



Research on the Transitional Care Model-based Health Management Protocol for Patients after Sleeve Gastrectomy

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Abstract

Background: Postoperative care after sleeve gastrectomy is critical to a successful outcome because of the increasing popularity of the procedure in the treatment of obesity and related conditions.

Objectives: The purpose of this study was to evaluate the effectiveness of a health intervention plan for sleeve gastrectomy patients based on the Transitional Care Model (TCM).

Methods: This study was conducted from January 2021 to January 2022 at Mudanjiang Hospital. The study included a total of 72 patients who underwent sleeve gastric volume reduction. Patients were randomly divided into an intervention group (36 cases) and a control group (36 cases). The intervention group received care based on a health intervention plan, while the control group received routine care. Various assessments were performed on the first day of hospitalization and three months after surgery, such as questionnaires on general information, physical activity, eating behavior, quality of life, and adherence to implementation.

Results: After the intervention, the intervention group showed significant improvements in total duration of physical activity, moderate-intensity activity, restrained eating, emotional eating, physical pain, mental health, and social functioning ($p < 0.05$). However, there were no significant differences between groups in activity intensity, walking, external diet, physical functioning, physical role, general health, or vitality ($p > 0.05$). Adherence to the health management protocol was significantly higher in the intervention group ($p < 0.05$).

Conclusion: The health intervention plan based on the transitional care model improves physical activity, eating behaviors, quality of life, and compliance in sleeve gastrectomy patients.

Keywords: Nursing care, Sleeve gastrectomy, Physical performance, Patient care, Quality of life

1. Background

Obesity poses a major health risk by significantly increasing the likelihood of developing several potentially fatal diseases. More than 1 billion adults worldwide are overweight, and at least 300 million people are obese, meaning they have a body mass index (BMI) greater than 30 kg/m². Recent studies have shown that the proportion of obese adults has increased sharply over the past decade (1).

Sleeve gastrectomy is a weight loss surgical procedure in which a portion of the stomach is removed to reduce its size and limit the amount of food that can be eaten (2). The use of sleeve gastrectomy as an option for bariatric surgery has gained significant popularity among individuals struggling with obesity and its associated comorbidities (1, 3). However, patients face numerous physical, psychological, and lifestyle changes in the postoperative period, which can have a long-term impact on overall health outcomes. Therefore, implementation of a comprehensive health management protocol is critical to improve patient care and ensure a successful transition from hospital to home (4, 5).

The Transitional Care Model (TCM) refers to a care management model led by an Advanced Practice

Nurse (APN) and organized by a team with defined responsibilities for each member (6-8). TCM aims to reduce health complications and readmissions, improve patient satisfaction and self-management, and reduce healthcare costs. It includes comprehensive care planning and coordination, patient and family education, promotion of self-management, and follow-up (9, 10). Previous studies have shown that a TCM-based model can improve patients' quality of life and satisfaction during treatment and care, and ultimately reduce overall patient costs, which is why it is commonly used by clinical nurses (11, 12).

TCM provides a comprehensive and patient-centered approach to patient health management after sleeve gastrectomy. By focusing on education, self-management, and seamless transitions, TCM can improve patient outcomes, increase satisfaction, and reduce healthcare costs. However, successful implementation requires collaboration among patients, healthcare providers, and caregivers (9, 13, 14).

2. Objectives

The purpose of this study was to evaluate the efficacy of a TCM-based health intervention plan for patients undergoing sleeve gastrectomy and to assess

the impact of the intervention on physical activity levels, healthy eating behaviors, quality of life, and adherence to health management content implementation. The results of the study contribute to the development of effective health management protocols for patients undergoing sleeve gastrectomy and highlight the importance of TCM in enhancing patient care and improving outcomes.

3. Methods

3.1. Study design and participants

This study was a randomized controlled trial conducted from January 2021 to January 2022 in the general surgery department of a first-class tertiary hospital in Mudanjiang. A total of 72 patients who had undergone sleeve gastrectomy were selected as study participants using an available sampling method. Participants were randomly divided into two groups, the intervention group (n=36) and the control group (n=36) using a random number table.

