The effect of patient education interventions on stoma patients

A descriptive review

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Abstract

Background: There are an estimated 100,000 new cases of stoma patients every year in China, with a total of about 1 million now. Due to the high incidence of postoperative complications in patients with stoma and the fact that stoma is a kind of physical disability or deformity, stoma patients are under great pressure in society, psychology, physiology and their quality of life is greatly affected. In recent years, more and more attention has been paid to the education and nursing of stoma patients.

Aim: Describe the effect of education intervention on stoma patients, and describe the education intervention of the selected articles.

Method: Empirical scientific studies were searched for in the electronic database of PubMed, including a manual search for studies published from 2008 to 2018. Chosen articles were related to the aim and specific research questions according to the selection criteria.

Main Results: Eleven articles were identified as meeting inclusion criteria. Education interventions include course education intervention, information consulting education intervention, follow-up education intervention and peer-led education intervention. Patient education have positive effects on stoma patients, focusing on four aspects: physiological, psychological, social, self-management.

Conclusions: Course education intervention, follow-up education intervention, information consulting education intervention and peer-led education intervention had positive effects on physiological, psychological, self-management. But there was no obvious effect in social adaption on social aspect. Nurses played an important role in implementing patient education intervention to stoma patients.

Keywords: Effects, Interventions, Nurses, Patient education
摘要：

背景：我国估计每年新增永久性肠造口患者 10 万例，目前累计约 100 万例。由于造口患者术后并发症发生率很高，而且造口是一种违反生理的残疾或畸形，所以肠造口患者在社会、心理、生理上都承受着巨大的压力，生活质量受到很大影响。近年来，造口患者教育与护理正受到越来越多的关注，护士在造口患者教育领域中发挥着重要的作用。

目的：描述教育干预对造口患者的作用，并描述所选文章的教育干预方法。

方法：在电子数据库 PubMed 中搜索了实证性和科学性的研究，并对 2008 年至 2018 年发表的文章进行了人工搜索。选定的文章符合筛选标准并且与目的和具体问题有关。

主要结果：11 篇文章被确定为符合纳入标准。教育干预包括课程教育干预、信息咨询教育干预、后续教育干预和同伴主导的教育干预。患者教育对造口患者有积极作用。效果主要集中在生理、心理、社会、自我管理四个方面。所有文章都详细描述了数据收集方法。

结论：课程教育干预、随访教育干预、信息咨询教育干预、同伴主导教育干预对学生的生理、心理、自我管理均有正向影响，但是在社会适应性方面影响不大。护士在实施口腔病人教育干预中发挥了重要作用。

关键词：造口患者教育，效果，干预，护士。
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APPENDIX
1. Introduction

Statistics show that at least 100,000 patients receive ostomy every year, and the total number of stoma patients in China is about 1 million (Yu, 2005). People of all ages have the possibility of forming a stoma, those in newborns are born without an anus (anal atresia), in children with inflammatory bowel disease or cancer, and in elderly persons with perforated diverticulosis (Burch, 2017). There are various etiologies can lead to the formation of stoma, which include cancer of the colon or rectum, bladder cancer, nonmalignant conditions, congenital disorders, diverticular disease and so on (Goldberg et al., 2018).

1.1 Definition

1.1.1 Definition of stoma

Stoma is an artificial opening made into a hollow organ, especially one on the surface of the body leading to the gut or trachea (Oxford Living Dictionary, 2018).

1.1.2 Definition of patient education

Patient education is about health professionals providing information to patients and their caregivers to change their health behavior and improve their health condition (Rankin, Stallings, & London, 2005).

1.2 Stoma patients experience

Stoma has a great impact on patient's life including physical, psychological and social aspects (Zhang, Wong, & Zheng, 2017). Whether the stoma is temporary or permanent, patients' lives will face multiple challenges (Goldberg et al., 2018). These challenges include sexual dysfunction, negative emotion production, excretion problems, dissatisfaction with body image, lifestyle changes and complications (Thorpe, Arthur, & McArthur, 2016; Silva et al., 2017; Lindholm et al., 2013).

1.2.1 Physical problem

Stoma changes the bowel movements of patients, making them unable to control their defecation autonomously that bring physical limitations on the patient's daily activities, personal hygiene, and sleep patterns (Lim, Chan, & He, 2015). In Zhu et al (2017) study, stoma patients will also face sexual problems. There is a large proportion of stoma
patients have sexual dysfunction and the quality of their sex lives is reduced due to the existence of a stoma (Zhu et al., 2017). Meanwhile, the formation of the stoma will lead to a number of postoperative complications. Lindholm et al. (2013) indicated that necrosis, separation, and stenosis were the most commonly observed complications among stoma patients.

1.2.2 Psychological problem
Due to the change of self-image, stoma patients can develop a series of negative emotions that increase their insecurity and fear of rejection in their daily life and sexuality (Silva et al., 2017). Over time, the formation of stoma can lead to patients’ loss of live confidence, self-esteem and reduced self-efficacy which seriously affect the quality of life (Silva et al., 2017). Stoma patients also will have a heavy psychological burden, and this new lifestyle may cause them to fear returning to social and work roles Palomero-Rubio, Pedraz-Marcos, & Palmar-Santos, 2018). Meanwhile, stoma patients often feel frustrated and helpless during the initial period after ostomy, and they do not disclose their emotions to their families for fear of becoming a burden to them (Lim et al., 2015).

1.2.3 Social problem
Due to the fixed and limited hospital environment, some stoma patients will suffer from social discrimination, undergo the process of social separation and social alienation (Thorpe & McArthur, 2017; Rubio et al., 2018). Stoma patients consciously reduced outdoor activities and family activities after surgery, and could not effectively integrate into the society, which affecting stoma patients and people around to establish a good interpersonal relationship (Thorpe & McArthur., 2017; Rubio et al., 2018). Meanwhile, stoma patients will face enormous financial pressure (Wick et al., 2011). The cost is related to the paid claims for total hospital, emergency department, home health, and outpatient pharmacy services since the day of surgery and continuing for entire length of hospital stay (Wick et al., 2011). Besides, stoma patients are not only under great financial pressure, but also delay the length of hospital stay significantly without early nursing education intervention before surgery (Rashidi, Long, Hawkins, Menon, & Bellevue, 2016).

1.2.4 Self-management
Stoma patients often felt unprepared due to limited knowledge of the stoma in the first few weeks after the formation of a stoma (Lim et al., 2015). Therefore, stoma patients did
not do well in self-management care after discharge (Lim et al., 2015). In addition, low patients' education level, rejection psychology of stoma and lack of time to receive stoma care education affect their self-management ability, and many patients lack good self-management ability due to these reasons (Ran et al., 2016).

1.3 Nurse’s role

Nurses play a large part in the process of nursing the stoma patients to help them quickly adapt to the life of the disease (Chrobak, 2009). Nurses' education support is critical to the patient's cognitive, motivational and information domains (Chrobak, 2009). Nurses are involved in both preoperative and postoperative process of providing education for stoma patients. In the preoperative phase, nurses act as an educator will introduce the necessities and the change of appearance after operation as well as the lifestyle guidance (Burch, 2017). In the immediate postoperative period, nurses will provide effective information about stoma care, such as self-management skills, proper diet, dressing styles and strategies for dealing with complications (Burch, 2017). In Chrobak (2009) study showed that the role of a qualified nursing educator allows patients to maintain good health, master knowledge of stoma and have ability to manage complications.

1.4 Orem's theory

Orem's theory was applied to authors' research (Polit & Beck, 2017). This theory consists of three parts including nursing systems theory, self-care deficit theory and self-care theory (Orem, 2001). According to Orem (2001), self-care theory is the process of patients' self-maintenance and health practice. Self-care defect theory refers to that when patients' self-care ability cannot meet their self-care needs, they need the care of nurses (Orem, 2001). Nursing system includes full compensation system, partial compensation system and supporting education system (Orem, 2001). The full compensation system refers to that the nurse assists the patient to complete all the self-care content, and the partial compensation system refers to that the nurse assists the patient to complete part of the self-care content, and the rest is completed by the patient alone (Orem, 2001). Support education system refers to the nurse helps the patient to complete the self-care content and adjusts the patient to exercise the self-care ability (Orem, 2001).
1.5 Earlier review

Although earlier review had begun to focus on the effectiveness of education interventions for stoma patients, there is no article to cover all types of stoma, and to evaluate the effectiveness in multiple aspects. Earlier review had shown that education for stoma patients has significant effects on shortening hospital stay, reducing readmission rate and reducing complications (Phatak, Li, Karanjawala, Chang, & Kao, 2014). In addition, education for colostomy patients improves patients' self-management ability, decreases complications and readmission (Faury, Koleck, Foucaud, M'Bailara, & Quintard, 2017). The results of the review by the Phatak et al (2014) did not involve physiological and psychological evaluation. And participants of the review by Faury et al (2017) were included only in patients with colorectal stoma. In authors’ review, the inclusion criteria of participants cover all types of stoma patients. And the result evaluation in authors’ review involves physiological, psychological, social and self-management evaluation, which is more extensive.

