

Nursing Intervention for Quality of Life in Patients with Ostomy: A Systematic Review

Abstract

Background: Ostomy-related challenges in everyday life may negatively affect patients' Quality of Life (QL), even long after ostomy surgery. Nurses provide care interventions that may have a significant effect on the patients' QL. Therefore, the purpose of the present study was to determine evidence of effective nursing interventions on the QL of patients with an ostomy. **Materials and Methods:** A systematic review was conducted following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. English articles published from 2000 to 2021 were identified and retrieved from PubMed, Medscape, MedlinePlus, ScienceDirect, Web of Science, Scopus, Wiley Online Library, ProQuest, ClinicalKey, SAGE, IRCT, and Cochrane. We assessed all included studies (18 articles) using the JBI Critical Appraisal Checklist. **Results:** Interventions reviewed in the study were categorized based on intervention, content of nursing intervention, training method, and target group of the nursing intervention. The nursing interventions involved natural treatments, self-care, and psychological support for patients. The training methods used in the studies included demonstration and lecture, mixed media presentation including PowerPoints, and Internet tools such as WeChat Applications. Some interventions were only presented to patients, caregivers, and patients together, or peer patients. **Conclusions:** According to the results of the present study, it is suggested that a regular care plan be used with the participation of families and patients from pre-operational to discharge along with nurses' follow-ups and home care to promote the QL. A combination of self-care and psychological education can promote these patients' QL.

Keywords: Nurses, ostomy, quality of life

Introduction

The formation of an ostomy and bowel resection are common procedures for people with colorectal cancer.^[1] Ostomies may also be required in patients with bladder cancer, ulcerative colitis, and Crohn's disease.^[2] Patients with an ostomy may experience some ostomy-related physical problems after ostomy surgery such as change in defecation, loss of bowel movement control, involuntary gas and stool disposal, deterioration of bodily integrity,^[3-7] stool leakage around the ostomy bag, unpleasant sounds and smells, ostomy bag inflation,^[5,8] psychological problems such as a lack of self-esteem and self-confidence, depression,^[7] stigma and fear of revealing ostomy,^[9,10] and feeling of being dismembered.^[11] Involuntary stool disposal into the ostomy bag gives a feeling of discomfort to the patient, and it also creates emotional changes that need adjustment. In addition to the effects of the ostomy

bag on sexual and social relationships, the resumption or maintenance of relationships is hard for them.^[12] The abovementioned problems may have a negative effect on patients' Quality of Life (QL) because they affect their adjustment and rehabilitation process.^[13]

QL is defined as the general well-being of a person or society in terms of health and happiness, rather than wealth.^[14] It is also defined as a patient's perceived health status considering the physical, psychological, social, and spiritual aspects of the health. Thus, research in relation to the QL and well-being of ostomy patients must address their physical health, psychological status, social relationships, and the spiritual aspects of their daily life. Over time, patients experience changes in their QL after ostomy surgery from initially negative to more positive with time and adaptation.^[15] Ostomy influences all parts of patients' life

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Access this article online

Website: <https://journals.iwv.com/ijnmr>

DOI: 10.4103/ijnmr.ijnmr_266_22

Quick Response Code:



How to cite this article: Heydari A, Manzari ZS, Pouresmail Z. Nursing intervention for quality of life in patients with ostomy: A systematic review. Iran J Nurs Midwifery Res 2023;28:371-83.

Submitted: 26-Aug-2022.

Revised: 10-May-2023.

Accepted: 13-May-2023.

Published: 24-Jul-2023.

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because they have to make some changes in their everyday activities, they have to dress differently, they have to adapt themselves to the new diet, and they have to change their lifestyle.^[7,12] Ostomy-related challenges in everyday life such as restrictions on dressing, limitations on traveling, sexual problems, and self-care may negatively affect the patients' QL, even long after the ostomy surgery.^[16-18] One of main themes of a qualitative study was efforts to improve QL.^[19] Because ostomy has various symptoms and types in different patients, they are considered as a heterogeneous group with different QLs. Therefore, some studies have shown lower QL in women than men,^[20] elder patients,^[21] and patients with skin problems.^[18] Moreover, there is a relationship between QL, type of ostomy,^[18] and the underlying disease that led to an ostomy.^[6]

Effective communication and collaboration between district nursing teams and stoma specialist nurses are essential to support patients through the period of adaptation to life with a stoma.^[2] These experienced professionals are experts who can provide a holistic approach to caring for patients by overseeing their physical and emotional well-being.^[22] A qualitative, descriptive study indicated that patients with stoma require support from health care professionals in regaining control of their lives.^[23] Specialist ostomy nurses are in contact with patients before, after, and during the medical process. They provide some care services before surgery such as stoma siting and presenting pre-surgery training, provide psychological support and educate patients during hospitalization, and visit patients in health centers or at home when they are discharged from the hospital. Nurses provide care interventions that may have a significant effect on the patients' QL. Furthermore, it is necessary to verify the effective measures in this regard. In order to achieve a comprehensive guide, it is necessary to review and summarize the studies of effective interventions on the QL of patients with an ostomy; therefore, the purpose of the present study was to determine evidence of effective nursing interventions on the QL of patients with an ostomy.

