

The preliminary study of health education quality indicators for patients with severe acute pancreatitis

Caihong Xue¹, Lihui Sun^{2*}, Xinzhi Shan³, Li Guo⁴, Hong Sun¹, Yanjun Zhao¹

¹Institute of Nursing, Qingdao University, Qingdao, 266021, China

²Department of Continuing Education, the Affiliated Hospital of Qingdao University, Qingdao, 266001, China

³Department of Nursing, the Affiliated Hospital of Qingdao University, Qingdao, 266001, China

⁴Institute of Nursing, Taishan Medical University, Taian, 271000, China

Abstract: The purpose of this study was to develop the quality indicators of health education for patients with severe acute pancreatitis (SAP), so as to provide nursing health education quality testing tools. Based on the literature review and a preliminary survey, we identified 3 first-level quality indicators and 26 second-level quality indicators of health education for patients with severe acute pancreatitis (SAP). Using a modified Delphi technique, 26 nursing experts that were knowledgeable and experienced in the field of nursing were consulted with two rounds. A questionnaire was developed following 4 steps, and involved ranking indicators on a five-point Likert scale. Mean (M), standard deviation (SD) and coefficient of variation (CV) were used to describe the importance of indicators. The expert agreements were measured using Kendall concordance coefficient (Kendall's W). The results showed that a consensus was achieved after the preliminary survey and two rounds of modified Delphi technique, with the ultimate containing 3 first-level indicators and 23 second-level indicators. All the experts surveyed are authoritative and responded to the investigation; significant experts disagreement was found (Kendall's W, $p < 0.01$). By using a modified Delphi technique, we developed the health quality indicators, which provide a basis for clinical nurses management and the monitoring of health education.

Keywords: Severe acute pancreatitis (SAP); Health education quality indicators; Preliminary survey; Modified Delphi technique

Received 20 February 2016, Revised 25 April 2017, Accepted 27 April 2017

*Corresponding Author: Lihui Sun, sunlh630201@163.com

1. Introduction

Severe acute pancreatitis (SAP) is a systemic disease that can induce many complications such as multiple organ dysfunction syndromes (MODS), and cause mortality [1]. Evidence shows that the mortality rate of SAP can up to 20%-30%, accounting for 36%-50% in acute pancreatitis (AP) [2-3]. It has the characteristics of a complicated condition, poor prognosis and easy to relapse [4]. The improvement of the living standard and diet structure were changed. Severe acute pancreatitis (SAP) in the worldwide incidence is increasing year by year.

Health education is a modern comprehensive therapy for severe acute pancreatitis [5], effect and evaluation of health education directly affects the patient outcomes and recovery. The quality indicators of health education are important and effective tool to evaluate the quality of health education for nurses. It is scientific and effective in guiding the clinical nurses to carry out health education, improve patient outcomes, to reduce the mortality of patients, and improve the quality of life of patients, preventing recurrence.

Indicators are measures used to answer questions about the monitoring and evaluation of a health education activity [6]. However, no valid indicators are currently available for health education quality of

China. It is an important cause of prognosis mala and high recurrence rate. Chinese nursing health education evaluation is still in the initial stage, and is toward the college development currently.

At present, the treatment methods of SAP involve two aspects of medical and surgical result at home and abroad [7], so this study developed two aspects of health education quality indicators including medical and surgical treatment; because of the poor treatment effect and easy to relapse, therefore, this research adds after discharge health education quality indicators, a total of three first-level quality indicators of health education were developed. And the second-level quality indicators were constituted into the basis of the United States Marion.J.2000 nursing outcome classifications (NOC) and Marion.J.2000 nursing interventions classification (NIC). The aim of this study was to preliminary formed health education quality indicators to provide a basis for clinical nurses management and the monitoring of health education, and to improve patient health education quality.

2. Methods

2.1. Study design

This is a descriptive and exploratory study. The investigation was using the questionnaire of health education quality indicators for patients with SAP

and the modified Delphi technique, to get data and determine indicators. The questionnaire was prepared in four phases. In the first stage, a literature reviews, to form Initial construction of potential indicators. In the second stage, a preliminary survey before the modified Delphi technique. In the third stage, gain consensus regarding the importance of each indicator of the modified Delphi technique. In the final stage, data collection and analysis were finished.