1.6 Problem statement

In recent years, the number of patients undergoing ostomy has been increasing year by year. The existence of stoma seriously affects the physiological function, psychological state and social adaptability of patients, reduces the quality of life of the stoma population. And stoma patients generally lack knowledge of stoma and self-management skills. Poorly educated patients do not have a good grasp of stoma self-care techniques. Positive and effective patient education can effectively improve patients' self-management ability. The earlier review focused on the effect of patient education on colorectal cancer population, while the intervention effect included a small range, only from two to three aspects to evaluate the effect.

1.7 Aim and specific questions:

The aim of literature review is to describe patient education interventions and the effect of those on stoma patients, with the help of the following questions:

1. What patient education interventions are used to effect stoma patients?
2. What’s the effect of patient education interventions on stoma patients?
2. Method

2.1 Design

The study was a descriptive literature review (Polit & Beck, 2017).

2.2 Search term and search strategies

The database used for searching articles was PubMed with certain limits to search articles. These restrictions were important for searching articles (Polit & Beck, 2017). MeSH terms were used to search articles for study were “stoma”, and “education”. Free text words were used to search articles for study were: “patient education”, “health education” and “ostomy”. By using the databases’ index of search terms; MeSH (PubMed), the relevant search terms for the aim were identified. Manual search was used to get a comprehensive search result, and the selected articles still need to follow the title and aim. In order to obtain the results accord with the research aim, search terms were searched one by one and combined with the Boolean operators AND and OR to identify relevant studies, expanding or narrowing the scope of research (Polit & Beck, 2017). Limitations were used in the searches in order to get the articles that were related to the aim and specific questions. In PubMed, the following limits were used: “University of Gävle”, “10 years” and “English”.

2.3 Selection criteria

Polit and Beck (2017) mentioned that PICO, as a systematic search strategy, P = population, I = intervention, C = comparison, O = outcome, which can clarify the selection process and help the author choose the article more easily (Polit & Beck, 2017). If the inclusion criteria of PICO were met, this review was included (Table 1).

According to the "micro", the different forms are listed as follows: population (ostomy population), intervention (education intervention with nurse participation), comparison (comparison of treatment group and control group) and search results article (empirical study published in English between 2008 and 2018).
Table 1 inclusion criteria defined according to PICO.

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P</strong></td>
</tr>
<tr>
<td><strong>I</strong></td>
</tr>
<tr>
<td><strong>C</strong></td>
</tr>
<tr>
<td><strong>O</strong></td>
</tr>
</tbody>
</table>

2.4 Selection process and outcome of potential articles

After a preliminary search, the authors found 104 studies that may contribute to the results. However, in order to make the literature used in the results more accurate, the author established a systematic exclusion process to simplify the search process and minimize the error. First, the authors found enough scientific research on selected topics in PubMed (n=104). Then, the 104 articles that did not fit the titles (n=35) and abstract (n=20) were excluded. Thirdly, careful reading of the full text and screening again to confirm that these studies answered research questions and were consistent with the aim. Finally, the author used the remaining articles (n=9) in the final screening for the results section, and confirmed that these 9 articles were available through communication with partners and supervisors. The other 2 articles were obtained from Manual search that relevance for inclusion criteria, aim and specific questions from other reference list.

The outcome of database searches and databases with limits, search terms, number of hits and chosen sources was presented in Table 2. The systematic exclusion process was presented in Figure 1.
**Table 2. Outcome of database searches.**

<table>
<thead>
<tr>
<th>Database and search date</th>
<th>Limits</th>
<th>Search terms</th>
<th>Number of hits</th>
<th>Potential articles (excluding doubles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medline through PubMed 2018-12-30</td>
<td>University of Gävle, 10 years, English,</td>
<td>“stoma” [MeSH] OR “ostomy” (free text)</td>
<td>3881</td>
<td></td>
</tr>
<tr>
<td>Medline through PubMed 2018-12-30</td>
<td>University of Gävle, 10 years, English,</td>
<td>“education” [MeSH] OR “patient education” (free text) OR “health education” (free text)</td>
<td>1092</td>
<td></td>
</tr>
<tr>
<td>Medline through Pubmed 2018-12-30</td>
<td>University of Gävle, 10 years, English,</td>
<td>stoma [MeSH] OR ostomy AND education OR “patient education” (free text) OR “health education” (free text)</td>
<td>104</td>
<td>9</td>
</tr>
<tr>
<td>Manual search 2018-12-30</td>
<td>University of Gävle, 10 years, English,</td>
<td>Relevance for inclusion criteria, aim and specific questions</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total: 11</td>
<td></td>
</tr>
</tbody>
</table>
Total study search results (n=104); PubMed:104

Studies included based on titles (n=69); PubMed:69

Studies included based on abstracts (n=49); PubMed: 49

Studies included based on full text (n=20); PubMed: 20

Studies included based on quality appraisal (n=9); PubMed: 9

Studies included in the review (n=11);

Excluded based on titles (n=35)
- not about stoma; not about education; qualitative study; not related to the aim and title; did not describe the effects of interventions/caring

Excluded based on abstracts (n=20)
- not about nursing; did not describe the education intervention; not quantitative intervention, the instructor of education intervention is not a nurse, the education is not aim at patients

Excluded based on full texts (n=29)
- not about nursing; not an RCT trail or a longitudinal study; no specific education interventions were mentioned

Excluded based on read and discuss again. (n= 11)
- the effect of intervention in the result

Manual search(n=2)
- relevant for aim, title and inclusion criteria

Figure 1: Flowchart of the exclusion process
2.5 Data analysis

Descriptive literature review including only quantitative studies was used in author’s article (Polit & Beck, 2017). At first authors read all articles in the result section. After reading all the articles carefully by each author, authors listed the results of the selected article according to the aim and research question of this study. In order to facilitate further analysis, this article made a comprehensive discussion. Table was used to obtain an overview of the article. Eleven articles accorded with the selection criteria were collected in Table 3. Appendix 1 summarized author, years, country, title, aim, study design/approach, sample, intervention, data collection methods and results of all 11 articles. Results were classified according to the form of education intervention and effects. These classifications were summarized to obtain a set of comprehensive research results. As the 11 article result had similar interventions, the authors classified them into four categories. The effect is systematically analyzed from four aspects. Figure 2 present types of intervention and effect. In the whole process, the author extracted the data independently. The accuracy and consistency of the data were cross-checked (Polit & Beck, 2017). In case of disagreement, the author discussed with the supervisor until both sides reached an agreement.

2.6 Ethical considerations

The author's literature review was based on published literature. The selection process of articles was not affected by the author's subjective emotions, and the reading and summarization were objective. The data of the original articles were faithfully and objectively respected, and the results had not been changed. All the data quoted from other literature were used as references to ensure no plagiarism. This part of the description was made by Polit and Beck (2017).
3. Results

3.1 Intervention methods

Authors summarized 4 types of interventions in 11 articles. These articles described four types of interventions and effects from four aspects on patients with stoma. The themes and categories of the results were presented in Figure 2. The results are presented as a table in the text, see table 1.