Materials and Methods

This was a systematic review of experimental and quasi-experimental studies that have examined the effect of nursing interventions on the QL of patients with an ostomy. A systematic literature review was conducted based on the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines.^[24] To ensure a comprehensive search strategy, the PICOT framework guided our literature search. The components include the Population of interest (P), Issue of interest (I), Comparison of interest (C), Outcome of interest (O), and Timeframe (T).^[25] Our search focused on patients with ostomy (colostomy, ileostomy, and urostomy) (P) using nursing interventions (I). The comparison of interest (C) was the intervention by the physician or other health care providers. The outcome (O) was the patient's QL. We set

a timeframe (T) for research published since 2000, which encompassed the last 21 years.

ProQuest, Science Direct, Web of Science, Medline (through PubMed), MedlinePlus, Scopus, Wiley Online Library, Clinical key, and SAGE electronic databases were independently searched by two nurse researchers (ZP and ZSM) to identify eligible publications [Figure 1]. The search was also carried out in the clinical trials register "IRCT, COCHRANE." The initial literature search was performed on October 20, 2020, and the last search was run on December 26, 2020.

Original articles were identified through the search. The search keywords were "colostomy, nursing intervention in ostomy, quality of life, ileostomy, urostomy, health-related quality of life, stoma, Ostomies, patients with ostomy, interventions planned by nurse" using AND/OR operators. The search was also performed in the references of the selected articles. An example of the search strategy was as follows: (Quality of life OR Life Quality OR Health-Related Quality of Life OR HRQL OR QL) AND (Ostomy OR colostomy OR illeostomy OR stoma OR Ostomies OR urostomy OR Ostomate OR Patients with ostomy OR patient with ostoma) AND (nurse OR nurses role OR nursing intervention OR nursing implementation OR nursing plan).

The study inclusion criteria were as follows: (a) The study must be an experimental and quasi-experimental study, (b) it must be published between 2000 to 2021, (c) the main purpose of the study must be effective nursing intervention on the QL of patients with an ostomy, (d) the intervention has to be designed and executed by a nurse, (e) the study has to be carried out on patients with ostomy (colostomy, ileostomy, and urostomy), (f) it must be written in English, and (g) it must be available in full length. The exclusion criteria included articles written in different languages, review articles, and a lack of a nursing intervention. We developed a data extraction sheet. The data were extracted by two reviewers (ZP and ZSM). Any differences were discussed, and data were only included if a consensus was reached between the reviewers. To extract and summarize the information from the included studies, the reviewers conducted an in-depth review including the author, title, location, study type, the sample size and characteristics, intervention, and the results of the study. We used the JBI Critical Appraisal Tools to appraise the articles. The JBI Critical Appraisal Checklist for randomized controlled trials includes 13 items,^[26] and the checklist for quasi-experimental studies (non-randomized experimental studies) includes nine items.^[26] As a result of the appraisal of the articles, all 18 articles were included in the systematic review.

Ethical considerations

This project was approved by the Ethics Committee of Mashhad University of Medical Sciences, Mashhad, Iran, with the number "IR.MUMS.REC.1398.173."