2.2. Stage 1- Initial construction of potential indicators

Nineresearchers, which included 8 nursing specialists and 1 medical statistics invited to identify initial construction of potential indicators. By searching various databases, including CNKI, CQVIP, and WanFang, PubMed, Web of Science, Ovid, ScienceDirect Online, SpringerLink, for related key words and original papers from 2010-2016, we identified 3 first-level indicators and 26second-levelindicatorsof health education on patients with SAP. At the end of this process, a concise list of indicators was tabulated into a preliminary questionnaire.

2.3. Stage 2- preliminary survey

Through the preliminary questionnaire, 26 potential indicators were generated by the researchers from a preliminary survey of a group of nursing experts (n=10), these experts were from nursing education (n=3), nursing management (n=3) and clinical care (n=4). The preliminary questionnaire was designed by researchers and distributed among nursing experts, available on paper and through email to complete and return in 2 weeks. The questionnaire included four sections: (1) Research purpose and questionnaire filling method; (2) A list of indicators and a 5-point Likert scale was used to assess each indicator in terms of importance, allocated a specific degree of importance of each

indicator, using values of 1 "dispensable" to 5 "very important" [8]. (3) Familiarity with the field and the basis of making these choices; (4) The suggestions and opinions field where experts could express their views of revisions, additions, or deletions and their reasons [9].

2.4. Stage 3- modified Delphi technique

A modified Delphi technique served to obtain expert consensus on indicators to be included in the assessment tool [10]. It has served in many previous studies to develop quality indicators for a variety of diseases [11].

Data collection was achieved through the two-steps process of the 26 nursing experts by using a Delphi questionnaire. When the research was finished 26 experts remained. The expert panel requires in a variety of areas including nursing education (n=6), nursing management (n=8) and clinical care (n=12). The indicators were measured using a five-point Likert scale of the importance of each indicator ranging from 1 (dispensable) to 5 (very important). According to the experience and theory of experts give each indicator score and put forward their own opinion, and each indicator in the next rounds was revised according to the feedback from the previous round.

2.5. Stage 4- data collection and analysis

All databases were input into Excel 2016 and analyzed by IBM SPSS 22.0 (SPSS Inc., Chicago, IL). Mean (M) and standard deviation (SD) are used to estimate the basic situation of the expert, and coefficient of variation (CV) was determined for each score and round. The professional degree of experts is reflected by the authority coefficient. The Kendall coefficient of concordance was used to measure the agreement with experts. Kendall's W varies from 0.0 (no agreement) and 1.0 (maximum agreement) [12].

Table 1 Expert demographics

	N (%) or $\bar{X} \pm SD$ (Preliminary survey)	N (%) or $\bar{X} \pm SD$ (Modified Delphi)technique)
Age (years)	49.0 \pm 4.0	42.1 \pm 5.7
Work experience (years)	26.5 \pm 4.5	18.8 \pm 6.0
Educational attainment		
Master's	6 (60.0%)	14(54.0%)
Bachelor's	4 (40.0%)	12(46.0%)
Work area		
Nursing education	3(30.0%)	6(23.1%)
Nursingmanagement	4(40.0%)	8(30.8%)
Clinical nursing	3(30.0%)	12(46.2%)

3. Results

3.1. Expert demographics

All 10 experts reacted to the preliminary survey. Their mean age was 49.0 years (SD = 4.0 years), and their mean work experience was 26.5 years (SD =

4.5 years). Most of the invited experts get a master's degree (n = 6, 60.0%; Table 1). Among 26 experts that received in each modified Delphi technique round, 26 (100.0 %) responded. Their mean age was

42.1 years (SD = 5.7 years), and their cruel work experience was 18.8 years (SD = 6.0 years). Most of the invited experts get a Bachelor's degree (n = 14, 54.0%; Table 1).