Figure 2: The themes (kind of interventions and effects of interventions) and categories of the results
3.1.1 Course education intervention

A total of five articles mentioned course education intervention (Altuntas et al., 2012; Karabulut, Dinç, & Karadag, 2014; Stokes et al., 2017; Daielsen & Rosenberg, 2014; Krouse et al., 2016). The number of participants in all courses ranges from 50 to 218. Participants were all over 18 years old and had at least one permanent stoma. The duration of course education was from 3 weeks to 1 year. However, different studies used different teaching forms. Two articles adopted the form of multimedia teaching. Nurses used PPT and video to carry out the teaching content of basic information, nursing, complications and daily life guidance of stoma (Karabulut et al., 2014; Stokes et al., 2017). Three articles mentioned the method of demonstration teaching by nurses to improve patients' self-management skills by demonstrating the use of stoma tools to stoma patients (Altuntas et al., 2012; Stokes et al., 2017; Daielsen & Rosenberg, 2014). Four articles mentioned the form of group discussion teaching. The stoma nurse served as the team leader and the stoma members sat at a round table for discussion (Altuntas et al., 2012; Karabulut et al., 2014; Stokes et al., 2017; Krouse et al., 2016). The stoma nurse helped the stoma participants solve the stoma-related problems, assisting them share their feelings and ideas, and finally gave the solution to the problems (Altuntas et al., 2012; Karabulut et al., 2014; Stokes et al., 2017; Krouse et al., 2016). The course focused on training stoma patients to become problem solvers and sharing their experience in solving life problems in groups (Altuntas et al., 2012; Karabulut et al., 2014; Stokes et al., 2017; Krouse et al., 2016).

3.1.2 Follow-up education intervention

One article mentioned follow-up education intervention (Zhang et al., 2013). Follow-up education was conducted in the form of telephone follow-up, which was provided by enterostomy nurses. Telephone follow-up consisted of three parts: assessment (included patient’s general clinical status, discomfort, stoma complication, self-care ability, emotional condition and self-efficacy), management options based on the results of the assessment and evaluation (Zhang et al., 2013). Three telephone follow-up visits were conducted at 3 to 7 days, 14 to 20 days and 23 to 27 days after discharge (Zhang et al., 2013).
3.1.3 Information consulting education intervention

A total of four articles mentioned information consulting education intervention (Lo et al., 2009; Lo et al., 2011; Forsmo et al., 2016; Younis et al. 2012). Information consulting intervention adopted a variety of means included the use of multimedia, the provision of textual materials, direct oral communication. For provision of textual materials, nurses distributed an information brochure for stoma patients to read after them was one day post-operatively or discharged from the hospital (Forsmo et al., 2016; Lo et al., 2009). For the use of multimedia, Lo et al (2009) used film and picture format to convey information about anatomy, indications of stoma formation, stoma care and irrigation to stoma patients. Lo et al (2011) used flash, 2D animation, films, and pictures to deliver the core elements of stoma care to patients and realize the information interaction between man and machine. Younis et al (2012) used the form of a DVD to deliver information about how to empty and replace stoma bag. All three articles were dominated by nurses. However, nurses did not participate in the teaching format, and all the video images were viewed independently by stoma patients to realize man-machine information interaction. For direct oral communication, Forsmo et al (2016) mentioned stoma patients were consulted with a stoma nurse specialist for 45 to 60 minutes before surgery. The consultation content included explaining to the patient what part of intestine would be removed, the probable consequence as well as how to use the stoma care equipment. Younis et al (2012) mentioned the nurse specialist conducted preoperative counseling education for stoma patients in clinical or at home before patients participated in the enhanced recovery program.

3.1.4 Peer-led education intervention

One article mentioned peer-led education (Cheng et al., 2012). Peer-led education was an intervention organized by nurses and led by experienced stoma patients. Peer-led education was first implemented by nurses. Firstly, five training programs were carried out for specialist patients, including general introduction, communication and experience sharing skills, types of colostomy, lifestyles and common complications (Cheng et al., 2012). Each course time was 30-120 minutes. In the second stage, specialist patients gave a course to other stoma patients. The course included the technique of replacing the colon bag, the prevention of common complications and how to conduct stoma self-management (Cheng et al., 2012). Each course time was 30-60 minutes. The course was
implemented for three weeks in total. At last, all stoma patients participated in the questionnaire survey (Cheng et al., 2012).

3.2 Outcome synthesis

3.2.1 Physical

3.2.1.1 Bodily pain

Two studies examined bodily pain and both found significant improvements by using a generic quality of life questionnaire (SF36). Bodily pain was significantly reduced by course education intervention (P=0.040) (Daielsen & Rosenberg 2014). And in Altuntas et al (2012) study, married patients could be significantly reduced bodily pain by course education intervention (P=0.001).

3.2.1.2 Stoma complication

Two studies examined complications and found both follow-up and course education interventions could reduce complications. Zhang et al (2013) used the measurement tools of stoma complications and the result indicated that participants received follow-up education intervention had fewer stoma complications at 1 month (P=0.028) and 3 months (P=0.044). Stoke et al (2017) compared the postoperative complications of stoma patients after course education intervention within 30 days after surgery. The results showed that the peristomal complications were significantly reduced by course intervention (P=0.002) (Stoke et al., 2017).

3.2.1.3 Physical function

Two articles used course education intervention to examine physical functions. One of them found improvements in physical function and another found no significant effect.

Altuntas et al (2012) study examined physical function and found significant improvements by using a survey (Short Form-36, SF-36). The results showed that the physical function of patients after receiving course education intervention was significantly improved (P=0.001) (Altuntas et al., 2012). Another study did research on physical limitations by using Short form 36 v2 which consisted of 36 items measuring 8 dimensions of health on a multi-item scale, and the dimension of body limitation is
involved in this measurement tool (Danielsen & Rosenbery 2014). However, the results showed that the course education intervention had no significant effect in physical function (Danielsen & Rosenbery 2014).

3.2.2 Psychological

3.2.2.1 Mental health

Three studies examined mental health. Two of them found improvements and one found no statistical significance. The first study applied the questionnaires Short Form 36 (SF-36) and found that stoma patients received course education intervention had significant improvement in mental health (P=0.040) (Danielsen & Rosenberg 2014). The second study also used Short Form 36 (SF-36) face-to-face before the initiation of the programme and the result showed mental health (MH) significant improvements in the form of course education intervention (P=0.000) (Altuntas et al., 2012). The third study used City of Hope Quality of Life Ostomy (COHQOL-O) survey and found that the score of mental health didn’t have any statistical significance after course education intervention (P=0.200) (Krouse et al., 2016).

3.2.2.2 Emotion

Three studies mentioned research on emotion. The results of two articles showed that emotion improved significantly after education intervention, while one article were not significant in the result. One study examined participants’ anxiety and depression and found significant improvements based on Hospital Anxiety and Depression Scale (HADS) (Krouse et al., 2016). The anxiety decreased with time and was significantly reduced at the time of the course education intervention (Krouse et al., 2016). According to the HADS anxiety scale, the score after course education intervention was obviously lower (P=0.020) (Krouse et al., 2016). The second study used Short Form 36 (SF-36) and concluded that course education had a significant improvement (P=0.000) in the role emotional (RE) (Altuntas et al., 2012). The third study also researched on role emotional (RE) but the results didn’t have any statistical significance after course education intervention (Danielsen & Rosenberg 2014).
3.2.3 Social

3.2.3.1 Length of stay in hospital
Length of stay in hospital was assessed in one study. The results of study showed that the length of stay in hospital was significantly shortened after education intervention. The study used postoperative hospital stay scale found that the information consulting education intervention significantly shortened total hospital stay (P < 0.001) (Forsmo et al., 2016).

3.2.3.2 Social adaption
Social adaption was assessed in two studies. One study showed significant improvement in social adaptability after education intervention, while the other article showed no significant improvement in it. One study used City of Hope Quality of Life Ostomy (COHQOL-O) survey which involved social adaption and found that social adaption of stoma patients had been significantly improved after course education intervention (P=0.002) (Krouse et al., 2016). Another study used Short form 36 (SF36) and one part of the scale concerned social adaption (Daielsen & Rosenberg 2014). The result showed that it didn’t have any statistical significance after course education intervention (Daielsen & Rosenberg 2014).

3.2.4 Self-management, Self-care and self-efficacy

3.2.4.1 Self-management
Only one study explored self-management and found improvement. The study used Self-management Scale and found that the total score of stoma self-management was significantly increased after peer-led education intervention (P = 0.000) (Cheng et al., 2012).

3.2.4.2 Self-care
Two RCT studies explored self-care which used Self-Care Knowledge Scale (KSC), Self-Care Attitudes Scale (ASC) and Self-Care Behaviour Scale (BSC) and concluded that patients received information consulting education intervention showed significant
improvement in overall self-care knowledge (P<0.001) attitude (P<0.001) and behavior (P<0.001) (Lo et al., 2011 & Lo et al., 2009).

