promoted in clinical practice.

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