In the study, a table of random numbers was used to assign 72 patients to either the experimental or control group. The digits in a row were numbered according to the code 1-72 and then divided by 2. Patients with digits that could be divided evenly were assigned to place the experimental group, while those with digits that couldn't be divided evenly were assigned to the control group.

Inclusion criteria: Patients who met the surgical indication criteria in the *Guidelines for the Surgical treatment of Obesity and Type 2 Diabetes in China (2019 Edition)* (15); patients aged over 18 years; patients who underwent sleeve gastrectomy; patients who owned a smartphone and knew how to use WeChat; patients who consented to participate in the study after being informed about the content of the study. **Exclusion criteria:** Patients with serious postoperative complications; patients with severe comorbidity; patients with mobility limitations or communication difficulties such that they were not eligible for the postoperative health management intervention; patients with poor compliance or difficulty in fulfilling follow-up.

This study was reviewed and approved by the ethics committee of Mudanjiang Hospital (approval number.: 202043), and all subjects in this study had signed the written informed consent.

Preoperative preparation of patients was as follows. Before surgery, patients were informed about the benefits, risks, and short- and long-term complications of surgery and signed the written informed consent form for surgery. One day before surgery, patients were required to eat liquid food, with bowel movement.

After surgery, patients were to take the proton pump inhibitor omeprazole 20 mg daily and undergo intravenous fluid resuscitation with normal saline in an amount 125 mL/hr and nutritional support by a

standardized oral dietary supplement with high protein content. After recovery of bowel movements, the gastric tube was removed and the drainage tube extubated within 3 to 5 postoperative days. Patients who had no vomiting, abdominal pain, or fever were discharged. After surgery, antidiabetic drugs are discontinued, while blood glucose is monitored regularly.

3.2. Intervention

3.2.1. Experiment group

The intervention protocol for the intervention group focuses on providing comprehensive services to patients after sleeve gastrectomy to ensure a smooth transition from hospital to home. The protocol includes assigning two nurses for health management, screening high-risk patients, appointing a head nurse with a master's degree to manage the project, promoting continuity of care by the same group of physicians and nurses, and coordinating care efforts, facilitating collaboration among patients, caregivers, and teams; maintaining reliable communication with patients and caregivers, eliciting their participation in the protocol, managing symptoms and risks, and facilitating self-administration. These measures aim to improve patient outcomes and ensure effective postoperative care (Appendix A) (12).

The intervention group, on the other hand, received an additional health intervention programme based on the Transitional Care Model (TCM) developed for patients with postoperative sleeve gastrectomy. This intervention involved a multifaceted approach that included physical activity, nutritional management, and health management. Patients in the intervention group were encouraged to gradually increase their physical activity under the supervision of a trained physical therapist, while a dietitian provided them with a tailored diet plan that focused on portion control, balanced nutrient intake, and avoidance of high-calorie and low-nutrient foods. A key component of TCM was educating patients about post-surgery health management, including adherence to medications, dietary restrictions, physical activity, regular follow-up, and recognizing signs of complications.

3.2.2. Control group

The control group received standard postoperative care according to the hospital's routine care procedures. This included general care, medication management, nutritional counselling, wound care, and regular follow-ups.

3.3. Measured outcomes

The outcomes were measured by change in physical activity level, adherence to dietary restrictions, quality of life, and overall adherence to the health management protocol.

3.4. Measurement tools and questionnaires

3.4.1. Survey of general data

According to the subject and content of the study, a questionnaire was designed for the patients for the general data, which included the name, age, sex, marriage, education, health insurance, complications, and body mass index (BMI).

3.4.2. International physical activity questionnaire

The International Physical Activity Questionnaire (IPAQ), an important tool for assessing the level of physical activity validated in the Chinese population, was used to evaluate the patients' physical activity (16, 17). In our work, the IPAQ was used to measure physical activity within 1 week to analyze patients' physical activity.