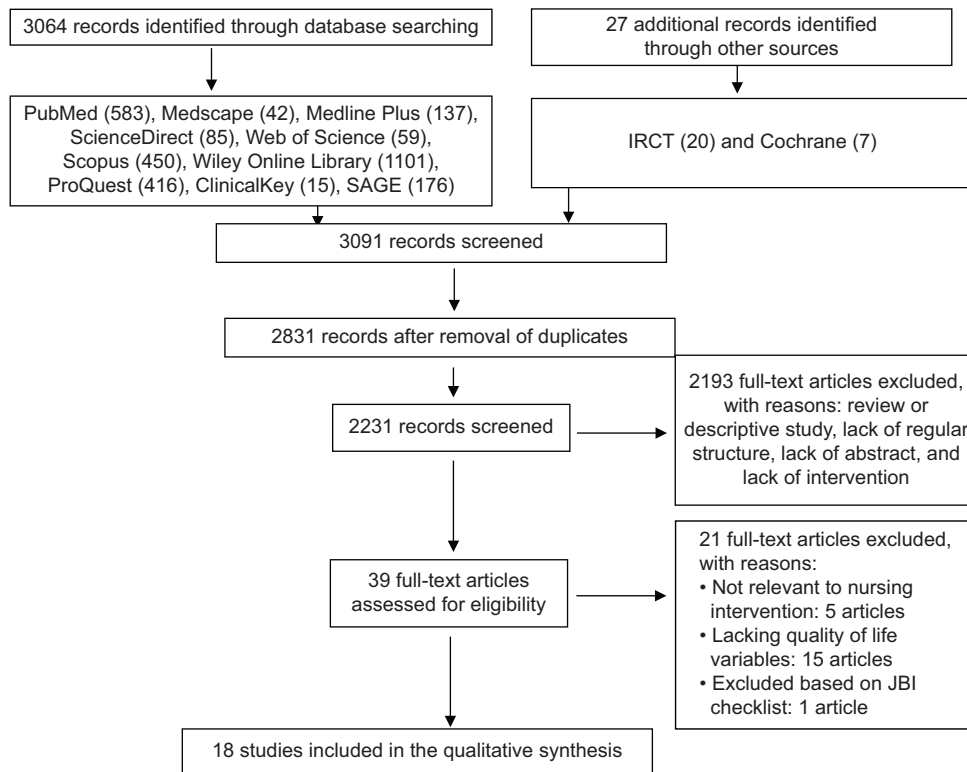


Figure 1: The PRISMA flow diagram outlines the literature search

Results

Overview of Included Studies

A systematic review of 18 experimental and semi-experimental studies was carried out in the present study. Nursing interventions of the assessed studies included progressive muscle relaxation training,^[27,28] self-efficacy intervention,^[29] home visits as part of a new care pathway,^[30] motivational interview,^[31] family-centered training programs,^[32,33] specialty practice nursing care,^[34] determination of the location of the ostomy before surgery by an ostomy nurse specialist,^[27] home care,^[28] the Multimedia Educational Package,^[11] the Ostomy Care Team Intervention,^[29] hospital-family holistic care intervention,^[30] lavender essential oil intervention,^[35] Ostomy Telehealth for Cancer Survivors,^[36] structured ostomy care training,^[37] telemedicine in post-operative follow-up of STOMA patients,^[38] and the Continuous Care Model Guidance.^[39] The details of the interventions are presented in Table 1.

Interventions

The nursing interventions involved standard treatments that comprise verbal and written information related to pre-operative preparation; post-operative physical changes; ostomy care until discharge;^[11,29,30,34,39-41] teleconsultation on months 0–3, 6, and 9 and over 12 months after the initial surgery;^[38] visit by the ostomy therapist before surgery and at the time of admission;^[42] home visit and appointment in an outpatient clinic;^[28,39] recommendations for at least

one appointment with Wound, Ostomy, and Continence Nurses (WOCN); recommendation for at least one follow-up visit after surgery by the surgeon;^[31,36,40] discharge by telephone or verbal support such as emotional support; providing support to promote medical treatment adherence, evaluation, and monitoring;^[29,30,34] providing training booklets and written information;^[31,36,37,40] providing the contact information of national and local ostomy support groups; providing the contact information of nutrition and physical therapists; providing the contact information of WOCN; and responding to the patient's questions.^[36] Dedicated care carried out by ostomy nursing specialists included stoma siting before surgery, counseling regarding ostomy surgery,^[27,40-42] providing post-operative training and written information about ostomy care, choosing an ostomy bag, follow-up visit with the ostomy nurse up to 4–6 weeks after discharge from the ostomy care clinic,^[40-42] motivational interview,^[31] and inviting the patients to the ostomy support group quarterly.^[29]

Content of nursing intervention

Nurses planned continuous and regular training.^[29-33,36,42-44] The content of most interventions correlated to ostomy self-care,^[11,29,32-34,36,37] equipment,^[11,36,37] ostomy appliance, ostomy care and care of its surrounding skin,^[11,32,33,36,37,42,44] social well-being concerns,^[36,43] anxiety, social isolation or other signs of distress,^[29] promotion of lifestyle programs, and provision of problem-solving methods based on ostomy care in trip.^[32,33,36]

