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Describing self-care and its associated variables in ostomy patients

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Abstract

Aims: To describe self-care in ostomy patients, to identify socio-demographic and clinical variables associated with self-care and to identify the association between self-care self-efficacy and self-care over and above the variables associated with self-care.

Design: Longitudinal and multicentre study. Data were collected between February 2017-May 2018.

Methods: In this study, 523 ostomy patients were enrolled at baseline (T0) and 362 were followed-up after 6 months (T1). The Ostomy Self-Care Index was used to measure self-care maintenance, monitoring, management, and self-efficacy. Correlations between self-care dimensions and patient socio-demographic and clinical characteristics were performed with Pearson's or Spearman's correlations. Three separate two-step hierarchical regression analyses were performed to identify variables associated with self-care maintenance, monitoring, and management.

Results: Participants' mean age was 69 years (*SD* 12.4); 63.9% were male and most had enterostomies (38.8% colostomies, 29.3% ileostomies) and permanent ostomies (72.5%). Patients had adequate self-care maintenance and monitoring at T0 and T1, while they had lower self-care management and self-efficacy at baseline. Significant variables associated with better self-care maintenance and self-care monitoring were female gender, more information received during hospitalization and better autonomy in stoma management, while a better level of education was an additional variable associated with self-care monitoring. Self-care self-efficacy produced a significant increase in the explained variance of self-care maintenance and self-care monitoring. None of the selected variables were significantly associated with self-care management.

Conclusion: Middle-high levels of self-care maintenance, monitoring, management, and self-efficacy were found. The variables associated with ostomy self-care and the role of self-care self-efficacy identified in this study can help in developing tailored nursing interventions.

Impact: This study found specific variables associated with ostomy self-care which could contribute to guiding future interventions aimed at improving self-care in ostomy patients.

KEYWORDS
clinical variables, nursing, ostomy patients, self-care, self-efficacy, socio-demographic variables

1 | INTRODUCTION

An ostomy is the result of a surgical procedure through which an external diversion of faeces and urine is created. The most common type of ostomies are colostomy and ileostomy for the diversion of faeces and urostomy for the diversion of urine (Recalla et al., 2013). In the United States, there are approximately 1 million people with an ostomy and approximately 100,000 to 130,000 new ostomies are created annually (Maydick-Youngberg, 2017). In Europe, there are about 700,000 ostomized people (Claessens et al., 2015).

Ostomies can be temporary or permanent. Patients with a permanent ostomy can live with it even for several years (Krouse et al., 2016) if we consider the ostomies as the result of colorectal (Sun et al., 2013) or bladder cancer (Jensen, Kiesbye, Soendergaard, Jensen, & Kristensen, 2017), which have a 5-year survival rate of between 40% and 65% (Liu et al., 2016; Siegel et al., 2017). Therefore, an ostomy can lead to complex and lifelong consequences for patients (Villa, Mannarini, et al., 2019; Wen et al., 2019).

Several studies have demonstrated that an ostomy negatively influences a patient's quality of life and lifestyle (Näsvall et al., 2017; Vonk-Klaassen, de Vocht, den Ouden, Eddes, & Schuurmans, 2016), including as a result of ostomy-related problems, such as physical and sexual problems, depression, dissatisfaction with appearance and body image, changes in clothing, travel difficulties, and decreased work activities (Ayaz-Alkaya, 2019; Vonk-Klaassen et al., 2016).

Having an ostomy is a chronic condition and, in such situations, self-care improves patient outcomes. Self-care has been defined as a 'process of maintaining health through health-promoting practices and managing illness' (Riegel, Jaarsma, & Strömberg, 2012, p. 5). Self-care improves quality of life and reduces hospitalizations, mortality rates, and complications in patients with heart failure, diabetes, or chronic obstructive pulmonary disease (Ausili et al., 2018; Clari, Matarese, Ivziku, & De Marinis, 2017; Jonkman et al., 2016).

Self-care has also been studied in ostomy patients. In this population, better self-care has been found to be associated with better quality of life (Zhang, Xian, Yang, Zhang, & Wang, 2019), better adjustment (Xian, Zhang, Yang, Zhang, & Wang, 2018), and reduced rehospitalizations (Hardiman, Reames, McLeod, & Regenbogen, 2016). However, in all studies conducted to date, ostomy self-care was evaluated only partially (e.g., self-care abilities) without a clear definition (Hardiman et al., 2016; Xian et al., 2018; Zhang et al., 2019) and with questionnaires or checklists lacking sound psychometrics (Hardiman et al., 2016; Xian et al., 2018; Zhang et al., 2019). A recent document published by the International Center for Self-Care Research (Jaarsma et al., 2020) recommended the adoption of the above criteria. Moreover, only a few previous studies have investigated socio-demographic and clinical variables associated with ostomy self-care behaviours which are theoretically based.