The IPAQ included 7 questions to assess physical activity in the past 7 days. It had a minimum score of 0 and a maximum score of infinity, with higher scores indicating higher levels of physical activity. The IPAQ was self-completed.

3.4.3. Dutch Eating Behavior Questionnaire (DEBQ)

The DEBQ designed by Van Strien, which includes three dimensions – restrictive dieting, emotional dieting, and external dieting-and contains 33 items, was used to assess patients' diet. The Cronbach's α coefficient of 0.88 showed good reliability and validity and, therefore, used to assess patients' diet and predict obesity and possible eating disorders.

The DEBQ consisted of 33 questions assessing restrained, emotional, and external eating patterns. Each item was scored on a 5-point scale from 1 (never) to 5 (very often). The minimum score was 33 and the maximum score was 165, with higher scores reflecting more dysfunctional eating behaviors.

3.4.4. The MOS 36 Item Short Form Health Survey (SF-36)

In the present study, the patients' quality of life was assessed using the SF-36 scale. For this purpose, the Chinese version of the SF-36 scale was used which includes 8 dimensions and 36 items. It is worth noting that higher scores on the SF-36 scale indicate better health status and higher quality of life related to health (18).

The SF-36 scale included 36 questions on eight health domains-vitality, physical functioning, physical pain, general health perception, physical functioning, emotional functioning, social functioning, and mental health. Each domain was scored between 0-100, with higher scores indicating better health-related quality of life.

3.5. Compliance

Currently, there are no accepted scales to assess compliance. With this in mind, we considered patients who completed more than 80% of the health management protocol content to have high

compliance, those between 60% and 80% to have moderate compliance, and those below 60% to have poor compliance (19).

3.6. Data collection

Data collection was performed by two trained nurses who were part of the research team. Their duties included distributing the questionnaires to the patients, guiding them in completing them, and collecting the completed questionnaires immediately after completion. The questionnaires were completed online via the Wenjuanxing survey platform to allow convenient data collection while maintaining patient privacy. The first questionnaire was completed on the day of admission and the second questionnaire 3 months after surgery. Several measures were taken to protect patient privacy during data collection. Each participant was assigned a unique anonymous ID rather than using names or identifiable details. The questionnaires and data files were stored securely in encrypted folders to which only the principal investigators had access.

3.7. Ethical Considerations

This study was reviewed and approved by the Ethics Committee of Mudanjiang Hospital (approval number.: 202043), and all subjects in this study had signed the written informed consent.

3.8. Statistical methods

The data of this study were entered using Excel software and processed using SPSS 25.0 software. First, the data were prepared for testing for normal distribution. Measurement data with normal distribution were expressed in terms of mean \pm standard deviation, while enumeration data were tested with the chi-square test. Data that were not normally distributed were expressed in terms of quartiles and tested with the Mann-Whitney U test. Comparison of means between two independent samples was performed with the *t* test. $P < 0.05$ means that the difference is statistically significant.

4. Results

Participants were randomly assigned to two groups, and no significant differences were found between the two groups in terms of sex, age, marital status, occupation, type of health insurance, education level, complications, and body mass index (BMI) ($p > 0.05$) (Table 1).

Table 2 compares the level of physical activity between the intervention and control groups before and after the intervention. Before the intervention, there were no significant differences in physical activity parameters between the two groups, with a mean total activity time of 130 min/week in both groups ($p = 0.695$). After the intervention, there was a

Table 1. Comparison of the general data between two groups [n (%)]