Table 1: Characteristics of the included studies

Title	Author (year)	Location	Design	Sample size and characteristics	Intervention	Content of nursing intervention	Results
A pilot study on the effect of progressive muscle relaxation training of patients after stoma surgery	Cheung et al., 2001 ^[40]	Hong Kong	randomized controlled trial	The resultant sample consisted of 18 patients.	Progressive Muscle Relaxation Training (PMRT)	Patients received 2 PMRT training sessions in addition to the standard treatment. They received an audio-recorded file of PMRT sessions, and they were asked to practice at home. PMRT included a 20-minute session of expansion and contraction of 10 muscle groups along with deep breaths. Two 40-minute sessions (a briefing session and a training session) were held after surgery to achieve the desired effects. They were asked to practice them at least 2 or 3 times a week and record them.	No significant differences were shown on overall QoL-colostomy scores ($F=2.81$; $p=0.12$), as well as the score on individual domains. Patients receiving PMRT reported significantly higher mean total WHO-QOL scores (28 items) ($F=4.73$; $p=0.046$) and higher scores on the physical domain/independence ($F=6.68$; $p=0.02$) and general perception of QoL domain (items 1 and 2 on the scale) ($F=9.21$; $p=0.01$). For all other domains of QoL, there were no significant differences between the control and experimental groups. The use of PMRT significantly decreased state anxiety and improved generic quality of life in the experimental group ($P50:05$), especially in the domains of physical health, psychological health, social concerns, and environment. Social relationships decreased in both groups. In relation to the disease-specific quality of life measure, differences were observed only in the 10-week assessment, with the experimental group reporting better quality of life compared to the control group at 10 weeks, but not over time.
The effect of progressive muscle relaxation training on anxiety and quality of life after stoma surgery in colorectal cancer patients	Cheung et al., 2003 ^[41]	Hong Kong	randomized controlled trial	The required sample size was at least 32 individuals in each group.	PMRT	Patients received 2 PMRT training sessions in addition to the standard treatment. They received an audio-recorded file of PMRT sessions, and they were asked to practice at home. PMRT included a 20-minute session of expansion and contraction of 10 muscle groups along with deep breaths. Two 40-minute sessions (a briefing session and a training session) were held after surgery to achieve the desired effects. They were asked to practice them at least 2 or 3 times a week and record them.	Patients receiving PMRT significantly improved generic quality of life in the experimental group ($P50:05$), especially in the domains of physical health, psychological health, social concerns, and environment. Social relationships decreased in both groups. In relation to the disease-specific quality of life measure, differences were observed only in the 10-week assessment, with the experimental group reporting better quality of life compared to the control group at 10 weeks, but not over time.
Home visits as part of a new care pathway (aid) to improve quality of care and quality of life in ostomy patients: a cluster-randomized stepped-wedge trial	Sier et al., 2017 ^[42]		Cluster-randomized trials	210 patients in the standard care pathway and 105 patients in the new care pathway	New care pathway	Home visits carried out (about 2 hours) by an ostomy therapist 3 weeks before hospital admission to inform patients and their family members about the surgical procedure and ostomy care after discharge from the hospital.	Although in the new pathway (NP) group more patients had stoma-related complications, QoL scores were significantly better ($p<0.001$). In the standard pathway (SP) group, more patients required extra care at home for their ostomy than in the NP group (60.6% vs. 33.7%, respectively; .

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Title	Author (year)	Location	Design	Sample size and characteristics	Intervention	Content of nursing intervention	Results
Effect of self-efficacy intervention on quality of life of patients with intestinal stoma	Xu <i>et al.</i> , 2018 ⁽⁴³⁾	China	Experimental	The 48 patients receiving treatment for permanent colostomy surgery were divided into control and intervention groups.	A 3-month self-efficacy intervention as well as routine nursing	The self-efficacy intervention included alternative experience, direct experience, social and psychological support, and adjustment of the alternative measures according to the patients' feedback. Patients received the mentioned interventions as follows: once a week during the first month after surgery (total: 4 times), once per 2 weeks during the second month after surgery (total: 2 times), and a phone call in the third month after surgery.	risk difference: 26.9%; 95% CI: 13.5–40.4%). Stoma revision was done more often in the SP group ($n=11$) than in the NP group ($n=2$) The self-efficacy nursing intervention method improved self-efficacy and the quality of life of patients with intestinal stoma and is worthy of clinical utilization and application.
Ostomy telehealth for cancer survivors: Design of the ostomy self-management Training (OSMT) randomized trial	Sun <i>et al.</i> , 2018 ⁽³⁶⁾	United States of America	Randomized trial	162 cancer survivors with ostomies and their caregivers	OSMT	The curriculum was delivered in 4 group sessions administered by trained ostomy certified nurses (WOCNs) and peer ostomates.	The OSMT program has high potential to make a positive impact on the unique physical, psychological, social, and spiritual needs of cancer survivors living with a permanent ostomy.
A prospective, experimental study to assess the effectiveness of home care nursing on the healing of peristomal skin complications and quality of life	Harputlu and Özsoy (2018) ⁽²⁸⁾	Turkey	A prospective, experimental study	35 peoples with a colostomy or ileostomy and peristomal skin complications who were listed in 2 ostomy supplier databases	Home care visits	6 home visits in a month as once per 5 days	The QOL scores achieved at the final assessment were significantly improved compared with the initial assessment.
Effectiveness of a multimedia educational package for cancer patients with colostomy on their performance, quality of life, and body image	Qalawa and Moussa (2019) ⁽¹¹⁾	Damietta, Egypt	Quasi-experimental design	26 patients with colostomy	Multimedia educational package	The multimedia educational package: consisted of 2 sections. The first consisted of the presentation of knowledge about the process of stoma formation, including the anatomy and physiology of stoma, definition, complications, and the clinical indications for stoma formation using PowerPoint. The second section focused on the practices related to the various central elements of stoma care, medication, diet, exercises, and self-examination of stoma. The researchers used graphics, posters, video, and pictures to demonstrate and reinforce the information and skills.	Statistically significant differences were observed in colostomized patients regarding all quality of life domains, except for the social domain, in the posttest and follow-up phases compared with the pretest phase ($p=0.092$).