Table 2 Descriptive statistics regarding health evaluable indicators

Indicators	Preliminary survey		Delphi round 1		Delphi round 2	
	$\bar{x} \pm SD$	CV	$\bar{x} \pm SD$	CV	$\bar{x} \pm SD$	CV
A1 Health education quality indicators of comprehensive medical treatment						
B1 Pathogen of disease	4.60 ± 0.52	0.11				
(Pathogen and symptoms of the disease)			4.46 ± 0.65	0.15	4.58 ± 0.50	0.11
B2 Clinical symptoms of the disease	4.50 ± 0.53	0.12				
B3 Drug side effect	3.20 ± 0.92	0.29	3.62 ± 0.94	0.26	3.46 ± 0.86	0.25
B4 Requirements for bed rest and activities	4.60 ± 0.52	0.11	4.35 ± 0.63	0.14	4.42 ± 0.50	0.11
B5 Importance of oral hygiene	4.50 ± 0.53	0.12	4.08 ± 0.80	0.20	4.15 ± 0.73	0.18
B6 Significance of gastrointestinal decompression and pipeline nursing	4.90 ± 0.32	0.07	4.88 ± 0.33	0.07	4.96 ± 0.20	0.04
B7 The time and meaning of fasting	5.00 ± 0.00	0.00	4.92 ± 0.27	0.05	5.00 ± 0.00	0.00
B8 Measures to relieve pain and vomit	4.90 ± 0.32	0.07	4.46 ± 0.65	0.15	4.54 ± 0.51	0.11
B9 The significance of enteral nutrition (TPN) and parenteral nutrition (The importance of nutrition support and pipeline management)	5.00 ± 0.00	0.00	4.92 ± 0.27	0.05	5.00 ± 0.00	0.00
B10 The management of the input nutrient pipeline	5.00 ± 0.00	0.00				
B11 Self psychological adjustment	4.80 ± 0.42	0.09	4.31 ± 0.79	0.18	4.38 ± 0.40	0.09
A2 Health education quality indicators of surgical treatment						
B12 The importance of preoperative preparation	5.00 ± 0.00	0.00	4.38 ± 0.70	0.16	4.46 ± 0.58	0.13
B13 Postoperative dietary requirements	5.00 ± 0.00	0.00	4.62 ± 0.47	0.10	4.77 ± 0.43	0.09
B14 Position of drainage tube after operation	4.30 ± 0.82	0.19	4.38 ± 0.75	0.17	4.54 ± 0.51	0.11
B15 Nursing care of drainage tube	5.00 ± 0.00	0.00				
(Nursing care of drainage tube and surrounding skin after operation)			4.92 ± 0.27	0.05	5.00 ± 0.00	0.00
B16 Nursing care of skin around the operation area	5.00 ± 0.00	0.00				
B17 Observation of drainage fluid	4.70 ± 0.48	0.10	4.31 ± 0.74	0.17	4.23 ± 0.65	0.15
B18 Postoperative functional exercise	4.20 ± 0.79	0.19	4.04 ± 0.77	0.19	4.19 ± 0.63	0.15
A3 Quality indicator of health education after discharge						
B19 Adjust the diet structure and living habits	5.00 ± 0.00	0.00	5.00 ± 0.00	0.00	5.00 ± 0.00	0.00

B20 Physical exercise	4.80 ±0.42	0.09	4.73 ±0.45	0.10	4.81 ±0.40	0.08
B21 Own or family monitoring	5.00 ±0.00	0.00	4.85 ±0.37	0.08	4.88 ±0.33	0.07
B22 Recurrence symptoms	4.80 ±0.42	0.09	4.62 ±0.57	0.12	4.73 ±0.45	0
B23 Keep health and avoid infection	4.40 ±0.70	0.16	4.15 ±0.78	0.19	4.00 ±0.80	0
B24 Follow the doctor's advice	5.00 ±0.00	0.00	4.58 ±0.50	0.11	4.65 ±0.49	0
B25 Periodic review	5.00 ±0.00	0.00	5.00 ±0.00	0.00	5.00 ±0.00	0
B26 Maintain an optimistic attitude	4.80 ±0.42	0.09	4.85 ±0.37	0.08	4.92 ±0.27	0

3.2. Indicators analysis

In the preliminary survey, a total of 26 indicators were measured, and these results showed a strong central tendency towards all indicators in terms of importance and for most indicators in terms of feasibility (Table 2). Depending on expert opinion that two indicators "Direct and indirect causes of disease "and" Clinical symptoms of the disease" were combined as an indicator. "Significance of nutrient supports" and "Nutrition input pipeline nursing" two indicators were saved for one indicator after the panel discussion.