1.1 | Background

According to the self-care theory which guided this study (Riegel et al., 2012) and the authors' previous conceptualization (Villa, Vellone, et al., 2019, p.26), ostomy self-care is 'a naturalistic decision-making process that influences actions related to maintaining the physiological stability of the stoma and peristomal skin (self-care maintenance), facilitates the perception of problems and complications (self-care monitoring) and directs the management of these problems and complications (self-care management)'. Even though it is not part of self-care, an important variable influencing self-care is self-care confidence or self-care self-efficacy, which has been defined as the ability of the patient to engage effectively in self-care (Riegel et al., 2012; Villa, Vellone, et al., 2019).

As reported above, to date, studies conducted on ostomy self-care have described only partial aspects of self-care. Regarding studies focussed on self-care maintenance behaviours, investigators have studied compliance with the ostomy and pouching system (Bulkley et al., 2018; Ran et al., 2016; Sun et al., 2013) and dietary adjustment (Sun et al., 2013). Studies attributable to self-care monitoring behaviours have been focussed on monitoring ostomy aspects, such as leakage (Bulkley et al., 2018) and dietary intake (de Oliveira, Boroni Moreira, Pereira Netto, & Gonçalves Leite, 2018). Regarding self-care management, investigators have studied how ostomy patients deal with ostomy complications (Cheng, Meng, Yang, & Zhang, 2013; Vonk-Klaassen et al., 2016).

Investigators have also analysed the influence of socio-demographic and clinical variables on ostomy self-care, which have been found in age and gender. However, the results of those studies are inconsistent. For example, one study (Goldblatt et al., 2018) found that younger age is associated with better self-care in terms

of attaining independent stoma management, but another study (Bulkley et al., 2018) found that younger age was associated with more challenges in ostomy self-care. Regarding gender, males have been found to perform better ostomy self-care in terms of more independence in stoma care at discharge after surgery (Goldblatt et al., 2018), but another study found no statistically significant relationship between self-care and gender (Bulkley et al., 2018).

Studies conducted on self-care in other chronic conditions have found that being employed (Ausili et al., 2018) or unemployed (Cocchieri et al., 2015), education level (Ausili et al., 2018), caregiver support (Cocchieri et al., 2015) and living alone (Lee, Lennie, Yoon, Wu, & Moser, 2017) can influence self-care, but these variables have never been investigated in ostomy self-care. Regarding income, no significant relationship has been found between ostomy self-care and income (Bulkley et al., 2018).

Regarding the influence of clinical variables on ostomy self-care, a higher body mass index (BMI) has been found to be consistently related to ostomy self-care challenges (Bulkley et al., 2018). No studies have analysed the relationship between self-care and time since stoma creation or the duration of an ostomy (e.g., temporary or permanent), but it has been observed that individuals with permanent ostomy had a better understanding of care-related information and practices (Karabulut, Dinç, & Karadag, 2014). Moreover, no significant relationship has been found between self-care and comorbidity (Bulkley et al., 2018), while information during hospitalization on stoma care and pre-operative stoma site marking have been found to be associated with an increased probability of independent stoma management at discharge (Goldblatt et al., 2018) and with better self-care respectively (Danielsen, Burcharth, & Rosenberg, 2013; Jensen et al., 2017). Moreover, so far, investigators have not found any significant relationship between having a different type of enterostomy (e.g., colostomy or ileostomy) and self-care (Bulkley et al., 2018; Goldblatt et al., 2018). Finally, less is known about the direct correlation between self-care and underlying diseases which lead to ostomy creation (e.g., oncological and non-oncological disease), but it has been found that cancer ostomy patients showed better quality of life (Jansen et al., 2015), which is considered in the literature to be an element correlated with ostomy self-care (Liao & Qin, 2014; Zhang et al., 2019).

Self-efficacy has been considered in the literature to be a factor associated with positive health outcomes after an ostomy (Su et al., 2016, 2017). However, few studies have identified the association between self-care self-efficacy and ostomy self-care. It has been found that higher levels of self-care self-efficacy are associated with family support, higher educational level and ostomy type (Su et al., 2016). Moreover, another study (Kandagatla et al., 2018) found that self-efficacy was not different between younger and older patients after discharge. Self-efficacy is also an important factor in the self-care behaviours of colostomy patients. Indeed, self-efficacy was found to increase when patients could independently perform self-care (Nam et al., 2019).

In conclusion, several studies have described something related to self-care in ostomy patients, but what the investigators have studied is not real self-care. Indeed, several studies have mostly focussed on other concepts, such as adjustment, quality of life, and stoma care abilities. Therefore, this study aims to describe the theory-based self-care process and its associated variables in ostomy patients.

2 | THE STUDY

2.1 | Aims

The aim of this study was threefold: (a) to describe self-care in ostomy patients; (b) to identify socio-demographic (i.e., age, gender, occupation, education, living alone, and financial problems) and clinical (i.e., BMI, number of ostomies, nature of the ostomy, comorbid conditions, information received during hospitalization on stoma care, pre-operative stoma site marking, autonomy in stoma management, time since stoma creation, type of ostomy, and underlying disease) variables associated with self-care; and (c) to identify the association between self-care self-efficacy and self-care over and above socio-demographic and clinical variables associated with self-care.

