

# The impact of stoma management education on the self-care abilities of individuals with an intestinal stoma

Yani Liu, Li Wang and Liping Zhu

## ABSTRACT

An intestinal stoma is a surgically formed exteriorisation of the large or small bowel on to the anterior abdomen wall, to enable faeces to be excreted from the body. Patients living with a stoma may encounter physical, psychological, and social barriers and challenges. Stoma self-management education is essential to improving self-care competence, and patients who perceive the benefits of self-management education show a better adjustment to living with a stoma. This literature review explored the effectiveness of patient education interventions in improving the self-care knowledge and skills of patients living with an ostomy. The findings from the nine studies reviewed showed that self-management education approaches are effective in improving patients' self-care. The application of different approaches to ostomy self-management education, such as a transtheoretical model, chronic care model, telehealth and multimedia-based programmes – helped improve patients' self-care ability. The review also found that patients needed at least 3 months to develop the skills and maintain their ability to self-care. In addition, two education sessions provided to patients in hospital pre-discharge appeared sufficient for improving and maintaining self-care abilities. Where patients received education in hospital post-surgery, 2 or 3 sessions over 7 days were found to be sufficient to provide them with stoma care skills. Education sessions based on the transtheoretical model and chronic care model or telehealth helped maintain and reinforce self-care behaviours following discharge.

**Key words:** Stoma ■ Ostomy ■ Self-management ■ Self-care ■ Education

**C** olostomy and ileostomy are the two most frequently performed types of intestinal ostomy, which is a surgically formed exteriorisation of the large or small bowel on to the anterior abdominal wall, to enable the excretion of faeces from the body. Despite advances in stoma surgery, postoperative

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complications occur in up to 30% of cases and remain a major concern (Babakhanlou et al, 2022). Krishnamurty et al (2017) demonstrated that complications, which include skin mucosa separation, retraction, necrosis and parastomal abscess, often occurred within 30 days of surgery. Peristomal skin complications are the most frequent problems encountered in patients with an intestinal stoma, with estimates putting the incidence as high as 75% (Salvadalea et al, 2020). A qualitative study by Werth et al (2014) found that 90% of patients considered that education during their hospital stay in self-management of their stoma was essential. The aim of self-management is to maintain a satisfactory state of health and health functioning through effective interventions, allowing patients to lead more independent and healthy lives (Grady and Gough, 2014).

In the UK, self-management education (NHS England, 2023), supported by quality standards on good practice in self-management education developed by the Quality Institute of Self-Management Education and Training (<https://www.qismet.org.uk>), involves helping patients to develop an understanding of their condition and develop personal self-management behaviours. In China, research on the self-management model has focused on diabetes, hypertension, psychiatric disorders and cancer pain management. It has been developed mainly in the form of adding self-management skills to health education, in combination with electronic health (eHealth) technology (Gong et al, 2020; Shen et al, 2020).

## Introduction

Several studies have shown that following the creation of a stoma patients may experience stigmatisation; having a stoma will also affect people's perception of their body image and sexuality, and impact on other physical and psychological issues (Luo et al, 2018; Villa et al, 2018; Choudhary and Kaur, 2020). Following stoma creation, it can take 2–4 weeks for the individual to adjust and adapt to life after hospital discharge, and the many challenges patients experience can undermine their confidence in caring for their stoma, which in turn affects quality of life (Lim et al, 2015; Capilla-Diaz et al, 2016).

Due to the complexity of stoma care and, in many cases, patients' limited stoma-related knowledge, demand for stoma education has been increasing over the past few years (Cengiz and Bahar, 2017). In order to minimise discomfort and complications,

as well as reduce the risk of hospital readmission, it is vital to support patients to independently master good self-care skills and to help them understand appropriate product selection and usage (Williams, 2012). Forsmo et al (2016) suggested that nurse-led provision of pre-operative and postoperative stoma education is essential for ensuring independent self-care and enabling patients to maintain a good quality of life. Therefore, providing ostomy education for patients in the immediate postoperative period while they are still in hospital should be a key nursing activity, aiding acceptance of living with a stoma and promoting self-management. People who perceive the benefits of self-management education have shown better adjustment to living with a stoma and have a better quality of life (Villa et al, 2018).