Item	Category	Intervention group (n=36)	Control group (n=36)	P
Sex	Male	10 (27.78)	9 (25.00)	0.789*
	Female	26 (92.22)	27 (75.00)	
Age		28.78±6.79	27.64±7.22	0.493**
Marriage	Married	12 (33.33)	15 (41.67)	0.465*
	Not married	24 (66.67)	21 (58.33)	
Occupation	Employed	26 (72.23)	29 (80.56)	0.405*
	Unemployed	10 (27.77)	7 (19.44)	
Type of medical insurance	medical insurance for urban employees	27 (75.00)	25 (69.44)	0.599*
	New Rural Cooperative Medical system	9 (25.00)	11 (30.56)	
Education	University or above	18 (50.00)	17 (47.22)	0.814*
	Senior school or below	18 (50.00)	19 (52.78)	
Complications	Yes	21 (58.33)	19 (52.78)	0.635*
	No	15 (41.67)	17 (47.22)	
BMI		36.28±4.47	37.27±3.82	0.315**

* Chi-square test, ** t-test

Table 2. Comparison of the scores of questionnaires for physical activity between two groups [M(P₂₅,P₇₅)]

Item	Before the intervention			After the intervention		
	Intervention group (n=36)	Control group (n=36)	P value*	Intervention group (n=36)	Control group (n=36)	P value*
Time of physical activity (min/week)	130 (100,150)	130 (100,157.5)	0.695	235 (190,270)	150 (120,180)	< 0.001
Time of heavy physical activity (min/week)	0(0,0)	0(0,0)	1.000	0(0,0)	0(0,0)	0.710
Time of moderate physical activity (min/week)	0(0,0)	0(0,0)	0.695	90(90,90)	0(0,0)	< 0.001
Walk (min/week)	120 (100,150)	120 (100,150)	0.977	140 (100,150)	150 (120,150)	0.235

* t-test

significant increase in total activity time to 235 min/week in the intervention group compared to 150 min/week in the control group ($p < 0.001$). The mean time spent in moderate-intensity activity also increased to 90 min/week in the intervention group, whereas it remained at 0 min/week in the control group ($p < 0.001$). However, there were no significant differences between the two groups after the intervention in terms of time spent in intense activity or walking ($p = 0.710$ and $p = 0.235$, respectively).

Before the intervention, there were no significant differences in DEBQ total scores or subscale scores between the intervention and control groups (all $P > 0.05$). After the intervention, the DEBQ total score decreased in both groups but the difference between groups was not statistically significant ($p = 0.242$). However, the intervention group showed significantly greater improvement in subscale scores for restrained eating (43.47 ± 3.24 vs 37.86 ± 2.45 , $p < 0.001$) and emotional eating (25.08 ± 3.27 vs 28.56 ± 4.44 , $p < 0.001$) after the intervention compared to the control groups. For the External Eating Behavior subscale, there was no significant difference between groups after the intervention ($p = 0.491$) (Table 3).

Table 4 shows that before the intervention, there were no significant differences in SF-36 scores

between the intervention and control groups ($p > 0.05$). After the intervention, the intervention group showed significantly greater improvement in physical pain (88.44 ± 11.27 vs 79.33 ± 9.45 , $p < 0.001$) and mental health (80.33 ± 4.62 vs 62.22 ± 9.54 , $p < 0.001$) compared to the control group. The intervention group also had higher post-intervention scores for social functioning (67.71 ± 16.74 vs 57.64 ± 14.10 , $p = 0.007$). However, there were no significant difference between groups in physical functioning, physical role, general health, or vitality after the intervention ($p > 0.05$).

Adherence to the health management protocol was significantly higher in the intervention group than in the control group ($P = 0.000$). In the intervention group, 24 patients (66.7%) showed high compliance ($\geq 80\%$ compliance with the protocol), 12 (33.3%) showed moderate compliance (60-79% compliance), and none (0%) showed poor compliance ($< 60\%$ compliance). In contrast, only 3 control patients (8.3%) were highly compliant, 10 (27.8%) were moderately compliant, and 23 (63.9%) were marginally compliant. Thus, the lifestyle intervention program significantly improved patients' compliance with the health management protocol after surgery compared with standard treatment alone (Table 5).