2.2 | Design

A longitudinal, multicentre design was used to conduct the study. The research was conducted across Italy in eight outpatient clinics for ostomy patients in Rome and Milan between February 2017 -May 2018.

2.3 | Sample/participants

A convenience sample of ostomy patients was recruited in the study. The inclusion criteria were: (a) having an ostomy for any diagnosis (e.g., ileostomy, colostomy, and urostomy), including both elective and urgent cases, for more than 1 month; (b) being older than 18; (c) speaking the Italian language; and (d) providing written consent to participate in the study. Patients with serious psychiatric disorders or severe cognitive impairments were excluded. Participants were enrolled during outpatient visits by trained nurse research assistants. The minimum sample size was calculated based on the number of observations required to assess the factor structure of the 32-item Ostomy Self-Care Index (OSCI) (Villa, Vellone, et al., 2019). Therefore, to be able to complete a confirmatory factor analysis before proceeding in the analytic process, a minimum of 10 observations per item ($N = 320$) were expected both at baseline (T0) and after 6 months (T1) (DeVellis, 2012). A sensitivity analysis was carried out using G*Power software v.3.1.9.2 with respect to the most complex multiple regression analysis planned and considering the minimum sample size of 320. In a multiple regression model with 19 variables, such sample size would allow for detection of effect sizes as small as 0.09 with an achieved power of 0.95. To avoid problems in sample size due to patient dropping out of the study, a larger sample was collected at T0. We recruited a total of 523 patients during the baseline and 362 patients at follow-up.

2.4 | Data collection

Data were collected twice: at baseline (T0) and after 6 months (T1). Patient assessments were conducted using the following instruments.

2.4.1 | Socio-demographic and clinical questionnaire

This questionnaire was developed by the research team to collect data on socio-demographic (i.e., age, gender, occupation, education, live alone, and financial problems) and clinical characteristics. Clinical characteristics included BMI, the number of ostomies, the nature of the ostomy (i.e., temporary or permanent), the presence of other comorbid conditions (e.g., diabetes, hypertension), information received during hospitalization on stoma care (i.e., no information, little information, enough information, a lot of information), pre-operative stoma site marking (i.e., yes or no), autonomy in stoma management, time since stoma creation, type of ostomy (i.e., colostomy, ileostomy, urostomy) and underlying disease (i.e., oncological and non-oncological).

2.4.2 | The Ostomy Self-Care Index

The OSCI was developed to measure self-care in ostomy patients and comprises 32 items divided into four scales which assess the following dimensions: (A) self-care maintenance; (B) self-care monitoring; (C) self-care management; and (D) self-care self-efficacy (Villa, Vellone, et al., 2019). The self-care maintenance scale measures daily routine behaviours performed to maintain stable stoma and peristomal skin. The self-care monitoring scale evaluates stoma and peristomal skin monitoring, while the self-care management scale measures the ability of the patient to recognize problems and behaviours in response to those problems. The self-care management scale can only be administered to patients who have experienced stoma problems in the last month. The self-care self-efficacy scale assesses a patient's confidence in their ability to engage effectively in self-care.

The OSCI is a self-reported tool which uses a 5-point Likert scale from 'Never' to 'Always' (Villa, Vellone, et al., 2019). Standardized 0 to 100 scores are calculated for each scale. Higher scores indicate better self-care. As in other self-care scales used in other populations (Riegel, Lee, Dickson, & Carlson, 2009), a score ≥ 70 on each scale is considered adequate self-care.

2.5 | Ethical considerations

The study was approved by the ethical committee of one of the hospitals where patients were enrolled and all of the other enrolling hospitals accepted the ethical approval of that hospital. All patients participated voluntarily and were informed of the objectives of the study, the procedures and their right to participate and withdraw from the study at any time. Participants provided an informed consent and a privacy statement. In addition, participants' data protection and anonymity were guaranteed through the attribution of a unique identification code. We also assured the publication of studies in aggregate form to prevent the identification of each patient.

2.6 | Data analysis

All analyses were conducted using SPSS v. 25 (IBM Corp., released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.). The main descriptive statistics (e.g., means, standard deviations, and frequencies) were used to describe the sample's socio-demographic and clinical characteristics and the level of self-care. Correlations between self-care dimensions and patient socio-demographic and clinical characteristics were performed with Pearson's correlations for continuous variables and Spearman's correlations for ordinal and dichotomous variables.

To identify socio-demographic and clinical variables associated with self-care and the association between self-care self-efficacy and self-care, three separate two-step hierarchical regression analyses were conducted with self-care maintenance, monitoring, and management at T1 as outcome variables. In the first step, the following socio-demographic and clinical explanatory variables were entered: age, gender, occupation, education, live alone, financial problems, BMI, number of ostomies, nature of the ostomy, comorbid conditions, information received during hospitalization on stoma care, pre-operative stoma site marking, autonomy in stoma management, time since stoma creation, type of ostomy, and underlying disease. In the first step, each model explaining self-care maintenance, monitoring, and management at T1 was controlled for self-care maintenance, monitoring and management at T0 respectively. In the second step, we entered self-care self-efficacy.