Nurses can choose from a number of models to deliver high-quality patient education on stoma self-management:

- **Chronic care model:** this model promotes effective collaboration between informed and engaged patients and well-prepared healthcare teams, leading to improved disease management and clinical outcomes (Kadu and Stolee, 2015)
- **The transtheoretical model:** this focuses on understanding individual behaviour change and how people move dynamically through five stages (pre-contemplation, contemplation, preparation, action and maintenance) (Prochaska and Velicer, 1997). This model acknowledges that people may be unaware of the need to change. In the first two stages, patients are encouraged to consider and make a small change; they are next supported to move on and make plans in the preparation stage; they then actively engage in behaviour change for 6 months, and finally include the change in their daily routine, to maintain the new behaviour over 6 months (Brug et al, 2005)
- **Self-education:** this approach to patient education can take a number of forms. During hospitalisation, patient education can be delivered via individual or group sessions; following post-discharge it can be provided via telephone calls, telehealth education and home visits.

The literature review described below builds on patient self-management and psychological experiences, and the challenges they encounter, to examine the effectiveness and impact of self-management education on improving patient self-care and experiences after educational interventions.

## Methods

The literature review set out to explore the following research question: how does ostomy self-management education influence the ability of individuals with an intestinal stoma to self-care? The objectives were to critically examine the effectiveness of different patient education interventions in improving their self-care knowledge and skills in managing their stoma.

Research studies can use a variety of approaches: quantitative, qualitative and mixed methods. In the case of this review, studies using quantitative methodology provided data on the effectiveness of self-management education in supporting an individual's abilities to improve their self-care skills, while those using qualitative approaches explored patients' lived experience after the delivery of self-management education; mixed-methods

**Table 1. Inclusion and exclusion criteria for review**

	Inclusion criteria	Exclusion criteria
Primary research studies	Qualitative study, quantitative study and mixed methodology	Systematic reviews and other types of secondary research
Age of patients	Adult patients, aged over 18 years	Patients aged under 18 years
Language of publication	English	Non-English
Publication date	Within 10 years	Over 10 years
Stoma type (disease stage)	Intestinal stoma (colostomy, ileostomy, enterostomy)	Urostomy

approach studies used both methodologies. The inclusion criteria included individuals with a stoma aged more than 18 years, with the intervention being ostomy self-management education, and the outcome assessment of competency in self-care (Table 1).

Articles were sourced through Medline, CINAHL, the Cochrane Library and PubMed. The key words used in the search were 'self-management', 'self-care', 'education', 'stoma', 'ostomy', 'colostomy', 'ileostomy' and 'enterostomy'. The database search used the search phrases 'adult patient' AND 'stoma OR ileostomy OR colostomy OR ostomy OR enterostomy' AND 'self-management education OR stoma education OR self-care education'.

A total of 229 articles were found using the above search criteria. After removing duplicates and screening the remaining articles to ensure they evaluated educational interventions, nine articles remained. These included data on educational interventions and so were included for analysis.

## Findings

The nine studies comprised six quantitative studies, one qualitative study and two mixed-methods studies. The Johns Hopkins Nursing Evidence-Based Practice model was used to appraise the evidence level and the quality of the nine studies. The primary aim of these articles was to explore the impact of stoma self-management education on patients' self-management behaviours or self-care abilities, including the impact on self-care knowledge and skills.

Three studies (Ercolano et al, 2016; Krouse et al, 2016; Song et al, 2021) focused on providing ostomy self-management interventions based on the chronic care model with multidisciplinary team involvement. Another study (Wen et al, 2019) used a transtheoretical model-based intervention on self-management education, with two (Sun et al, 2018; Grant et al, 2022) conducting ostomy self-management education delivered using a telehealth approach through videoconferencing. One study (Wang et al (2021) used a DVD-based multimedia educational format. Moreover, Seo (2019) and Goldblatt et al (2018) investigated the relationship between the intensity and duration of stoma health education on patient self-care and the acquisition of relevant stoma knowledge and skills, respectively.