Table 3. Comparison of the DEBQ scores between two groups (Point, $\bar{X}\pm s$)

Items	Before intervention			After intervention		
	Intervention group (n = 36)	Control group (n=36)	P value*	Intervention group (n = 36)	Control group (n=36)	P value*
DEBQ score	107.97±12.56	106.56±11.32	0.617	99.44±6.10	97.75±6.09	0.242
Restrictive diet	36.94±5.57	37.36±4.02	0.717	43.47±3.24	37.86±2.45	< 0.001
Emotional diet	34.47±10.51	33.58±9.70	0.710	25.08±3.27	28.56±4.44	< 0.001
External diet	36.56±4.84	35.61±4.20	0.380	30.89±3.28	31.33±2.01	0.491

* t-test

Table 4. Comparison of the scores in life quality between two groups (Point, $\bar{X}\pm s$)

Items	Before intervention			After intervention		
	Intervention group (n = 36)	Control group (n=36)	P value*	Intervention group (n = 36)	Control group (n=36)	P value*
Physiology	55.28±10.21	56.25±7.87	0.652	55.42±8.14	56.53±7.91	0.559
Physiological function	56.25±20.16	59.72±19.16	0.456	67.36±16.71	63.19±16.35	0.289
Body pain	80.22±11.22	77.78±10.24	0.338	88.44±11.27	79.33±9.45	< 0.001
Health status	48.06±7.22	48.06±7.22	1.000	52.22±8.64	50.39±7.35	0.336
Energy	51.11±11.41	50.69±10.36	0.872	53.06±10.16	51.67±10.14	0.563
Social function	54.17±15.24	54.86±14.42	0.843	67.71±16.74	57.64±14.10	0.007
Emotional function	57.42±29.41	57.42±24.72	1.000	68.54±19.43	62.05±19.78	0.165
Mental health	57.78±7.12	58.67±8.28	0.627	80.33±4.62	62.22±9.54	< 0.001

* t-test

Table 5. Comparison of the compliance of patients to the execution of health management protocols

Items	Intervention group (n=36)	Control group (n=36)	P value*
Compliance to the execution of health management protocols	High compliance ($\geq 80\%$)	24(67%)	3(8%)
	Moderate compliance ($\geq 60\%$ and $< 80\%$)	12(33%)	10(28%)
	Poor compliance ($< 60\%$)	-	23(64%)

* Chi-square test

5. Discussion

Sleeve gastrectomy is a surgical procedure in which a large portion of the stomach is removed to reduce its size and limit the amount of food that can be ingested. After surgery, patients require careful follow-up to manage potential complications and ensure optimal weight loss results (20, 21). The aim of this study was to evaluate the efficacy of a transitional care model-based health management protocol for patients undergoing sleeve gastrectomy. The results of this study show that a transitional care model-based health management protocol can effectively improve outcomes for patients after sleeve gastrectomy. Patients who participated in the TCM intervention spent more time exercising, ate less restrictively and emotionally, and had better quality of life in terms of body pain, social functioning, and mental health compared with the control group. In addition, the TCM protocol resulted in better adherence to recommended health management strategies after surgery.

Recent studies have shown that physical activity may have numerous benefits for patients after sleeve gastrectomy. One such benefit is the attenuation of bone loss caused by surgery (22). In addition, routine moderate physical activity in conjunction with sleeve gastrectomy can lead to significant improvement in lipid profile parameters (23). Overall, physical

activity is critical to improving health outcomes after bariatric surgery, and transitional care models that promote physical activity may be effective in achieving these outcomes (24). The results of the present study show that the health management protocol based on the transitional care model is effective in promoting physical activity in patients after sleeve gastrectomy. This is because after surgery, patients in the intervention group spent more time on physical activity than their counterparts in the control group. In their study, Coskun et al. (2022) adopted the TCM model in for the care for postoperative cardiac patients. They found that the TCM model, when self-managed, increased patients' physical activity, demonstrating the usefulness of the TCM model for managing one's health. This is consistent with the results of the present study (6).