2.7 | Validity, reliability, and rigour

In a previous validation study, the OSCI was shown to be a valid and reliable tool for measuring self-care in ostomy patients with a very high internal consistency for the total OSCI ($\alpha = 0.975$). For the maintenance, monitoring, management, and self-efficacy scales, the Cronbach's alpha values were 0.965, 0.953, 0.930, and 0.962 respectively (Villa, Vellone, et al., 2019). To assure rigour in the data collection, periodic meetings were held with the research assistants and the main investigator was always available by telephone.

3 | RESULTS

3.1 | Socio-demographic and clinical characteristics

The sample enrolled at baseline (Table 1) was composed of 523 patients who were predominantly male (63.9%) with a mean age of

TABLE 1 Socio-demographic and clinical characteristics at baseline ($N = 523$)

Socio-demographic and clinical characteristics	*N* (%)
Age, *mean (SD)*	68.6 (12.4)
Gender	
Male	334 (63.9)
Female	189 (36.1)
Occupation	
Employed	115 (22.0)
Unemployed/retired	402 (76.9)
Missing data	6 (1.1)
Education	
Elementary	110 (21.0)
Middle school	156 (29.8)
High school	203 (38.8)
University degree	54 (10.3)
Live alone	92 (17.6)
Financial problems	
Having more than necessary for living	56 (10.7)
Having just what is necessary for living	427 (81.6)
Not having what is necessary for living	40 (7.6)
BMI, *mean (SD)*	25.03 (4.30)
Number of ostomies	
1	481 (92.0)
2	42 (8.0)
Nature of the ostomy	
Temporary	144 (27.5)
Permanent	379 (72.5)
Other comorbid conditions	242 (46.3)
Reported information received during hospitalisation on stoma care	
None	100 (19.1)
Little	93 (17.8)
Enough	259 (49.5)
A lot	71 (13.6)
Received preoperative stoma site marking	193 (36.9)
Autonomy in stoma management	
Autonomous	259 (49.5)
Supported	264 (50.5)
Type of support received ([a])	
From partner	177 (67.04)
From children	66 (25)
From others	21 (7.95)
Time since stoma creation (months, mean [*SD*])	40.60 (69.47)
Type of ostomy	
Colostomy	203 (38.8)
Ileostomy	153 (29.3)
Urostomy	158 (30.2)
Unknown	4 (0.8)
Ileostomy and colostomy	2 (0.4)
Colostomy and urostomy	2 (0.4)
Ileostomy and urostomy	1 (0.2)
Underlying disease	
Oncological disease	433 (82.8)
Non-oncological disease	89 (17.0)
Both	1 (0.2)

[a]Of those ($n = 264$) who were supported in stoma management.

69 years (*SD* 12.4, range 29–95), unemployed or retired (76.9%) and mostly with elementary or middle school education (50.8%). Only 18% of patients lived alone and most had financial resources to guarantee the necessities and more than necessary for living (92.3%).

Regarding clinical characteristics, in the sample, the mean BMI was 25.03 (*SD* 4.30, range 14.84–42.58). Most participants had one ostomy (92.0%) and enterostomies (38.8% colostomies, 29.3% ileostomies). Moreover, most patients had a permanent stoma (72.5%): indeed, the mean time since stoma creation was 40.6 months (range 1 month to 40 years; *SD* 69.47); in addition, almost half of the patients (46.3%) also had other comorbid conditions (e.g., diabetes). The studied patients were generally followed during the pre- and postoperative path: nearly half of the participants (49.5%) had received enough information during hospitalization. However, in some patients (36.9%), pre-operative stoma site marking was performed. At home, patients were primarily autonomous (49.5%). Of those who received support, most received support from partners (67.04%). The ostomy surgery in the sample was mainly required for oncological disease (82.8%).

After 6 months, 161 patients (30.8% of the sample) dropped out. Of those, 29.2% refused to continue the study, 18% were unreachable, 13.7% received an ostomy recanalization, 21.1% were deceased, and 18% were excluded because they provided incomplete data.

3.2 | Self-care maintenance, monitoring, management, and self-efficacy

At baseline, mean scores of self-care maintenance, monitoring, management, and confidence were 77.24 (*SD* 26.65), 76.44 (*SD* 24.64), 45.6 (*SD* 9.89), and 65.33 (*SD* 26.50), respectively. Therefore, only self-care management and self-care self-efficacy scores were below the recommended threshold of 70 (Riegel et al., 2009), while self-care maintenance and self-care monitoring mean scores were middle-high. Only 16.1% of patients reported complications or problems, so self-care management (behaviours in response to stoma complications or problems) was only assessed in 84 cases.

After 6 months, enrolled patients showed higher mean scores in all dimensions of self-care: mean scores of self-care maintenance, self-care monitoring, self-care management, and self-care self-efficacy were 78.79 (*SD* 25.27), 79.10 (22.20), 72.80 (18.64), and 71.70 (22.76) respectively. Therefore, they were higher than the recommended threshold of 70 (Riegel et al., 2009).