In the first and second round of the Delphi technique, 23 indicators were assessed in each round. And the feedbacks on the indicators were more

concentrated and unified. Experts believe that no one was to be deleted and the coefficients of variation (CV) for both indicators were less 0.3, so 23 indicators were all retained at the end of the Delphi technique (Table 2).

3.3. Agreement analysis

The agreement on the experts was demonstrated using the Kendall coefficient of concordance (Kendall's W). The W-value for concordance between the three rounds ranged from 0.27 to 0.39 (p<0.001; Table 3).

Table 3 Agreement of experts regarding the indicators importance

	W-value	X ²	P-value
Preliminary survey	0.39	101.71	<0.001
Delphi round 1	0.27	156.24	<0.001
Delphi round 2	0.38	214.76	<0.001

4. Discussion

For patients with different treatment options, the research group has developed all the indicators. Through three rounds of surveys, the experts have reached a consensus.

4.1. Health education quality indicators of comprehensive medical treatment

After three surveys, the experts have the biggest differences in the indicator of drug side effects. Because of the coefficient of variation (CV) of <0.3, so the experts still agree with this indicator.

Pathogenic and clinical symptoms were the basis to understand the disease, and an indispensable one for nurses to carry out health education for patients and their families. Through the preliminary survey and two modified Delphi technique round, most experts believe that pathogenic and clinical symptoms should become two important indicators

to measure the quality of health education for patients with SAP.

The patient's condition was serious and accompanied by a large amount of fluid loss, need long time to stay in bed, in order to avoid the pulmonary infection and occurrence of bed sore, the need for bed activities; the patients were often accompanied by vomiting, need to clean the mouth. Experts believe that these two elements can be used to evaluate the quality of health education in patients with SAP.

Since the middle of the twentieth century, the concept of SAP treatment of early surgical treatment and of early internal medicine comprehensive treatment to control and reduce complications, improve the cure rates [7]. SAP patients with severe abdominal pain and vomiting, require fasting and gastrointestinal decompression treatment. So the three items including "significance of gastrointestinal decompression and pipeline nursing", "fasting time and meaning", and "measures to relieve pain and

vomit” should be used to evaluate the quality of health education in patients with SAP.

Nutrition supported was an important aspect of comprehensive treatment of SAP. Furthermore, early EN (EEN) has been declared to be associated with reduced complications and improved clinical outcomes of AP patients [13-14]. Recent experimental studies have indicated that early EN (EEN) has the same effect in SAP patients [15]. Nutrition supported pipelines of tube, blockage, and infection occur frequently, mainly in patients with the lack of relevant knowledge. Experts believe that health education of nutrition supported and related pipeline management can avoid or reduce catheter blockages, reduce prolapse. So it can serve as a valuable indicator.

Most of the patients with SAP accompanied by fear, tension and other psychological problems, guiding patients with self psychological adjustment, can alleviate symptoms and promote recovery, so experts think this is an important index to evaluate the quality of health education.

4.2. Health education quality indicators of surgical treatment

At present, physicians and surgeons have reached consensus, only a few SAP patients require surgery [7], but postoperative patients requiring drainage and lavage lesions, therefore, experts believe that nurses should guide the surgical treatment of patients with drainage so that they understand the knowledge about drainage-tube, drainage of liquid and operation surrounding skin to reduce postoperative complications.

4.3 Health education quality indicator after discharge

SAP has the characteristics of a poor prognosis and easy to relapse, so health education after discharge was very important to prevent recurrence. SAP has the characteristics of a poor prognosis and easy to relapse. So after discharge of health education on the prevention of recurrence was very important. Therefore, experts believe that the diet, physical exercise, own monitoring, health, the doctor's orders, periodic review and optimistic attitude are very important indicators of the quality of health education.

5. Conclusion

A modified Delphi technique was applied. We were developed in the health education quality indicators for SAP practices. These provide a basis for nursing management and the monitoring of health education quality. All the indicators identified by the theoretical basis and clinical experience, and difficulties regarding the reliability and feasibility of data collection are recognized. The indicators

included in the study have yet to be tested in practice, verified and revised for clinical applications.

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