### 3.2.4.3 Self-efficacy

Three studies examined self-efficacy and all of three articles showed an improvement in self-efficacy after education intervention. The first study used instrument of Self-efficacy for stoma management and the result showed that the self-efficacy of the participants was significantly improved (P=0.008) after receiving course education intervention (Krouse et al., 2016). The second study used Stoma self-efficacy scale and the result of this study indicated that the participants had higher self-efficacy after receiving follow-up education intervention (P=0.014) (Zhang et al., 2013). The last study used questionnaires with items about stoma self-efficacy and the results showed that participants received peer-led education intervention had a significant improvement (P=0.001) in their sense of self-efficacy (Cheng et al., 2012).

### 3.3 Study characteristics

Eleven studies were eligible to be included in the review (Daielsen & Rosenberg 2014; Cheng et al., 2012; Younis et al., 2012; Altuntas et al., 2012; Lo et al., 2011; Forsmo et al., 2016; Krouse et al., 2016; Lo et al., 2009; Zhang et al., 2013; Stokes et al., 2017; Karabulut et al., 2014). The earliest publication was 2009, the latest 2017. The characteristics of design, aim, sample, intervention, data collection methods, data analysis methods, result were described in the table 1. Among these trails, two of them were conducted in China (Cheng et al., 2012; Zhang et al., 2013), two in Taiwan (Lo et al., 2009; Lo et al., 2011), two in USA (Stokes et al., 2016; Krouse et al., 2016), two in Turkey (Karabulut et al., 2014; Altuntas et al., 2012), one in Norway (Forsmo et al., 2016), one in UK (Younis et al., 2012) and one in Canada (Daielsen & Rosenberg 2014). All studies were quantitative articles, among these articles, 8 of them were randomized controlled trials (Daielsen, A. K. & Rosenberg, J. 2014, Canada; Younis et al., 2012, UK; Lo et al., 2011, China; Forsmo et al., 2016, Norway; Lo et al., 2009, TaiWan; Zhang et al., 2013, China; Stokes et al., 2017, USA; Karabulut et al., 2014, Turkey). Three of them were longitudinal one-group design pilot study (Cheng et al., 2012; Altuntas et al., 2012;
Krouse et al., 2016). A total eleven trails comprised 1140 patients with different types of stoma. Study sample sizes ranged from 39 to 240.

### 3.4 Sample characteristics

The studies contained any kinds of stoma patients and most of them were center on ileostomy and colostomy. Three of the studies did not restrict specific types of stoma, the participants of these studies included no matter what kind of stoma (Daielsen & Rosenberg 2014; Lo et al., 2009; Lo et al., 2011). Two studies included colostomy patients (Cheng et al., 2012; Forsmo et al., 2016). Two studies included rectal cancer patients who were required to form a stoma (Krouse et al., 2016; Zhang et al., 2013). Three studies included both ileostomies or colostomies patients (Altuntas et al., 2012; Karabulut et al., 2014; Stokes et al., 2017) and one of the trails also studied urostomy patients (Altuntas et al., 2012). And one study only included loop ileostomy patients (Younis et al., 2012). Patient education intervention was delivered by nurses in five studies (Younis et al., 2012; Lo et al., 2011; Altuntas et al., 2012; Zhang et al., 2013; Stokes et al., 2017), by enterostoma therapist or enterostoma therapist nurses in two studies (Daielsen & Rosenberg 2014; Karabulut et al., 2014); by a trained researcher and enterostoma nurses in one study (Cheng et al., 2012); by ERAS nurse and stoma nurse specialist in one study (Forsmo et al., 2016); by health care professionals in one study (Lo et al., 2009) and by ostomy nurses in one study (Krouse et al., 2016).

### 4. Discussion

#### 4.1 Main result

This review involved 11 intervention studies summarizing the types of education interventions and examining the effects of these interventions on stoma patients. The education interventions included course education intervention, follow-up education intervention, information consulting education intervention, and peer-led education intervention. The effects of intervention on stoma patients were mainly discussed from the four aspects of physiological, psychological, social and self-management. Different education interventions had different effects on stoma patients.
4.2 Result discussion

4.2.1 Nurse’s role to promote physical aspect in patient education

Patient education had a great improvement in the physiological aspects of stoma patients, especially in reducing physical pain and reducing the incidence of complications. Compared to other education interventions, the effect of course education in improving patient’s physical aspect is more significant. Course education intervention enabled participants to actively share their experiences about managing postoperative complications and alleviating physical pain, which achieved the effect of learning from each other (Daielsen & Rosenberg 2014; Altuntas et al., 2012; Stoke et al., 2017). This form of patient education allowed patients to deepen their knowledge of the causes of complications and pain as well as solutions for improving physiological function. This result also mentioned in Faury et al (2017) study. Faury et al (2017) also did research on the relationship between patient education and physical aspect. In his study, most of the patient education was conducted in the form of course education, which could significantly reduce postoperative complications and alleviate physical pain in stoma patients, which was consistent with the results of this review (Faury et al., 2017).

In Orem’s theory, support education system can be used when nurses deliver patient education intervention (Orem, 2001). Nurses can adopt the form of course in patient education. In this mode, nurses mainly play the role of educators, providing some knowledge and experience in pain management and complication management (Chrobak, 2009). After receiving the course education intervention, stoma patients can finally be qualified for the role of patients and have the skills to deal with stoma problems independently (Chrobak, 2009).

4.2.2 Nurses role in promoting psychological aspect in patient education

Patient education could effectively improve the mental health and alleviate the occurrence of adverse emotions of stoma patients in this review. Faury’s review (2017) was consistent with the author's conclusion on the psychological impact of patient education. Faury et al (2017) concluded that patient education had a positive impact on mental health and emotional improvement of stoma patients.
Compared with other education intervention modes, course education had more significant effect on improving patients' psychological aspects. The course model of group education allowed patients to share their experience in disease management with each other and influence their own behavior (Debono & Cachia, 2007). This kind of group education provided an equal opportunity for each patient to participate and let the group members learn from each other. Therefore, patients could vent their negative emotions in this mode.

In Orem's theory of support education system, the nurse's role in this education system was to provide education and support (Orem, 2001). This support also included psychological support was especially important in support education system (Orem, 2001). Stoma patients were prone to anxiety, depression and other adverse psychological (Silva et al., 2017). This required nurses to pay more attention to the psychological status of stoma patients and apply support education system theory reasonably to give more psychological support to patients and teach more psychological skills in the process of patient education. To improve the psychological status of patients, nurses can carry out the course model of group education, let each patient actively interact in the course, and give them a voice. During the course, stoma patients can share some of their experiences and vent their negative emotions.

4.2.3 Nurse role in improving self-management ability in patient education

Patient education could improve the self-management ability of stoma patients. Among these four types of patient educations, peer-led education, Information consulting education and course education can all improve patients' self-management ability.

Peer-led education intervention focused on the discussion of attitudes and the training of skills rather than the teaching of stoma knowledge (Ahmadi, Sadeghi, & Loripoor, 2018). It was through the experienced stoma patients to inspire other stoma patients on the common topic concern to put forward suggestions and ideas (Ahmadi et al., 2012). Stoma patient could learn more self-management skills of stoma in the communication process (Ahmadi et al., 2012). In this education intervention, nurses were not only educators, but also guides. Nurses organized patients to establish a good way of communication, which can better promote peers to learn from each other and create a better learning atmosphere (Chrobak, 2009).
Information consulting education intervention through multimedia, text, oral intervention to convey more self-care related knowledge to stoma patients. Multimedia information consulting intervention was more accepted by stoma patients (Lo et al., 2011 & Lo et al., 2009). Nurses were able to provide targeted information about stoma patients' self-management. This includes the distribution of knowledge brochures, video presentations and one-on-one oral presentations. This intervention could most accurately answer the problem that patients want to solve, and it was more generally accepted by patients (Faury et al., 2017).

Course education designed the course content including how to change pockets, oral care and cleaning, and self-management knowledge of how to deal with waste (Faury et al., 2017). The design of the entire education content was done by nurses. The teaching ability of nurses also had a direct impact on the teaching effect (Chrobak, 2009).