3.3 | Correlations between self-care and participant socio-demographic and clinical characteristics

Table 2 reports the correlations between participant self-care dimensions and socio-demographic and clinical characteristics at T0. All self-care dimensions correlated positively with each other, except for self-care maintenance and management, which correlated negatively. At T0, several socio-demographic and clinical variables were significantly correlated with self-care maintenance, monitoring, management, and self-efficacy scores, as reported in Table 2.

3.4 | Variables associated with self-care maintenance, monitoring, and management at T1

The first step of the hierarchical regression analysis with socio-demographic and clinical variables at T0 as explanatory variables and self-care maintenance, monitoring, and management at T1 as outcome variables, controlling for self-care maintenance, monitoring, and management at T0, respectively, is reported in Table 3 (first step column). Significant variables associated with better self-care maintenance at T1 were female gender, more information received during hospitalization and better autonomy in stoma management. This model explained 19% of the variance in self-care maintenance at T1 (adjusted $R^2 = 0.19$, $F = 5.603$, $p = .0019$). After adding self-care self-efficacy to the model (Table 3, second step column), a significant increase in the explained variance was observed (adjusted $R^2 = 0.20$; $F = 5.718$; $p_{\Delta F} = 0.013$), but gender was no longer a significant variable associated with self-care maintenance ($p = .085$).

Significant variables associated with self-care monitoring at T1 were female gender, better education, more information received during hospitalization and better autonomy in stoma care. That model explained 25% of the variance in self-care monitoring at T1 (adjusted $R^2 = 0.25$, $F = 7.512$, $p < .001$). After adding self-care self-efficacy to the model (Table 3, second step column), the explained variance of self-care monitoring at T1 increased significantly (adjusted $R^2 = 0.26$; $F = 7.407$; $p_{\Delta F} = 0.0419$), but autonomy in stoma management was no longer a significant variable associated with self-care monitoring. Regarding self-care management, none of the considered variables significantly explained self-care management at T1 both in the first (adjusted $R^2 = 0.22$, $F = 1.357$, $p = .394$) and second step of the regression analysis (Table 3) after adding self-care self-efficacy to the model (adjusted $R^2 = 0.10$; $F = 1.136$; $p_{\Delta F} = 0.588$).

4 | DISCUSSION

To the best of our knowledge, this is the first study aimed at describing self-care in ostomy patients with a psychometrically sound instrument and one of the first studies which considered socio-demographic and clinical variables associated with ostomy self-care behaviours which are theoretically based. We found that ostomy patients performed a good level of self-care that several socio-demographic and clinical variables explained self-care and that self-care self-efficacy had an important role in explaining self-care maintenance and monitoring.

In our sample, at both times of enrollment, we found high levels of self-care maintenance and self-care monitoring and self-care management since the mean scores of those three dimensions were all above the recommended threshold of 70 (Riegel et al., 2009). Those results could be because our participants were mostly enrolled in outpatient settings where they were cared for by specialized nurses or stoma therapists who periodically followed up on patients. In our study, patients effectively performed self-care behaviours, such as removing ostomy appliances correctly, cleaning the skin with soap and water, drying dabbing skin around the stoma and monitoring the stoma; the appliance; or the stoma appliance provision. However, looking at specific self-care maintenance and self-care monitoring items, our patients had lower scores on the items measuring drinking according to the information received and monitoring weight. These results are consistent with another study (Sun et al., 2013), where patients reported challenges in dietary adjustments. Therefore, these findings may suggest that ostomy patients can experience difficulties in adapting their diet to the new condition.

Regarding self-care management behaviours, at baseline, we observed that only 16% of our participants had complications or problems related to the stoma and had to adopt a response to these complications and problems. One explanation for this could be that our participants were regularly followed up on by ostomy nurses who educated them on how to manage their stoma. This finding is consistent with another study showing that when patients are followed up regularly by a specialized ostomy nurse, they experience a lower prevalence of peristomal skin problems (Carlsson, Fingren, Hallén, Petersén, & Lindholm, 2016). It is also interesting that the self-care management scores were positively correlated with self-care monitoring scores but negatively correlated with self-care maintenance scores. Our interpretation is that if patients monitor their stoma and peristomal skin they might respond more effectively to these problems, but if they perform better self-care maintenance behaviours, for example, changing the stoma appliance according to information received, they are less likely to have complications related to the stoma.

In this study, we identified socio-demographic and clinical variables associated with self-care. Female gender, information received during hospitalization and autonomy in stoma management were associated with both self-care maintenance and monitoring, while self-care monitoring was also associated with participant education.