**Table 2. Study design and outcomes**

Author(s)	Design	Outcome measurements
Ercolano et al, 2016	Qualitative study of content analysis	Understand the primary goal of ostomates
Krouse et al, 2016	Longitudinal, pilot trial (mixed methods)	<ul style="list-style-type: none"> <li>■ Physical wellbeing</li> <li>■ Self-efficacy for ostomy management</li> <li>■ Satisfaction with ostomy care</li> <li>■ Total health-related quality of life</li> </ul>
Goldblatt et al, 2018	Quantitative study	<ul style="list-style-type: none"> <li>■ Independent management of stoma at discharge from hospital</li> <li>■ Factors associated with achieving independent stoma management</li> <li>■ Time taken to achieve stoma self-care</li> </ul>
Sun et al, 2018	Three-year, multi-site, randomised controlled trial (RCT) (quantitative study)	<ul style="list-style-type: none"> <li>■ Self-efficacy to perform ostomy self-management behaviour</li> <li>■ Ostomy knowledge</li> <li>■ Anxiety and depression</li> <li>■ Health-related quality of life</li> </ul>
Wen et al, 2019	A single blind RCT, and follow-up study (quantitative study)	<ul style="list-style-type: none"> <li>■ Self-management behaviour</li> <li>■ Decision balance</li> <li>■ Self-efficacy</li> </ul>
Seo, 2019	Pre-test/post-test design (quantitative study)	<ul style="list-style-type: none"> <li>■ Self-care knowledge level</li> <li>■ Self-efficacy</li> <li>■ Ability to change stoma appliance</li> </ul>
Wang et al, 2021	A quasi-experimental design (quantitative study)	Self-care knowledge and skills
Song et al, 2021	A prospective, non-randomised trial (quantitative study)	<ul style="list-style-type: none"> <li>■ Ostomy care self-efficacy and self-management ability</li> <li>■ Peristomal and stoma complication incidences</li> <li>■ Intervention satisfaction</li> </ul>
Grant et al, 2022	Multi-site randomised prospective trial with qualitative analysis (mixed methods)	Theme: physical, psychological, social and spiritual wellbeing, and ostomy-specific issues

Table 2 provides an overview of the selected studies, including their design and outcome measures.

## Discussion

The objectives of the review were to critically examine the effectiveness of patient education interventions in improving the self-care knowledge and skills of patients with an ostomy, and determine which educational approaches are effective in improving patients' self-care skills. A range of factors was demonstrated to influence the effectiveness of strategies in promoting self-care management. The review found that effective approaches included use of the self-education model of delivery, and depended on the time span over which education was delivered and the number of sessions, and family or caregiver influence over the intervention.

## Model of stoma self-management

### Transtheoretical model

Wen et al (2019) applied the transtheoretical model to ostomy self-management education; the results showed the effectiveness

of transtheoretical model-based ostomy education at 1 month, 3 months and 6 months after discharge in two patient groups. The researchers found that those in the intervention group who had received the transtheoretical model-based ostomy education moved to the action and maintenance phases of stoma care more rapidly, while more than 60% of the control group had not initiated stoma self-care behaviours at 3 month follow-up.

This result was consistent with the findings of studies by de Freitas et al (2020) and Selçuk-Tosun and Zincir (2019), who found that patients might perform self-care behaviour in the later stage. However, in these studies, using the transtheoretical model of delivering education took patients 3–6 months to achieve self-care behaviour changes.

In addition, research reported by Wen et al (2019) found that patients in the intervention group were able to better master stoma care knowledge and perform stoma care independently compared with the control group. Using the transtheoretical model to develop and implement ostomy self-management education to help patients develop beliefs about behavioural change and transform them into positive health actions at different stages of their behaviour can significantly improve self-care, making it worthy of clinical application.

### Chronic care model

Krouse et al (2016) conducted a mixed-methods study to explore how ostomy self-management education might influence the adaptation of patients to living with a stoma using the chronic care model. They used the City of Hope Quality of Life Ostomy (COH-QOL-O) questionnaire (Grant et al, 2004) to assess the quality and effectiveness of the stoma self-management programme pre-intervention and post-intervention.

Outcome indicators were generally achieved and maintained throughout the project; however, behaviour changes had not significantly improved post-intervention, although they did improve at follow-up. Patients' motivation improved after the intervention and this was maintained at follow-up. The increase in motivation scores indicated that participants had gained knowledge, skills and confidence in managing their own health. Their physical and social health was also found to have improved considerably, both post-intervention and at follow-up. These findings suggest that the chronic care model is effective in embedding stoma self-care management behaviours over the longer term. This study also evaluated the quality of the education sessions based on the chronic care model, the feedback from patients and the scores received from participants regarding the educators, ostomate peers and the curriculum. The overall feedback was positive: some participants suggested that the education sessions might be better delivered in larger groups using visual aids.