Orem’s theory could be well applied to the self-management education of stoma patients. Orem’s partial compensation system pointed out that both nurses and patients need to participate in self-care activities (Orem, 2001). On the one hand, nurses should compensate patients for their self-care deficiencies (Orem, 2001). On the other hand, it was necessary to give play to patients’ initiative and help them improve their self-care ability (Orem, 2001). The main function of nurses in self-management education was to cultivate the self-care ability of patients. Nurses instructed stoma patients how to deal with life problems and help them learn self-management skills in this process (Chrobak, 2009).

4.2.4 Nurse role in promoting social aspect in patient education

In the results of this study, it could be concluded that patient education can shorten the length of hospital stay, but the effect was not significant in social adaptation. Compared with other education interventions, information consulting had a more significant effect on shortening length of hospital stay time. Information consulting education intervention had important benefits for perioperative stoma patients, especially to improve their overall quality of life (Phatak et al., 2014). In information consulting intervention, the stoma patient had a short conversation with the nurses before surgery. During this process, the nurse told patients the part of the intestine would be removed during the operation and the possible impact on stoma creation, such as changes in relationships, bathing and showering (Forsmo et al., 2016). This education intervention could most accurately
answer the problem that patients want to solve, and it was more generally accepted by patients.

In the aspect of social adaptation, there was no definite improvement in the social adaptation of patients with stoma after receiving the course education. Patient education has more of an indirect effect on patient social adaptation. The social adaptation of stoma patients was related to their psychological, physiological and self-management problems. By improving patients' self-management ability and physical and mental health, patients' social adaptability can be further improved. However, nurses cannot directly improve social adaptation through patient education. Nurses could only solve the causes of these social problems by educating their patients. Therefore, nurses should pay more attention to the social problems of stoma patients when educating patients, analyzed the causes of these social problems, and then find out the insufficiency of patient education according to these reasons, so as to make the education content of patients more reasonable (Chrobak, 2009).

4.3 Method discussion

This article reviewed the literature on the types of interventions and effects of patient education interventions (Poilt & Beck, 2017). The completion of a review requires careful sampling and data collection procedure. The two authors eliminated all plagiarism in the process of writing this review, carefully checked whether the content in the process of searching the literature conforms to the research questions, and made relevant records in each step of retrieval to ensure the reliability and validity of this scientific article (Poilt & Beck, 2017).

In selection criteria, the authors of this study formulated PICO search strategy to clarify the search process, and the whole search process was carried out based on PubMed database. This kind of scientific search strategy can make the search process clearer (Poilt & Beck, 2017). In order to limit search scope, in the process of searching the literature in the database, the author selected MeSH terms related to the research questions and combined them with free text using the Boolean operator “AND” and “OR” (Poilt & Beck, 2017). Through the limitation and combination of keywords, the search scope of the
article became smaller and more consistent with the research questions, which was also an advantage of this study (Poilt & Beck, 2017). In order not to omit other articles on relevant topics, the author used manual search to select articles which were relevant to the aim and research questions (Poilt & Beck, 2017).

The articles should have been published between Jan 1st, 2008 and Dec 30th, 2018 in order to limit the outcome of the search. The regulation of document retrieval time was the strength of this study but had some limitations at the same time. On the one hand, it could ensure the timeliness of selected articles. On the other hand, it would lead to early useful literature was not adopted (Polit & Beck, 2017).

The strength of this descriptive review was about the reliability. The authors of this study participated in the each step of participated in the process of literature search, screening articles related to the aim according to the inclusion criteria and excluding articles that were repetitive or irrelevant to the research questions. This effectively ensures that useful literature would not be left out, and more to ensure the reliability of the results (Polit & Beck, 2017).

The weakness of this descriptive review was regard to language bias. One of the inclusion criterion was that all articles should be written in English. In this way, other good articles related to the aim but not written in English would not be considered. In addition, English is not the author's first language, there may be some misunderstanding in the expression.

4.4 Clinical implications

The results of present literature reviews were to summarize nurse-led standardized education interventions and to assess the effects of interventions. Nurses may applied Orem' self-care theory in the process of patient education. Through patient guidance, encouragement, education and help, nurses can support patients' positivity was fully mobilized. And self-care for stoma patients may realize to a large extent, which greatly improved patients' physiological, psychological, social. Therefore, in clinical practice, this article has some referential significance for nurses to carry out patient education. Nurses can better understand the benefits of patient education for stoma patients and nurses can continue to maintain education that has a positive impact for patients. Nurses need to correctly evaluate stoma patients and select appropriate education intervention
methods according to specific conditions to improve patients’ physical health, psychological and social adaptability, self-management ability.

4.5 Suggestions for further research

At present, patient education involves more education of patients themselves and less of their families. Older people account for a large proportion of more stoma patients. They need family members to be involved in their lives. Therefore, researchers can consider increasing the synchronized education of family members when setting up participants.

Meanwhile, the education of stoma patients should involve physiological, psychological, social, self-management and other aspects, and a comprehensive education model is needed for intervention. Therefore, future studies should involve more comprehensive education model for patients.

4.6 Conclusion

The results of this review indicated that patient education interventions can have positive effects on physical, psychological and self-management. But there was no obvious effect in social adaption on social aspect. This review summarized the four patient education interventions on stoma patients, including course education intervention, follow-up education intervention, information consulting education intervention, peer-led education intervention. Meanwhile, these patient education interventions had positive effects on physiological, psychological, self-management. Nurses played an important role in implementing patient education intervention to patients with stoma. Nurses need to constantly learn and master various interventions to provide better nursing care for stoma patients.
Reference

Relevant articles quoted in the results section are marked with an asterisk (*) in the reference list.