TABLE 2 Correlations between dimensions of self-care at T0 and between dimensions of self-care at T0 and socio-demographic and clinical characteristics ($N = 523$)

Variables	Self-care maintenance T0	Self-care monitoring T0	Self-care management T0	Self-care self-efficacy T0
Self-care maintenance T0	1			
Self-care monitoring T0	**0.884****	1		
Self-care management T0	**−0.247***	**0.313****	1	
Self-care self-efficacy T0	**0.561****	**0.601****	**0.241***	1
Age	0.021	−0.007	0.024	**−0.110***
Gender (0 = Male; 1 = Female)	0.038	**0.133****	0.043	**0.133****
Occupation (0 = Unemployed/ retired;1 = Employed)	**0.108***	**0.099***	0.088	**0.146****
Education	0.010	**0.108***	0.144	**0.109***
Live alone (0 = No; 1 = Yes)	0.071	0.081	−0.155	0.043
Financial Problems	0.003	0.022	0.124	−0.047
BMI	−0.011	−0.015	−0.145	0.004
Number of ostomies (0 = One; 1 = Two)	**−0.121****	**−0.096***	−0.040	**−0.115****
Nature of the ostomy (0 = Temporary; 1 = Permanent)	−0.063	−0.058	−0.124	−0.030
Comorbid condition (0 = No; 1 = Yes)	0.038	0.039	0.101	0.021
Information received during hospitalization on stoma management[a]	**0.135****	**0.144****	−0.085	**0.089***
Preoperative stoma site marking (0 = No; 1 = Yes)	0.003	−0.020	0.137	−0.029
Autonomy in stoma management (0 = Supported; 1 = Autonomous)	0.016	**0.124****	**0.265***	**0.189****
Time since stoma creation (0 = up to 24 months; 1 = more than 24 months)	−0.033	0.012	−0.001	0.022
Type of ostomy				
Colostomy (0 = Other types; 1 = Colostomy)	0.050	0.005	−0.144	**0.092***
Ileostomy (0 = Other types; 1 = Ileostomy)	0.013	0.070	0.127	0.083
Urostomy (0 = Other types; 1 = Urostomy)	−0.066	−0.075	0.015	**−0.180****
Underlying disease (0 = Non-oncological; 1 = Oncological)	0.074	0.074	0.048	0.081

[a]1 = no information; 2 = little information; 3 = enough information; 4 = a lot of information. Correlation coefficients in bold are statistically significant.

*$p<.05$.

**$p<.001$.

Findings that female gender was a variable associated with better self-care maintenance and self-care monitoring was not surprising since other studies conducted on self-care in other chronic conditions have found the same (Cocchieri et al., 2015). Interestingly, education was only associated with self-care monitoring. Our explanation is that, as described in the middle-range theory of self-care in chronic illness (Riegel et al., 2012), self-care monitoring is more difficult than self-care maintenance because it requires more attention to be paid to signs and symptoms. It has also been demonstrated in other studies that lower education might limit a person's ability to recognize signs and symptoms of complication (S. Lee & Riegel, 2018).

Our analysis revealed that more information received during hospitalization and better autonomy in stoma management were associated with better self-care maintenance and self-care monitoring. Information and autonomy might be interrelated, and it is not surprising that they both were associated with self-care maintenance and monitoring. In fact, prior studies have already shown that educational programmes during the pre- and postoperative phases improve ostomy self-care (Faury, Koleck, Foucaud, M'Bailara,

TABLE 3 Hierarchical regression for self-care maintenance, self-care monitoring (T0 $N = 523$; T1 $N = 362$), and self-care management (T0 and T1 $N = 24$) at T1