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Title	Author (year)	Location	Design	Sample size and characteristics	Intervention	Content of nursing intervention	Results
The impact of specialty practice nursing care on health-related quality of life in persons with ostomies	Coca <i>et al.</i> , 2015 ⁽³⁴⁾	Madrid, Spain	Multicenter, quasi-experimental, prospective, longitudinal study	402 ostomy patients in health centers	Specialty practice nursing care	The ostomy nurse specialist provided training to patients in the wards. Pre-operative and post-operative training included comprehensive checking by the nurse, checking HRQOL including body images and sexual activity without the determination of ostomy location. Post-operative training included evaluation-based training, health, and care of the ostomy and its surrounding skin, care-centered training, ostomy bag replacement, dietary and nutritional recommendations, guidelines for preventing and identifying complications, discharging with support (telephonic or verbal) including emotional support to improve medical treatment, and evaluation and monitoring.	Patients who received specialized ostomy care experienced significant improvements in health-related quality of life compared to patients who did not receive this care.
To investigate the impact of family-centered education on the quality of life of patients with stoma	Nasiri Ziba and Kanani, 2018 ⁽³²⁾	Tehran, Iran	Non-randomized clinical trial (semi-experimental)	61 subjects with gastrointestinal stomatitis and their companion (family members involved in the care process)	Family-centered education	Family members who collaborated in ostomy care participated in the training program. The ostomy care training program included 3 sessions of 39 to 45 minutes per 3 weeks. The purpose of the training program was to provide a training manual of sessions, group discussion, and question and answer sessions.	The results showed that the family-centered education approach can improve the quality of life of patients with gastric stoma.
The effect of education with a family-centered and client-centered approach on the quality of life in patients with stoma	Nasiri Ziba and Kanani (2020) ⁽³³⁾	Tehran, Iran	Semi-experimental study	60 individuals with colostomy and ileostomy	Family-centered education	Family members who collaborated in ostomy care participated in the training program. The ostomy care training program included 3 sessions of 39 to 45 minutes per 3 weeks. The purpose of the training program was to provide a training manual of sessions, group discussion, and question and answer sessions.	There was a significant difference in the quality of life score and score of the spiritual-psychological dimension after the intervention compared to before the intervention in the family-centered group.
Effect of group motivational interviewing on quality of life of patients with colorectal cancer and permanent ostomy	Rajabipour <i>et al.</i> , 2014 ⁽³¹⁾	Tehran, Iran	Quasi-experimental study	70 patients with colorectal cancer and permanent ostomy	Group motivational interviewing	The motivational interview structure was extracted from the 5-session group intervention workbook of the motivational interview. Individuals attended the motivational interview as follows: a 12-individual group with the attendance of the researcher as a group leader, a psychologist familiar with motivational interviewing as a group facilitator, and an ostomy nurse specialist to answer patients' questions about ostomy-related problems.	The implementation of "motivational interviewing" caused a significant difference in the quality of life of patients with colon cancer and permanent ostomy. Therefore, the implementation of this procedure improves the quality of life of patients with ostomy.