### APPENDIX

**Table 3. Overview of selected articles**

<table>
<thead>
<tr>
<th>Author(s), years, country</th>
<th>Title</th>
<th>Aim</th>
<th>Study design/approach</th>
<th>Sample</th>
<th>Intervention</th>
<th>Data collection methods</th>
<th>Data analysis methods</th>
<th>Result</th>
</tr>
</thead>
</table>
| Altuntas et al., 2012, Turkey | The role of group education on quality of life in patients with a stoma | To evaluate the group education programmes on patients’ life quality, and find out significant features shaping the people who will benefit from these events most. | A longitudinal one-group design pilot study | Number: 72  
Age: 56.8 ±13.6 years  
Participants: patients with a diverting or permanent ileostomy, colostomy or urostomy | (1) **Intervention methods:** group education programme  
(2) **Frequence:** every 4–6 months.  
(3) **Conductors:** nurses | (1) Demographical parameters in the study group  
(2) The comparisons of pre- and post-education SF-36 results and the factors and the impact of demographic parameters | T tests; Chisquared (Pearson’s or Fischer’s Exact) test | Improvements in physical/social functioning  
- Yes  
Improvements in role-physical  
- Yes  
Improvements in role-emotion  
- Yes  
Improvements in general health  
- Yes  
Improvements in vitality |
<table>
<thead>
<tr>
<th>Study</th>
<th>Title</th>
<th>Methodology</th>
<th>Participants</th>
<th>Intervention Methods</th>
<th>Outcome Measures</th>
<th>Data Analysis</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheng et al., 2012, China</td>
<td>Evaluation of the Expert Patient Program in a Chinese Population with Permanent Colostomy</td>
<td>To evaluate the effect of a 3-week Expert Patient Program (EPP) on colostomy knowledge, stoma care self-efficacy, self-management, and psychosocial adjustment in Chinese patients who had a permanent colostomy</td>
<td>Number: 91</td>
<td>(1) Intervention methods: EPP course</td>
<td>(1) Stoma-related knowledge scale</td>
<td>Student paired t test</td>
<td>Improve the level of stoma-related knowledge - Yes</td>
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<td></td>
<td></td>
<td>A longitudinal one-group design pilot study</td>
<td>Age: 18-75</td>
<td>(2) Frequency: last for 3 weeks</td>
<td>(2) Colostomy-related self-efficacy scale</td>
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<td>Improve the level of self-efficacy - Yes</td>
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<td></td>
<td></td>
<td>Participants: patients with permanent colostomy from a stoma outpatient clinic</td>
<td>(3) Time: 2 hours a week</td>
<td>(3) Self-management scale</td>
<td>(4) Ostomates psychosocial adjustment scale</td>
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<td>Improve the level of self-management - Yes</td>
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<td>(4) Conductors: A trained researcher and an enterostomal nurse.</td>
<td>(5) EPP evaluation questionnaire</td>
<td>(6) Social-demographic information social</td>
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<tr>
<td>Daielsen, A.K. &amp; Rosenberg, J. 2014, Canada</td>
<td>Health Related Quality of Life May Increase when Patients with a Stoma Attend Patient Education – A Case-Control Study</td>
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<td>permanent colostomy</td>
<td>To explore the effect of a structured patient education program on health related quality of life.</td>
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<td></td>
<td>A randomized controlled trial</td>
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<td>A quantitative approach</td>
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<td>18+</td>
<td>Age: 18+</td>
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<td>(T: 25/C: 25)</td>
<td>Participants: (T: 25/C: 25)</td>
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<td></td>
<td>Participants were adult patients admitted to the surgical with all types of stoma</td>
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<td>Control group:</td>
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<td>(1) Intervention methods:</td>
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<td>Usual stoma care (the preoperative education included information on stoma care, and marking of the stoma site on the patient’s abdomen. postoperative education was ordinary stoma care guided by the nurses)</td>
<td>Usual stoma care and participants were visited in the ward by the ET two days after stoma creation. ET contacted the patient by telephone 5 days after discharge and set up patient education sessions</td>
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<td>(1) Baseline characteristics of participants with percentages in brackets.</td>
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<td></td>
<td>(2) Scores on Ostomy Adjustment Scale (OAS).</td>
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<td>(3) SF-36v2 scores. Values are median (range).</td>
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<td>descriptive statistics and nonparametric tests</td>
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<td></td>
<td>Improve the level of psychosocial adjustment</td>
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<td></td>
<td>Rise in HRQoL</td>
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<td></td>
<td>Improvements in bodily pain and mental health</td>
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<td></td>
<td>- Significant</td>
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</table>
| Forsmo et al., 2016, Norway | Pre- and postoperative stoma education and guidance within an enhanced recovery after surgery (ERAS) programme reduces length of hospital stay | To determine whether an ERAS care pathway can reduce the total postoperative hospital stay (THS) compared to standard care, mainly as a result of reduced morbidity | A randomized controlled trial | Number: 122  
Age: 18+  
Participants: (T: ERAS group 61/C: Standard group 61)  
Participants were patients scheduled for elective open or laparoscopic colorectal surgery  
Control group  
(1) Intervention methods: Standard care  
(2) Conductors: ET and ward nurses  
(3) Time: 1 year.  
Intervention group  
(1) Intervention methods: ERAS (Enhanced recovery after surgery programme)  
(2) Conductors: ET, physiotherapists, a sexologist and a lay teacher  
(2) Time: 45-60 minutes | 15D HRQoL | chi-square test; t-test; Mann-Whitney U test; Paired sample t-test | Total hospital stay was significantly shorter in the ERAS group - Yes |
<table>
<thead>
<tr>
<th>Source</th>
<th>Title</th>
<th>Methodology</th>
<th>Participants</th>
<th>Intervention Methods</th>
<th>Control group</th>
<th>Intervention group</th>
<th>Analysis Methods</th>
<th>Outcomes</th>
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</thead>
<tbody>
<tr>
<td>Karabulut et al., 2014, Turkey</td>
<td>Effects of planned group interactions on the social adaptation of individuals with an intestinal stoma: a quantitative study</td>
<td>A randomized controlled trial</td>
<td>Number: 50  Age: 18+  T: (n = 23)  C: (n = 27)  Participants: (T: 23/C: 27)  Participants were included ileostomy and colostomy patients</td>
<td>(1) Intervention methods: routine care services  (2) Time: 6 weeks  (3) Conductors: ET nurses</td>
<td>Control group  (1) Intervention methods: routine care services  (2) Time: 6 weeks  (3) Conductors: ET nurses</td>
<td>Intervention group  (1) Intervention methods: planned group interactions  (2) Time: 6 weeks  (3) Conductors: ET nurses</td>
<td>Friedman’s and Kruskal–Wallis analytical methods; Mann–Whitney U-test</td>
<td>Ostomy adjustment - Yes  Psychosocial adjustment - Yes  Psychological support - Yes</td>
</tr>
<tr>
<td>Krouse et al., 2016, USA</td>
<td>A chronic care ostomy self-management</td>
<td>A longitudinal one-group design pilot study</td>
<td>Number: 38  Age: 60-82 years</td>
<td>(1) Intervention methods: five-session program</td>
<td>(1) City of Hope Quality of Life Ostomy (COHQOL-O)</td>
<td>Paired t-tests; Pearson’s correlations; Improve patient activation</td>
<td>- Yes</td>
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<tr>
<td>Program for cancer survivors</td>
<td>of health-related quality of life (HRQOL) utilizing the Chronic Care Model through planned, proven strategies, management, and patient activation</td>
<td>Participants: were rectal cancer survivors with ostomies</td>
<td>(2) <strong>Frequency</strong>: initially approximately every 3 weeks, but midway was changed to sessions 1 and 2 being on 1 day, followed by sessions 3, 4, and 5 approximately 1 month later</td>
<td>(2) The 13-item Patient Activation Measure (PAM)</td>
<td>(2) The 13-item Patient Activation Measure (PAM)</td>
<td>(2) The 13-item Patient Activation Measure (PAM)</td>
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<tr>
<td>Multimedia education programme for patients with a stoma:</td>
<td>To evaluate the effectiveness of a multimedia education program in relation to stoma</td>
<td>A single-blind randomized controlled trial</td>
<td>Number: 102 Age: 18-90 years Participants: (T: 56/C: 46)</td>
<td>(3) <strong>Conductors</strong>: ostomy nurses</td>
<td>(3) <strong>Conductors</strong>: ostomy nurses</td>
<td>(3) <strong>Conductors</strong>: ostomy nurses</td>
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<tr>
<td>1) Intervention methods:</td>
<td>Patients were given the standard information brochure</td>
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<td>(4) The modified Group Health Association of America (GHAA)</td>
<td>(4) The modified Group Health Association of America (GHAA)</td>
<td>(4) The modified Group Health Association of America (GHAA)</td>
<td>(4) The modified Group Health Association of America (GHAA)</td>
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<tr>
<td>2) Intervention group</td>
<td>(1) Intervention methods:</td>
<td>(1) Intervention methods:</td>
<td>(2) The Self-Care Knowledge Scale (KSCS)</td>
<td>(2) The Self-Care Knowledge Scale (KSCS)</td>
<td>(2) The Self-Care Knowledge Scale (KSCS)</td>
<td>(2) The Self-Care Knowledge Scale (KSCS)</td>
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<tr>
<td>Number: 56</td>
<td>Patients were shown the</td>
<td>Patients were shown the</td>
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<td>Age: 18-90 years</td>
<td>standard information brochure</td>
<td>standard information brochure</td>
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<td>Participants: (T: 56/C: 46)</td>
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<td>Lo et al., 2011, TaiWan</td>
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<td>Lo et al., 2009, TaiWan</td>
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<td>The aim of this study was to compare the costs and effectiveness of enterostomal education using a multimedia learning education</td>
<td>A randomized controlled trial</td>
<td>Number:54</td>
<td>(1)Knowledge of self-care (KSC), (2)attitude of self-care (ASC) (3)behavior of self-care (BSC)</td>
<td>Chi-square test or Fisher’s exact test, and two independent sample t-tests; Analysis of covariance</td>
<td>Have more knowledge -Yes Have more positive attitude -Yes Better self-care behaviour</td>
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<tr>
<td>effectiveness evaluation</td>
<td>knowledge, self-care attitudes and behaviour with patients with a stoma in the postoperative period.</td>
<td>Participants: any patient with a stoma who can speak Chinese and English admitted to surgical unit in a medical centre in Taiwan.</td>
<td>A quantitative approach</td>
<td>Age:18+</td>
<td>(1)knowledge of self-care (KSC), (2)attitude of self-care (ASC) (3)behavior of self-care (BSC)</td>
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<tr>
<td>effectiveness evaluation</td>
<td></td>
<td>(2)Time: follow-up of 1 week</td>
<td>(3)Conductors: nurses</td>
<td>Number:54</td>
<td>(1)knowledge of self-care (KSC), (2)attitude of self-care (ASC) (3)behavior of self-care (BSC)</td>
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<tr>
<td>effectiveness evaluation</td>
<td></td>
<td>(2)Time: 30-45 minutes</td>
<td>(3)Conductors: nurses</td>
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</tr>
</tbody>
</table>
**Stokes et al., 2017, USA**

<table>
<thead>
<tr>
<th>Program (MLEP) and a conventional education service program (CESP).</th>
<th>Patient admitted to the surgical unit who can speak Chinese and English</th>
<th>(3) <strong>Conductors:</strong> Health care professionals</th>
</tr>
</thead>
</table>

**Institution of a Preoperative Stoma Education Group Class Decreases Rate of Peristomal Complications in New Stoma Patients**

The aim of this study was to compare selected postoperative complications (including stomal and peristomal complications), hospital length of stay, and readmission rates in a group of patients who attended a preoperative education class.