The results of the present study are consistent with previous research indicating that promoting healthy dietary behaviors is critical for achieving successful weight loss after sleeve gastrectomy (25, 26). In addition, it is important to note that the promotion of healthy eating behaviors is an integral part of the health care services provided to patients undergoing sleeve gastrectomy (27). In the present study, it was found that the Transitional Care Model - based health management protocol can be effective in promoting healthy eating behaviors in patients after

surgery. The results of the study by Qile et al. (2017) show that the transitional care model leads to the promotion of healthy eating behaviors after sleeve gastrectomy, which is consistent with the results of the present study. In addition, they found that the support and guidance provided by the interdisciplinary team led to the development of healthy eating habits in patients. This is because they provide patients with the necessary resources and information to make informed decisions about their eating habits (28).

The Transitional Care Model (TCM) is a health management protocol designed to improve the health-related quality of life of patients after sleeve gastrectomy (9). In the present study, it was found that patients in the intervention group who received a TCM-based health management protocol performed better than patients in the control group in terms of body pain, social functioning, and mental health. Bavarsad et al. (2022) conducted a study with the aim of determining the effects of implementing a program based on the transitional care model on quality of life and ability to perform activities of daily living in stroke patients. They found that implementation of a TCM-based program resulted in significant improvement in quality of life and ability to perform daily activities. This is consistent with the findings of the present study (24).

The Transitional Care Model (TCM) is a model of care that aims to improve continuity of care for patients transitioning from one health care facility to another. The TCM has been shown to be effective in improving patient adherence to health care management (29). The results of the present study showed that TCM-based health management protocol can improve health-related quality of life and compliance with health management in patients after sleeve gastrectomy. Nancy et al. (2014) investigated the impact of TCM on improving outcomes in a population with mental illness in their study. They found that continuity of care with primary care appointments and overall health status were significantly better in the intervention group. This is consistent with the results of the present study, showing that TCM can improve health management adherence in patients (30).

A limitation of this study is the small sample size and short follow-up time. The study was conducted in a single Grade A hospital in Mudanjiang, which may limit the generalizability of the results to other populations and settings. In addition, because of the short follow-up period, it may not have been possible to assess the long-term effects of TCM-based health management protocol. Future research should aim to address these limitations by expanding the study to a larger and more diverse population, extending the intervention period, and refining the health management protocol to produce more comprehensive and scientifically robust results.

6. Conclusion

The results suggest that the introduction of transitional care models may be beneficial for patients undergoing sleeve gastrectomy. The health management protocol used in this study, which focused on physical activity, diet, and compliance, was effective in improving outcomes. Hospitals and clinics should consider implementing transitional care models to support patients after sleeve gastrectomy and on their road to recovery. This type of coordinated, patient-centered care holds promise for improving patient health and quality of life after bariatric surgery.

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Footnotes

Conflicts of Interest: None to declare.

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Appendix A

The intervention protocol for intervention group as per the core component of TCM pattern

Core component	Definition	Criteria for judgment
(1) Providing the services covering the duration from hospital to family by two nurses with specific designation	Health management plan for patients after sleeve gastrectomy is initiated after admission, and patients would be contacted by telephone or WeChat after discharge according to the distance.	<input type="checkbox"/> Yes: One or more video interview with the patients after discharge; <input type="checkbox"/> No <input type="checkbox"/> Yes: Follow-up for patients within 24 h after discharge through WeChat video call. <input type="checkbox"/> No
(2) Screening the patients with high risks by the attending doctors	Attending doctors of this study would recognize the patients at high risks after surgery according to the conditions of patients after surgery.	<input type="checkbox"/> Yes: Patients at high risks and are re-admitted after discharge. <input type="checkbox"/> No
(3) Head nurse with a master's degree and rich experience is designated to manage the project, which is coordinated and supervised by the head nurse of the department.	During the whole perioperative period and the first time of re-visit of patients, a head nurse with a master's degree is responsible for the administration of patient, specifically the responsibility to focus on the implementation of health management protocol.	<input type="checkbox"/> Yes: Coordinating the whole transitional process from the hospital to family and evaluating the effect of health management protocol. <input type="checkbox"/> No