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Title	Author (year)	Location	Design	Sample size and characteristics	Intervention	Content of nursing intervention	Results
The effect of pre-operative stoma site marking on quality of life	Cakir and Ozbayir (2018) ⁽²⁷⁾	Turkey	A non-randomized quasi-experimental design	The study sample (n=60) included patients for whom a stoma was opened after a planned colorectal surgery.	Pre-operative stoma marking by CWOCN.	Determination of the location of the ostomy by an ostomy nurse specialist.	The study results demonstrated that patients who underwent stoma site marking reported higher HRQOL than those who did not.
Effect of ostomy care team intervention on patients with ileal conduit	Zhou et al., 2019 ⁽²⁹⁾	China	Randomized controlled trial	46 patients who underwent radical cystectomy and creation of an ileal conduit	A nurse-led, multicomponent, structured intervention delivered by an ostomy care team	The ostomy care team comprised 1 WOC/enterostomal therapy nurse and 3 RNs with specialized training in ostomy care provided by the certified enterostomal therapy nurse. The multicomponent intervention included a health record for every individual that focused on the patient's self-management, recovery from ostomy surgery, ostomy care skills, diet, psychosocial assessment, stoma or peristomal complications, and pouching problems. The educational intervention focused on ostomy self-management (pouching demonstration that included pouch removal, observation, cleaning, replacement of a new pouch, and the need for ongoing emotional support), the attendance of the lecture by at least 1 family member, a telephone call monthly from a member of the ostomy care team (to discuss challenges and assess family members' involvement), and the ostomy support group (for patients and families).	The mean COHQOL-O score was significantly higher in the experimental group (154.48±16.01) compared to the control group (138.26±13.42), indicating a higher health-related quality of life in this group (p=0.001).
Effects of hospital-family holistic care model on the health outcome of patients with permanent enterostomy based on the theory of 'timing it right'	Zhang et al., 2020 ⁽³⁰⁾	China	A randomized controlled trial	119 patients with permanent enterostomy were randomly divided into 2 groups, with 60 cases in the intervention group and 59 cases in the control group.	Routine care follow-up and hospital-family holistic care intervention based on 'timing it right'	The in-hospital interventions were implemented in the first 2 phases in the forms of one-on-one and face-to-face communication, lectures, bedside instruction and demonstration, video, etc.,. The out-of-hospital interventions were implemented in the last 3 phases in the forms of Internet tools such as WeChat, WeChat APP, and outpatient and telephone follow-ups. The interventions were completed by 4 nurses of the research team through explaining the nursing focus, providing psychological support at different stages of the disease, answering	After the intervention, there were significant differences in quality of life between the two groups at different observation points (p<0.01). The 3 evaluation indices of the intervention group increased with the migration of observation time points and were significantly better than those of the control group, especially the quality of life score (84.35±4.25 vs. 60.45±8.42; p<0.01).

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Title	Author (year)	Location	Design	Sample size and characteristics	Content of nursing intervention	Results
Effects of lavender essential oil for colorectal cancer patients with permanent colostomy on elimination of odor, quality of life, and ostomy adjustment: A randomized controlled trial	Duluklu and Celik, 2019 ⁽³⁵⁾	Turkey	Single-blinded, randomized, controlled trial	15 patients in the experimental group and 15 in the control group	<p>Patients in the experimental group used lavender essential oil in the ostomy bag for 1 month.</p> <p>The implementation steps for the experimental group in the first assessment (at baseline) are listed as follows:</p> <ul style="list-style-type: none"> A drop of lavender essential oil was placed on the inside of the patients' anterior arm, and patients were watched for development of a local reaction. The patients were provided a training continuing for an average of 15 minutes by using the brochure that included information on how to apply 10 drops of lavender essential oil into the clean bag during colostomy bag exchange and spread the oil around the entire inner surface of the bag, and their routine practices regarding nutrition and stoma care. First, these steps were demonstrated by the researcher, and then, the patients were requested to perform the same steps under the supervision of the researcher. One-month supply of lavender essential oil was provided to the patients in the experimental group. 	<p>As compared with the control group patients, the experimental group patients who used lavender essential oil in the ostomy bag experienced statistically significant less odor, a higher quality of life, and better adjustment to ostomy (all $p < 0.05$).</p>
Studying the effect of structured ostomy care training on quality of life and	Khalilzadeh Ganjalikhani <i>et al.</i> , 2019 ⁽³⁷⁾	Kerman, Iran	Randomized clinical trial	60 eligible participants were recruited from the ostomy clinic	<p>The intervention group attended oral and practical training and a</p>	<p>The results showed a higher mean score in overall QOL ($p = 0.009$) in the intervention group compared with the control group. The most significant increase was observed</p>