	Self-care maintenance				Self-care monitoring				Self-care management			
	First step		Second step		First step		Second step		First step		Second step	
Explanatory variables	Beta[*,a]	*p*	Beta[*,a]	*p*	Beta[*,a]	*p*	Beta[*,a]	*p*	Beta[*,a]	*p*	Beta[*,a]	*p*
(Intercept)		<0.001		<0.001		<0.001		<0.001		0.044		0.064
Self-care maintenance, monitoring, and management at T0[**,b]	**0.334**	<0.001	**0.245**	<0.001	**0.397**	<0.001	**0.319**	<0.001	−0.566	0.183	−0.571	0.220
Age (z score)	0.007	0.922	0.016	0.813	−0.007	0.909	0.000	0.994	0.023	0.955	−0.082	0.866
Gender (0 = Male; 1 = Female)	**0.107**	0.042	0.090	0.085	**0.134**	0.008	**0.123**	0.015	−0.590	0.233	−0.590	0.275
Occupation (0 = Unemployed/retired; 1 = Employed)	−0.045	0.467	−0.048	0.441	−0.023	0.702	−0.026	0.670	−0.892	0.135	−0.854	0.190
Education	0.082	0.134	0.080	0.139	**0.112**	0.035	**0.114**	0.030	0.622	0.141	0.534	0.262
Live alone (0 = No; 1 = Yes)	−0.022	0.672	−0.023	0.651	−0.051	0.314	−0.052	0.295	0.053	0.910	0.193	0.737
Financial problems	0.055	0.275	0.055	0.272	0.094	0.055	0.095	0.050	0.181	0.605	0.205	0.594
BMI (z score)	0.008	0.879	0.000	0.997	−0.048	0.338	−0.052	0.300	0.181	0.686	−0.096	0.890
Number of ostomies (0 = One; 1 = Two)	−0.059	0.274	−0.062	0.243	−0.018	0.726	−0.024	0.647	0.537	0.140	0.519	0.191
Nature of the ostomy (0 = Temporary; 1 = Permanent)	−0.026	0.656	−0.029	0.616	0.031	0.579	0.026	0.640	−0.452	0.332	−0.589	0.311
Comorbid condition (0 = No; 1 = Yes)	−0.092	0.072	−0.087	0.089	−0.072	0.147	−0.068	0.169	−0.473	0.342	−0.398	0.470
Information received during hospitalisation on stoma management	**0.158**	0.003	**0.145**	0.006	**0.157**	0.002	**0.148**	0.003	−0.104	0.773	−0.073	0.852
Preoperative stoma site marking (0 = No; 1 = Yes)	0.014	0.791	0.021	0.674	−0.008	0.864	−0.006	0.900	−0.109	0.762	−0.068	0.864
Autonomy in stoma management (0 = Supported; 1 = Autonomous)	**0.158**	0.004	**0.144**	0.009	**0.109**	0.040	0.102	0.054	0.226	0.599	0.301	0.541
Time since stoma creation (0 = up to 24 months; 1 = more than 24 months)	−0.018	0.746	−0.026	0.646	0.013	0.809	0.008	0.876	−0.146	0.742	−0.108	0.823
Type of ostomy—Ileostomy (1 = Ileostomy; 0 = Colostomy/Urostomy)	−0.005	0.932	−0.012	0.840	−0.014	0.801	−0.016	0.773	0.011	0.976	0.012	0.977
Type of ostomy—Urostomy (1 = Urostomy; 0 = Colostomy/Ileostomy)	−0.065	0.307	−0.035	0.581	−0.047	0.437	−0.019	0.758	−0.348	0.609	−0.201	0.796
Underlying disease (0 = Non-oncological; 1 = Oncological)	−0.058	0.292	−0.050	0.358	−0.039	0.466	−0.034	0.520	0.840	0.101	0.723	0.215
Self-care self-efficacy T0			**0.157**	0.013			**0.129**	0.041			−0.205	0.588
R^2	0.23		0.25		0.29		0.30		0.83		0.84	
Adjusted R^2	0.19		0.20		0.25		0.26		0.22		0.10	
F	5.603	<0.001	5.718	<0.001	7.512	<0.001	7.407	<0.001	1.357	0.394	1.136	0.506

Note: Specifically, self-care maintenance was entered in the self-care maintenance regression model, self-care monitoring was entered in the self-care monitoring regression model and self-care management was entered in the self-care management regression model. Beta coefficients in bold are statistically significant.

[a]Beta are all standardised.

[b]Only the corresponding self-care dimension at T0 was entered in the regression model.

& Quintard, 2017; Seo, 2019; Wen et al., 2019). People who are autonomous in their care are implicitly more likely to perform self-care.

We did not find any significant variable associated with self-care management. This could be because only 24 patients at both times of enrollment (T0 & T1) had problems or complications related to their stoma and could complete the self-care management scale. However, we should also clarify that self-care management is more complex than self-care maintenance because it requires people to better understand what is happening in their own bodies and to decide on actions to respond to a complication or problem. Consequently, variables other than socio-demographic and clinical variables could be associated with self-care management.

Interestingly, self-care self-efficacy played an important role in explaining self-care maintenance and monitoring as has also been found in other self-care studies (Ausili et al., 2018; Riegel et al., 2012; Vellone et al., 2015). This is particularly interesting in terms of practical implications because self-efficacy can be improved with interventions (Seo, 2019; Xu et al., 2017).

4.1 | Limitations and strengths

This study has several limitations. First, we enrolled patients using a convenience sample which may limit the generalizability of our study results. Second, even though we conducted a multicentre study, the sample was limited to a single European country and specific sociocultural issues might influence our findings. Another important limitation is that we enrolled our participants in centres where there were specialized nurses who followed up on patients at specific time intervals and educated them on stoma care. Considering these limitations, the self-care levels of ostomy patients are probably lower than we found in our sample because not all stoma patients have access to specialized ostomy nurses (Sun et al., 2018).

However, our study also has strengths. Particularly, we used a theoretically based and psychometrically sound instrument to measure self-care as well as a longitudinal design. Previous studies have considered only specific aspects of self-care (e.g., stoma care), while, by using the OSCI, we considered a pool of 32 behaviours which are theoretically based and are important for maintaining ostomy patients in good health and for dealing more effectively with daily problems they could face. Another important strength of the study is the longitudinal design we used. Many self-care studies are conducted with cross-sectional designs (Ausili et al., 2016, 2018; Cocchieri et al., 2015) and this represents a limitation because it is easier to find an association between the variables and the outcomes. Instead, in our study, we considered baseline variables which were regressed on self-care scores collected 6 months from the baseline. Finally, another strength of our study is that it adopted the recommendations of the International Center for Self-Care Research (Jaarsma et al., 2020), which helps to advance self-care research.

4.2 | Clinical implications

Our study has important clinical implications. The identified variables associated with self-care maintenance and monitoring can be used to tailor interventions aimed at improving ostomy self-care. Considering our findings, self-care interventions should be more intensive with male patients, those with lower education levels, those who have not received enough information during hospitalization and those who are less autonomous in stoma care and have lower self-care self-efficacy. The last three variables can be modified with intervention.