**A randomised controlled trial**

**A quantitative approach**

**Participants:**

- Number: 218
- Age: 19-89
- Participants: (T: 124/ C: 94)
- Participants with stoma who require surgery and their spouses/partners and caregivers

**Control group:**

1. **Intervention methods:** Usual care
2. **Conductors:** Nurses

**Intervention group**

1. **Intervention methods:** A preoperative 2-hour stoma education class
2. **Conductors:** Nurses

**Comparison of Demographic and Pertinent Clinical Data in the Control Group and the Stoma Education Group**

**Postoperative Outcomes in the Control and the Stoma Education Group**

- **χ² analysis**
- Fewer peristomal complications
- Significant
- Length of stay and the proportion
- Not significant
| Study (Younis et al., 2012, UK) | Preoperative educational intervention to a retrospective group of patients who did not receive the intervention. | A randomized controlled trial | Number: 240  
Age: T: the mean age was 65  
C: the mean age was 72  
Participants: (T: 120/C: 120) | Control group  
(1) Intervention methods:  
Postoperative stoma support and training by nursing staff within hospital and in the community  
(2) Time: 2 years  
(3) Conductors: nurses | Intervention group  
(1) Intervention methods:  
Preoperative stoma teaching and practise  
Postoperative stoma support and training by nursing staff within hospital and in the community | Statistical analysis; chi-square test | Shorten length of stay  
- Yes  
Decrease of rate of postponed discharge  
- Yes |

To promote independent stoma management post-operatively, thus expediting hospital discharge.

Participants were people who currently or previously had an ileostomy.

The study aimed to evaluate the impact of a preoperative educational intervention on postoperative outcomes.

ANOVA was used to compare demographic differences between the pre-ERP group and ERP group.

The primary outcome measures were length of stay, postponed discharge, and readmission rates.

The study found that the intervention group had a shorter length of stay and a lower rate of postponed discharge compared to the control group.

Participants were recruited from a tertiary care hospital in the UK.
<table>
<thead>
<tr>
<th>Author(s), years, country</th>
<th>Title</th>
<th>Aim</th>
<th>Study design/approach</th>
<th>Sample</th>
<th>Intervention</th>
<th>Data collection methods</th>
<th>Data analysis methods</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhang et al., 2013, China</td>
<td>Effects of Enterostomal Nurse Telephone Follow-up on Postoperative Adjustment of Discharged Colostomy Patients</td>
<td>The aim of this study was to evaluate the effect of enterostomal nurse telephone follow-up on the adjustment levels of discharged colostomy patients.</td>
<td>A randomized controlled trial A quantitative approach</td>
<td>Number: 103 Age: T: the mean age was 52.9 C: the mean age was 55.3 Participants: (T: 52/C: 51) Participants who undergone operations in China</td>
<td>Control group: (1) Intervention methods: Usual care (2) Conductors: nurses. Intervention group (1) Intervention methods: Usual care and Telephone Follow-up Intervention (2) Conductors: nurses.</td>
<td>(1) Demographic Characteristics and Length of Hospital Stay (2) Analysis of Variance Result for the Ostomy Adjustment Scale (OAS) and Stoma Self-efficacy Scale (SSES) (3) Statistics on Stoma Complications</td>
<td>t test $\chi^2$ tests</td>
<td>Better ostomy adjustment - Significant Stoma self-efficacy - Significant Less stoma complications - Yes</td>
</tr>
</tbody>
</table>
Altuntas et al., 2012, Turkey

The role of group education on quality of life in patients with a stoma

To evaluate the group education programmes on patients’ life quality, and find out significant features shaping the people who will benefit from these events most.

A longitudinal one-group design pilot study

Number: 72
Age: 56.8 ±13.6 years
Participants: patients with a diverting or permanent ileostomy, colostomy or urostomy

(1) **Intervention methods:** group education programme
(2) **Frequence:** every 4–6 months.
(3) **Conductors:** nurses

<table>
<thead>
<tr>
<th>Demographical parameters in the study group</th>
<th>(1)Demographical parameters in the study group</th>
<th>(2) The comparisons of pre- and post-education SF-36 results and the factors and the impact of demographic parameters</th>
<th>T tests; Chisquared (Pearson’s or Fischer’s Exact) test</th>
<th>Improvements in physical/social functioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>T tests; Chisquared (Pearson’s or Fischer’s Exact) test</td>
<td>Improvements in physical/social functioning</td>
<td>-Yes</td>
<td>Improvements in role-physical</td>
<td>-Yes</td>
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<tr>
<td>Improvements in role-emotion</td>
<td>-Yes</td>
<td>Improvements in general health</td>
<td>-Yes</td>
<td>Improvements in vitality</td>
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<tr>
<td>Improvements in mental/physical health</td>
<td>-Yes</td>
<td>Improvements in mental/physical health</td>
<td>-Yes</td>
<td>Improvements in mental/physical health</td>
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<tr>
<td>Study</td>
<td>Title</td>
<td>Methodology</td>
<td>Participants</td>
<td>Intervention</td>
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<tr>
<td>Cheng et al., 2012, China</td>
<td>Evaluation of the Expert Patient Program in a Chinese Population With Permanent Colostomy</td>
<td>A longitudinal one-group design pilot study</td>
<td>Number: 91 Participants: patients with permanent colostomy from a stoma outpatient clinic</td>
<td>(1) Intervention methods: EPP course (2) Frequency: last for 3 weeks (3) Time: 2 hours a week. (4) Conductors: A trained researcher and an enterostomal nurse.</td>
</tr>
<tr>
<td>Daielsen, A.K. &amp; Rosenberg, J., 2014, Canada</td>
<td>Health Related Quality of Life May Increase when Patients To explore the effect of a structured patient</td>
<td>A randomized controlled trial</td>
<td>Number: 50 Control group: (1) Intervention methods: Usual</td>
<td>(1) Baseline characteristics of participants with descriptive statistics and (2) Stoma-related knowledge scale (3) Colostomy-related self-efficacy scale (4) Self-management scale (5) Ostomates psychosocial adjustment scale (6) EPP evaluation questionnaire (7) Social-demographic information social demographic information</td>
</tr>
</tbody>
</table>
with a Stoma
Attend Patient
Education – A
Case-Control
Study

education
program
on health related
quality of life.

A quantitative
approach

Participants: (T:
25/C: 25)

Participants
were adult
patients
admitted to the
surgical with all
types of stoma
stoma care( the
preoperative
education included
information on
stoma care, and
marking of the
stoma site on the
patient’s abdomen.
postoperative
education was
ordinary stoma care
guided by the
nurses )

(2) Time: 1 year.

(3) Conductors:
ET and ward
nurses.

(1) Intervention
methods: Usual
stoma care and
participants were
visited in the ward
by the ET two
days after stoma
creation. ET
contacted the
patient by
telephone 5 days
after discharge
and set up patient
education sessions
after hospital
discharge.

(2) Time: 1 year.

(3) Conductors:
ET, physiotherapists,a
sexologist and a
lay teacher.

percentages in
brackets.

(2) Scores on Ostomy
Adjustment Scale
(OAS).