Ercolano et al (2016) designed an ostomy self-management training programme based on the principles of the chronic care model, which involved health education in physical, emotional, social and spiritual aspects of self-care. The study required ostomy attendees to write down self-care goals – Fredrix et al (2018), whose review looked at studies evaluating diabetes self-management interventions, suggested that the process of goal-setting can facilitate behavioural change and help people

identify the goals they needed to achieve. Ercolano et al's (2016) qualitative study showed that participants chose fewer social and psychological-related goals compared with physical goals, and they were mainly focused on ostomy-related complications or barriers. From the patient's point of view, the chronic-care-model-based stoma self-management programme should focus on the physical aspects required to meet patients' target needs.

## Education delivery

### Caregiver support

There is debate over whether to involve caregivers in ostomy self-management education programmes. In a study by Grant et al (2022) caregivers were included in self-management education. However, the recruitment criteria used by Sun et al (2018) highlighted that individuals with a regular caregiver should not be included in trials because in some cases having an over-reliance on a caregiver can compromise a patient's ability to self-care and consequently affect intervention outcomes.

Villa et al (2019) noted that the contribution of caregivers is that they can expend the effort and offer time and emotional support to help a loved one who is ill or disabled. The study by Rosland et al (2012) noted that patients with colostomies who did not have support and assistance from family and friends were more prone to poor adjustment following ostomy formation; the higher the level of caregiver support, the better a patient can control their chronic condition and better adhere to their self-management programme. However, Vellone et al (2015) stated that the care of patients by family members often shifts from giving recommendations to patients on how to perform self-care to instead directly providing care. This increases a patient's dependence on family caregivers and reduces self-care capacity. The role of family caregivers in improving patients' self-care needs to be investigated further, and more studies are required to demonstrate these consequences and explain them.

### Telehealth

Sun et al (2018), Wang et al (2021) and Song et al (2021) considered the delivery methods of ostomy self-management education. Sun et al's study (2018) focused on the telehealth approach in delivering ostomy health education, enabling participants with ostomies to be managed via electronic communication. The participants in this study received a distance stoma education course at home via videoconferencing. The results showed that stoma self-management training had a positive impact on an individual's physical, social and spiritual health needs and that the telemedicine approach contributed to the successful implementation of the stoma education course. The motivation and self-efficacy scores for patients' stoma self-care were significantly improved compared with four other outcomes (physical, psychological, social wellbeing and spiritual wellbeing), and were maintained 6 months post-intervention.

Research by Grant (2022), which was a mixed methodology study, explored further the patients' challenges in living with an ostomy following completion of a self-management telehealth programme based on the intervention used by Sun et al (2018). The qualitative aspect of Grant's (2022) study compared the challenges experienced by post-stoma patients who had received

**Table 3. Educational approaches used**

Author(s)	Delivery method	Educational content
Ercolano et al, 2016	Chronic care model-based self-management training	Sessions 1 and 2. Practical education on stoma care and physical wellbeing Session 3. Psychological management Session 4. Social wellbeing Session 5. Spiritual wellbeing
Krouse et al, 2016	Chronic-care-model-based education	Session 1. Practical curriculum for physical concerns Session 2. Social wellbeing Session 3. Designed for caregiver Session 4. Lifestyle management Session 5. Booster session and Q&A
Goldblatt et al, 2018	Pre- and postoperation intensive education	Education on the physiological aspects of stoma care
Sun et al, 2018	Chronic-care-model-based intervention. Three out of five sessions aimed at patients, one at caregivers and the final, booster session was aimed at both groups	Session 1. Provide stoma self-care knowledge and skill using mixed media presentation and hands-on practice Session 2. Social wellbeing education Session 3. Lifestyle education Session 4. Same content, but designed for caregivers Session 5. Group-based discussion and Q&A
Wen et al, 2019	Transtheoretical-model-based education conducted by trained nurses (one researcher and one enterostomal therapy (ET) nurse); four sessions were delivered before and after discharge	Session 1, Health need assessment and goal-setting at precontemplation stage Session 2. Delivery of stoma management skill and knowledge at preparation stage Session 3. Training and taking action Session 4. Maintaining and reinforcement
Seo, 2018	Ostomy management reinforcement education	Hands-on practical skill training, self-care knowledge explanation and instruction with feedback system at the end
Wang et al, 2021	Video-based education	10-minute video designed according to scales of self-care knowledge and skills. Included preparation and procedures for stoma care
Song et al, 2021	Standard care and 6-week period of using a multimedia messaging app as part of self-management education	Standard care included general education about stoma care before discharge. ET nurses provided information about self-management skills and inspiring life stories of survivors through multimedia messaging app after discharge
Grant et al, 2022	Five telehealth-enabled (by video communication devices) group sessions administered by 2 trained ET nurses and 3-7 peer ostomates	Same as Sun et al (2018) Session 1. Provide stoma self-care knowledge and skill using mixed media presentation and hands on practice Session 2. Social well-being education Session 3. Lifestyle education Session 4. Same content, but designed for caregivers Session 5. Group-based discussion and Q&A