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Title	Author (year)	Location	Design	Sample size and characteristics	Intervention	Content of nursing intervention	Results
anxiety of patients with permanent ostomy					question and answer session by a trained ostomy nurse and received an ostomy information booklet in addition to their routine care.	evaluated their learning by asking questions. At the end of the session, patients received a training booklet including information about ostomy care, sexual relationship, travel, diet, rituals, physical activities, sport, familiarity with ostomy equipment and how to use it, and common and uncommon side effects of ostomy and how to manage them. After the group assignment, patients in the intervention group were invited by the first author to participate in a single-session practice training and workshop (2-hour meeting) including information about the properties of healthy skin and how to take care of skin, measure pouch size, detach and empty the pouch, change the two-piece pouches, prevent leakage, and how to use ostomy equipment (powder, belt, paste, and adhesive), which was explained and performed by an ostomy-specialist nurse (first author), in addition to asking and answering questions and practicing/performing procedures for patients.	in the psychological, social, and physical aspects, and the least was in the spiritual aspect, all of which improved after the intervention. After controlling the effects of confounding variables such as age, ostomy period, and number of children, the structured training program still had a positive effect on QOL.
Telemedicine in post-operative follow-up of stoma patients: A randomized clinical trial (the STOMPA trial)	Augustad et al., 2020 ^[38]	Norway	Randomized clinical trial	A total of 110 patients were randomized to hospital (58 patients) or TC (52) follow-up, 64 patients (hospital: 38, TC: 26) were followed for more than 12 months, and 246 consultations (hospital: 151, TC: 95) were performed.	Telemedicine in post-operative follow-up (stoma nurses organized TC at 0-3, 6, 9, and more than 12 months)	Stoma nurses organized TC at 0-3 (defined as baseline), 6, 9, and over 12 months. Patients could withdraw from the study and be referred back to hospital follow-up at any time. Follow-up consultations were performed in both trial arms. A nurse-led TC stoma and wound school was established before the clinical trial; nurses with special training in the treatment of patients with wound and stoma problems developed the curriculum. Ten nurses from TC communities all over Northern Norway were recruited. These nurses were responsible for the practical arrangements of the TC at the district medical center (DMC). The stoma nurses were affiliated to the DMCs where the TC studios were performed. Stoma nurses in both trial arms consulted gastrointestinal surgeons when necessary. Guidelines for safety monitoring were	There were no differences in the QOL: EQ-5D™ index score ($p=0.301$) and EQ-5D™ visual analog scale (VAS) score ($p=0.775$), work/social function ($p=0.822$), sexuality/body image ($p=0.253$), and stoma function ($p=0.074$). Hospital follow-up performed better in the organization of care (staff collaboration, $p=0.004$; meeting the same individuals, $p=0.003$) and communication (surgeon being understandable, $p<0.001$; surgeon caring, $p=0.003$). TC did not increase the number of hospital consultations ($p=0.684$) and reduced the number of journeys of more than 8 hours ($p=0.007$).

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Table 1: Contd...

Title	Author (year)	Location	Design	Sample size and characteristics	Intervention	Content of nursing intervention	Results
The effects of continuous care model of information-based hospital-family integration on colostomy patients: A randomized controlled trial	Xia (2020) ^[39]	China	Single-blind, randomized, controlled trial	160 subjects were recruited from the gastrointestinal surgery department of the First Affiliated Hospital of Wenzhou Medical University	Continuous care model	<p>developed. Patients allocated to TC follow-up could be referred back to the university hospital at any time.</p> <p>(1) Hospital aspects: The hospital issued a self-management manual to patients within 24 hours of admission. The day before the colostomy operation, the patients and their families watched a video on colostomy care. The colostomy therapist provided an education program on colostomy care, assisted patients in reading the manual, and answered their questions. After the patient was discharged, the patient could contact the colostomy therapist through WeChat, blog, telephone, QQ, etc.,. The colostomy therapist made home visits to the patient to ensure the patient was correctly caring for the colostomy.</p> <p>(2) Family aspects: A caregiver, that is, the person responsible for helping the patient with colostomy care, was selected from the family. The caregiver was assisted in establishing effective communications with the colostomy therapist, so the caregiver could promptly inform the therapist of problems or changes in the patient's condition by WeChat, blog, telephone, QQ, etc.,. In addition to taking care of the patient at home, caregivers were taught to observe and keep records of any changes in mood. They were also taught to keep records of any problems that occurred and the solutions used to deal with the problems. Caregivers and patients can communicate with the colostomy therapist in real time via social software, including when he/she is off work.</p>	<p>In comparison with those in the control group, the scores of somatic, role, and emotional functions (STF, RF, and EF) markedly increased and the scores of fatigue, nausea and vomiting, pain, dyspnea, insomnia, anorexia, constipation, diarrhea, and economic difficulties (Fa, NV, Pa, Dy, In, An, Co, Di, and ED) decreased in the experimental group 1 month after discharge ($p < 0.0001$)</p>