(3) SF-36v2 scores.
Values are median
(range).

nonparametri-
c tests

Improvements in
bodily pain and
mental health
-Significant
Forsmo et al., 2016, Norway

Pre- and postoperative stoma education and guidance within an enhanced recovery after surgery (ERAS) programme reduces length of hospital stay in colorectal surgery

To determine whether an ERAS care pathway can reduce the total postoperative hospital stay (THS) compared to standard care, mainly as a result of reduced morbidity

A randomized controlled trial

A quantitative approach

Number: 122
Age: 18+
Participants: (T: ERAS group 61, C: Standard group 61)

Control group
(1) Intervention methods: Standard care
(2) Conductors: ward nurses and stoma nurse specialist

Intervention group
(1) Intervention methods: ERAS (Enhanced recovery after surgery programme)
(2) Time: 45-60 minutes
(3) Conductors: ERAS nurse and stoma nurse specialist.

Karabulut et al., 2014, Turkey

Effects of planned group interactions on the outcomes of patients with an ileostomy

The aim of this study was to investigate the effects of a

A randomized controlled trial

Number: 50
Age: 18+
T: (n = 23)

Control group
(1) Intervention methods: routine care services

Intervention group
(1) Intervention methods: Ostomy Adjustment Inventory (OAI)

15D HRQoL

chi-square test; t-test; Mann-Whitney U test; Paired sample t-test

Total hospital stay was significantly shorter in the ERAS group - Yes
<table>
<thead>
<tr>
<th>Study</th>
<th>Title</th>
<th>Participants</th>
<th>Intervention Methods</th>
<th>Conductors</th>
<th>Time</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Krouse et al., 2016, USA</td>
<td>A chronic care ostomy self-management program for cancer survivors</td>
<td>Number:38 Age: 60-82 years Paricipants: were rectal cancer survivors with ostomies</td>
<td>Five-session program (1)Intervention methods: Frequency: initially approximately every 3 weeks, but midway was changed to sessions 1 and 2 being on 1 day, followed by sessions 3,4, and 5 approximately 1 month later</td>
<td>Ostomy nurses</td>
<td>6 weeks</td>
<td>Improve patient activation - Yes Improve self-efficacy - Yes Improve total HRQOL - Yes</td>
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</tbody>
</table>
| Lo et al., 2011, Taiwan | Multimedia education programme for patients with a stoma: effectiveness evaluation | management, and patient activation | Improve physical well-being and social well-being -Yes | Lo et al., 2011, Taiwan

**Multimedia education programme for patients with a stoma: effectiveness evaluation**

To evaluate the effectiveness of a multimedia education program in relation to stoma knowledge, self-care attitudes and behaviour with patients with a stoma.

A single-blind randomized controlled trial

A quantitative approach

**Participants:**

Number: 102

Age: 18-90 years

Participants: T: 56/C: 46

Participants: were any patient with a stoma who can speak Chinese and participating in the study.

**Control group**

1. **Intervention methods:**

   Patients were given the standard information brochure on stoma care used by the surgical unit as predischarge information.

2. **Time:** follow-up of 1 week

**Intervention group**

1. **Intervention methods:**

   Patients were shown the multimedia education programme (MEP).

2. **Time:** 30-45 minutes

**Assessment tools:**

1. **Demographic information**
2. **The Self-Care Knowledge Scale (KSCS)**
3. **The Self-Care Attitudes Scale (ASCS)**
4. **The Self-Care Behaviour Scale (BSCS)**

**Analysis:**

Chi-square test or Fisher’s exact test, and two independent sample t-tests; Analysis of covariance

**Findings:**

1. Improved overall self-care knowledge -Significantly
2. Improved attitudes and behaviour statistically -Significantly
3. Reduced survivor anxiety -Significantly
4. Improved physical well-being and social well-being -Yes
<table>
<thead>
<tr>
<th>Lo et al., 2009, Taiwan</th>
<th>A cost–effectiveness analysis of a multimedia learning education program for stoma patients</th>
<th>stoma in the postoperative period.</th>
<th>English admitted to surgical unit in a medical centre in Taiwan.</th>
<th>(3)Conductors: nurses</th>
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<tr>
<td></td>
<td>A randomized controlled trial</td>
<td>A quantitative approach</td>
<td>Control group</td>
<td></td>
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<tr>
<td></td>
<td>Number: 54</td>
<td>Age: 18+</td>
<td>(1) Intervention methods: conventional education service program (CESP)</td>
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<tr>
<td></td>
<td>Participants: (T: 27/C: 27)</td>
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<td>(2) Time: 20 minutes</td>
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<td></td>
<td>Participants were any stoma patient admitted to the surgical unit who can speak Chinese and English</td>
<td>(3) Conductor: nurses</td>
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<td>Intervention group</td>
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<td>(1) Intervention methods: multimedia learning education program (MLEP)</td>
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<td>(2) Time: 30-45 minutes</td>
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<td></td>
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<td>(3) Conductor: Health care professionals</td>
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<td>Have more knowledge - Yes</td>
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<td>Have more positive attitude - Yes</td>
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<td>Better self-care behaviour - Yes</td>
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<td>less cost. - Yes</td>
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</table>
| Stokes et al., 2017, USA | Institution of a Preoperative Stoma Education Group | The aim of this study was to compare selected postoperative complications (including stomal and peristomal complications), hospital length of stay, and readmission rates in a group of patients who attended a preoperative educational intervention to a retrospective group of patients who did not. | A randomized controlled trial | Number: 218
Age: 19-89
Participants: (T: 124/ C: 94) | Control group:
(1) **Intervention methods**: Usual care
(2) **Conductors**: nurses.

Intervention group
(1) **Intervention methods**: A preoperative 2-hour stoma education class
(2) **Conductors**: nurses.

(1) Comparison of Demographic and Pertinent Clinical Data in the Control Group and the Stoma Education Group
(2) Postoperative Outcomes in the Control and the Stoma Education Group | χ² analysis | Fewer peristomal complications
- Significant
Length of stay and the proportion
- Not significant |
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Study Design</th>
<th>Participants</th>
<th>Control Group</th>
<th>Intervention Group</th>
<th>Demographic Differences</th>
<th>Morbidity and Mortality Rates</th>
<th>Length of Stay, Postponed Discharge</th>
<th>Readmission Rates</th>
<th>Statistical Analysis</th>
<th>Shorten Length of Stay</th>
<th>Decrease of Rate of Postponed Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younis et al., 2012, UK</td>
<td>Focused preoperative patient stoma education, prior to ileostomy formation after anterior resection, contributes to a reduction in delayed discharge within the enhanced recovery programme</td>
<td>A randomized controlled trial</td>
<td>Number: 240</td>
<td>Control group: Participants: (T: 120/C: 120) Age: T: the mean age was 65, C: the mean age was 72</td>
<td>Intervention group: (1) <strong>Intervention methods:</strong> Postoperative stoma support and training by nursing staff within hospital and in the community (2) <strong>Time:</strong> 2 years (3) <strong>Conductors:</strong> nurses</td>
<td>(1) Demographics differences between the pre-ERP and ERP patients (2) Morbidity and mortality rates (3) Length of stay, postponed discharge due to delayed stoma management and readmission rates</td>
<td>Yes</td>
<td>Chi-square test</td>
<td></td>
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<tr>
<td>Zhang et al., 2013, China</td>
<td>Effects of Enterostomal</td>
<td>A randomized controlled trial</td>
<td>Number: 103</td>
<td>Control group:</td>
<td>Intervention group: (1) <strong>Intervention methods:</strong> Preoperative stoma teaching and practise Postoperative stoma support and training by nursing staff within hospital and in the community (2) <strong>Time:</strong> 2 years (3) <strong>Conductors:</strong> nurses</td>
<td>(1) Demographic Characteristics and</td>
<td>t test</td>
<td>Better ostomy adjustment</td>
<td></td>
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| Nurse Telephone Follow-up on Postoperative Adjustment of Discharged Colostomy Patients | evaluate the effect of enterostomal nurse telephone follow-up on the adjustment levels of discharged colostomy patients. | A quantitative approach | Age: T: the mean age was 52.9  
C: the mean age was 55.3  
Participants: (T: 52 / C: 51)  
Participants who undergone operations in China | (1) **Intervention methods**: Usual care  
(2) **Conductors**: nurses. | (1) **Intervention methods**: Usual care and Telephone Follow-up Intervention  
(2) **Conductors**: nurses. | Length of Hospital Stay  
(2) Analysis of Variance Result for the Ostomy Adjustment Scale (OAS) and Stoma Self-efficacy Scale (SSES)  
(3) Statistics on Stoma Complications | - Significant Stoma self-efficacy  
- Significant Less stoma complications  
- Yes |