## KEY POINTS

- Two or three health education sessions over seven days are sufficient to empower in-hospital patients to undertake stoma self-care
- The transtheoretical model, chronic care model or the use telehealth can help maintain and reinforce self-care behaviours after discharge
- The role and involvement of family caregivers in ostomy self-management education programmes merits further research

a telehealth intervention with those who had received usual care. The results revealed that postoperative treatment-related problems were common in both groups, but that the control group faced more social and psychological challenges.

Song et al's (2021) study was based on the use of a telehealth multimedia messaging app: they found that use of the app improved patients' ability to self-care and reduced the incidence of peristomal complications. Participants also showed satisfaction with the app-based intervention.

The research by Wang et al (2021) focused on using multimedia DVDs to deliver self-management education sessions. The findings post-intervention showed a significant improvement in postoperative self-care knowledge and skills among participants who had received the DVD intervention compared with the controls. The results contradicted the findings of a study by Crawford et al (2012), which reported that the nursing instruction plus DVD method is as effective as face-to-face instruction by nurses alone, and more evidence is needed to identify the validity of using the combined DVD method. However, the generalisability of findings from studies focusing on telehealth interventions and the use of a multimedia app is likely to be limited due to disparities of access. For example, patients living in less economically developed communities may lack the smartphone technology required to access telemedicine (Allaert et al, 2020). It is therefore important to take this factor into account when selecting an education programme of stoma self-care in a particular setting.

## Number of education sessions

Seo (2019) focused on the effectiveness of the timing of the provision of ostomy management education on the self-care ability of ostomates. Two experimental groups were provided with reinforced ostomy education at different stages of their patient journey to identify optimal timing for delivering self-care education to patients. The results showed that those who received two or three sessions of ostomy self-management reinforcement education had higher scores in self-efficacy and ability to administer self-care. In addition, the scores increased when the number of education sessions increased from one to two, but when this was further increased from two to three, the study found that the scores remained the same or even decreased.

Based on this finding, it can be deduced that two ostomy self-management education sessions are sufficient to improve the self-care of ostomy patients and that more sessions would be unnecessary, given that a greater number of frequent educational sessions may reduce patients' independence and confidence in mastering self-care skills. Goldblatt et al (2018) investigated how

long it took patients to achieve self-care ability, and the factors associated with this period. The findings of the study indicated that patients required around 7 days to achieve independence in self-care, and 71% of participants had developed self-care skills at discharge. The study also found that combined pre- and postoperative stoma education was more effective than post-surgery stoma education alone. The details of the educational content used in the studies reviewed are presented in *Table 3*.

## Conclusion

Overall, stoma self-management education can effectively improve patients' self-care skills. In terms of self-care formation time, Wen et al's (2019) findings suggested that transtheoretical model-based ostomy education takes about 3 months for stoma patients to develop and maintain self-care behaviour change, whereas Goldblatt et al (2018) found that patients were able to perform self-care independently within about 7 days. This result differs from Wen et al's (2019) findings because Goldblatt examined self-care only before discharge and did not monitor the acquired and maintained self-care skill post-discharge. Sun et al (2018), Grant (2022) and Song et al (2021) all showed that telehealth and DVD-based ostomy education can help improve self-care ability. These tools can be applied according to an individual patient's needs and financial situation.

Seo (2019) suggested that two or three stoma self-management education sessions before patients leave hospital following surgery are sufficient to improve self-care abilities, while the stoma education sessions evaluated in several other studies remained at 3–4 sessions, similar to the experimental results of Seo (2019).

In general, based on the findings of the studies reviewed, two or three health education sessions over 7 days were sufficient to empower patients to undertake stoma self-care. Further, education based on the transtheoretical model, chronic care model or a telehealth approach can help maintain and reinforce self-care behaviours following discharge. **BJN**

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## CPD reflective questions

- If you were implementing a stoma self-care programme for patients, which education model would you choose? Why would you choose this model?
- In your practice, have two or three health education sessions over 7 days been sufficient to improve a patient's self-care skills, or have you found that more sessions over a different time span are more effective? Why do you think that might be?
- Consider the pros and cons of involving a patient's family members in an education programme for stoma self-management

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