Core component	Definition	Criteria for judgment
(4) Promoting the continuity, mainly by attending doctors and supervisor nurses	During the process from hospital to family, the same group of doctors and nurses are in charge of the health management protocol of patients based on the scientific evidence.	<input type="checkbox"/> Yes: The same clinical doctors in charge of the process from hospital to home; <input type="checkbox"/> No <input type="checkbox"/> Yes: Information tools, mainly by WeChat/telephone, are used to deliver the demand of patients, nursing protocols and goal of health management; <input type="checkbox"/> No <input type="checkbox"/> Yes: Rehabilitation information of patients is delivered to all staffs in the health management team. <input type="checkbox"/> No <input type="checkbox"/> Yes: Family members monitor the progression of diseases; <input type="checkbox"/> No <input type="checkbox"/> Yes: Communication and coordination between the hospital and community center of health; <input type="checkbox"/> No <input type="checkbox"/> Yes: Patients have access to the medical services from the community center of health; <input type="checkbox"/> No <input type="checkbox"/> Yes: Health management team evaluates the rehabilitation service of patients. <input type="checkbox"/> No <input type="checkbox"/> Yes: Team members work together; <input type="checkbox"/> No <input type="checkbox"/> Yes: Hospital, community center of health and family cooperate with each other; <input type="checkbox"/> No <input type="checkbox"/> Yes: Doctors of hospitals contact with their counterparts in the community center of health directly. <input type="checkbox"/> No <input type="checkbox"/> Yes: Easy and available methods are adopted regularly to establish and maintain the reliable correlation with the patients and their caregivers by WeChat or telephone. <input type="checkbox"/> No
(5) Coordinating nursing is designated to 2 nurses.	Patients have access to the ideal familial support, and to the service from the community center of health.	
(6) Cooperating with the patients, care-providers and teams, mainly the head nurse of General Surgery Department	Facilitating the patients, their family and members of health management team to reach a consensus on the nursing project.	
(7) Maintaining the correlation with the patients and their caregivers, mainly the head nurse of General Surgery Department	Head nurses should establish and maintain a reliable correlation with the patients and their family. Prior to the surgery, head nurses should talk with the patients to inform them of the cautions before and after surgery and condition of patients.	
(8) Attracting the patients and their caregivers to fulfill the protocol, mainly by two nurses	Ensuring the patients and major members of family to participate in the planning and implementation of health management protocol by understanding the preferences, sense of value and the expectations.	<input type="checkbox"/> Yes: Recording the goals of patients and their caregivers in health management protocol; <input type="checkbox"/> No <input type="checkbox"/> Yes: Ensuring the patients and their caregivers to participate in the planning of protocol. <input type="checkbox"/> No <input type="checkbox"/> Yes: Evaluating the real-time demand in rehabilitation of patients and their caregivers; <input type="checkbox"/> No <input type="checkbox"/> Yes: Utilizing the drug management strategy; <input type="checkbox"/> No <input type="checkbox"/> Yes: Utilizing the symptom management strategy. <input type="checkbox"/> No
(9) Manage the symptoms and other risks, mainly the attending doctors and supervisor nurses.	Attending doctors and supervisor nurses resolve the prioritized risk factors and symptoms by analyzing the condition of patients and recognizing the personnel health information acquired during the follow-up.	
(10) Facilitating the self-administration of patients, mainly by two nurses.	Make sure that patients and their caregivers are ready for the identification and management of any deterioration in symptoms. 1) Patients: Monitoring the condition of disease, protocols of surgery and compliance to rehabilitation plans by themselves; 2) Caregivers: Understanding the key elements in nursing after discharge, management strategy to the sudden attack of disease and preparations for rehabilitation at home.	<input type="checkbox"/> Yes: Facilitating the ability of patients in self-administration; <input type="checkbox"/> No <input type="checkbox"/> Yes: Providing the emergency plans for patients and their caregivers. <input type="checkbox"/> No