Training Method

The training methods used in these studies included demonstration and lecture,^[29,30] mixed media presentation including PowerPoint, hand-operated equipment, ostomy bags and belts,^[36] providing training booklets,^[30,32,33,37] home care,^[42] and Internet tools such as WeChat Application.^[30] Moreover, some sessions were held with the problem-solving skill training method to solve the social problems of patients.^[36]

Target group of the nursing intervention

Some interventions were only presented to the patients,^[35,37,42,43] while some other interventions were only presented to the caregivers or commonly with patients^[29,36,39] or in the form of common discussion between peer patients.^[42] Caregivers of patients including spouses, daughters/sons, or a friend who provides the patient with the most ostomy care only participated in training sessions in one study,^[36] and another study provided the patients' family the opportunity to ask their questions in pre-operative home visits.^[42] The other studies did not report any caregiver education.

Discussion

In the present study, the experimental and semi-experimental studies on nursing interventions concerning the QL of patients with an ostomy were verified. Nurses provide nursing interventions for patients with an ostomy during the pre-operative to post-operative period. It is important to maintain a constant training and to combine self-care with motivational training. Structured pre-operative ostomy education is feasible and sustainable and may be associated with improvement in ostomy adjustment and post-operative health-related QL.^[45] In the study by Danielsen *et al.*,^[46] the participants stated that education presented at the hospital did not entirely match their needs after they returned home and re-entered their communities. Rojanasart evaluated the effect of a post-discharge support program that included education and counseling and reported that participation in the program reduced the likelihood of emergency department visits and hospital admission within 18 months of ostomy surgery.^[47]

This study also found that psychological education and self-care education should receive equal attention. As patients experience disturbances such as changes in body image, anxiety, stigma, and social isolation when faced with an ostomy,^[5,16] it is necessary to provide certain interventions such as relaxation training, supportive group therapy, Cognitive-Behavioral Therapy (CBT), emotional and social support, and general interactional skills like supportive communication, and listening and counseling can be applied to solve and prevent psychosocial problems.^[16]

Another finding of this study was the participation of family caregivers in training. A study about family caregivers found

that they received more help with ostomy care than with any other medical or nursing task, presumably because of the higher level of complexity associated with this type of care.^[48] Yet, family caregivers still need more information and training regarding ostomy and peristomal skin care. Nurses must provide patients and caregivers with specialized information and resources before discharge so that they know what to expect when they return home, are knowledgeable about the products they will be using, are informed about how to manage an ostomy, and know when to contact a health care professional.^[49] Andrew Zganjar *et al.*^[45] indicated that the inclusion of partners/spouses in a group setting is key to maximizing education. The presence of one of the patients' family members in training sessions is effective on ostomy care,^[30,32,33,39] but we should also consider the patient's dependence on that person in changing the ostomy bag, which requires further studies in this context. In one of the studies, peer educators found that the contact of patients with people similar to them facilitated the achievement of post-operative outcomes. Self-management and self-care interventions are effective on the QL of patients with an ostomy. The results proved that often, there is no psychological disorder in patients participating in ostomy care.^[50]

According to the mentioned results, interacting with ostomy therapists may promote patients' performance after surgery. Setting person or in-person meetings (telephonic or by smart communicational software) with the nurse provides patients the opportunity to ask their questions from a specialist caregiver or to share their problems with the nurse. Providing the training content in the form of a booklet or audio file helps patients to recall the trainings easily and practice them at home, although the mentioned studies did not determine the effect of these factors on the QL of patients. Today, health center policies emphasize home care and promote the QL of patients with an ostomy.

Despite the exhaustive electronic search, our study had several limitations. First, the limited number of the studies selected by the reviewers did not include gray literature. Second, the retrieved studies were limited to those published in English journals. Third, other studies with different methods, such as observational and analytical studies, were not included in the present study.

Conclusion

According to the results of the present study, the use of a regular care plan with the participation of families and patients is suggested from pre-operation to discharge along with nurses' follow-ups and home care to promote the QL of patients with ostomy. A combination of self-care and psychological education can promote patients' QL.

Acknowledgements

The authors are grateful for the authorities of Mashhad University of Medical Science for sponsoring the study (Number: 971683).

Financial support and sponsorship

Mashhad University of Medical Science

Conflicts of interest

Nothing to declare.

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