5 | CONCLUSION

In this study, we found a middle-high level of self-care maintenance, monitoring, and management and we identified modifiable variables which are associated with self-care, including self-efficacy. Further studies are needed to describe self-care in ostomy patients to identify other variables influencing self-care and to test interventions aimed at improving self-care in this vulnerable population.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

Made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data (V.G., M.N., F.C., E.V., R.A., G.V.); Involved in drafting the manuscript or revising it critically for important intellectual content (V.G., M.N., F.C., E.V., R.A., G.V.); Given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content (V.G., M.N., F.C., E.V., R.A., G.V.); Agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved (V.G., M.N., F.C., E.V., R.A., G.V.).

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REFERENCES

Ausili, D., Rebora, P., Di Mauro, S., Riegel, B., Valsecchi, M. G., Paturzo, M., … Vellone, E. (2016). Clinical and socio-demographic determinants of self-care behaviours in patients with heart failure and diabetes mellitus: A multicentre cross-sectional study. *International Journal of Nursing Studies*, *63*, 18–27. https://doi.org/10.1016/j.ijnurstu.2016.08.006

Ausili, D., Rossi, E., Rebora, P., Luciani, M., Tonoli, L., Ballerini, E., … Di Mauro, S. (2018). Socio-demographic and clinical determinants of self-care in adults with type 2 diabetes: A multicentre observational study. *Acta Diabetologica*, *55*(7), 691–702. https://doi.org/10.1007/s00592-018-1135-x

Ayaz-Alkaya, S. (2019). Overview of psychosocial problems in individuals with stoma: A review of literature. *International Wound Journal*, *16*(1), 243–249. https://doi.org/10.1111/iwj.13018

Bulkley, J. E., McMullen, C. K., Grant, M., Wendel, C., Hornbrook, M. C., & Krouse, R. S. (2018). Ongoing ostomy self-care challenges of long-term rectal cancer survivors. *Supportive Care in Cancer*, *26*(11), 3933–3939. https://doi.org/10.1007/s00520-018-4268-0

Carlsson, E., Fingren, J., Hallén, A. M., Petersén, C., & Lindholm, E. (2016). The prevalence of ostomy-related complications 1 year after ostomy surgery: A prospective, descriptive, clinical study. *Ostomy Wound Management*, *62*(10), 34–48.

Cheng, F., Meng, A., Yang, L.-F., & Zhang, Y. (2013). The correlation between ostomy knowledge and self-care ability with psychosocial adjustment in Chinese patients with a permanent colostomy: A descriptive study. *Ostomy Wound Management*, *59*(7), 35–38.

Claessens, I., Probert, R., Tielemans, C., Steen, A., Nilsson, C., Andersen, B. D., & Størling, Z. M. (2015). The Ostomy Life Study: The everyday challenges faced by people living with a stoma in a snapshot. *Gastrointestinal Nursing*, *13*(5), 18–25. https://doi.org/10.12968/gasn.2015.13.5.18

Clari, M., Matarese, M., Ivziku, D., & De Marinis, M. G. (2017). Self-care of people with chronic obstructive pulmonary disease: A meta-synthesis. *Patient*, *10*(4), 407–427. https://doi.org/10.1007/s40271-017-0218-z

Cocchieri, A., Riegel, B., D'Agostino, F., Rocco, G., Fida, R., Alvaro, R., & Vellone, E. (2015). Describing self-care in Italian adults with heart failure and identifying determinants of poor self-care. *European Journal of Cardiovascular Nursing*, *14*(2), 126–136. https://doi.org/10.1177/1474515113518443

Danielsen, A. K., Burcharth, J., & Rosenberg, J. (2013). Patient education has a positive effect in patients with a stoma: A systematic review. *Colorectal Disease*, *15*(6), e276–e283. https://doi.org/10.1111/codi.12197

de Oliveira, A. L., Boroni Moreira, A. P., Pereira Netto, M., & Gonçalves Leite, I. C. (2018). A cross-sectional study of nutritional status, diet and dietary restrictions among persons with an ileostomy or colostomy. *Ostomy/Wound Management*, *64*(5), 18–29. https://doi.org/10.25270/owm.2018.5.1829

DeVellis, R. (2012). *Scale development: Theory and application*. New York, NY: SAGE Publications Ltd.

Faury, S., Koleck, M., Foucaud, J., M'Bailara, K., & Quintard, B. (2017). Patient education interventions for colorectal cancer patients with stoma: A systematic review. *Patient Education and Counseling*, *100*(10), 1807–1819. https://doi.org/10.1016/j.pec.2017.05.034

Goldblatt, J., Buxey, K., Paul, E., Foot-Connolly, R., Leech, T., & Bell, S. (2018). Study on the time taken for patients to achieve the ability to self-care their new stoma. *ANZ Journal of Surgery*, *88*(6), E503–E506. https://doi.org/10.1111/ans.14195

Hardiman, K. M., Reames, C. D., McLeod, M. C., & Regenbogen, S. E. (2016). Patient autonomy–centered self-care checklist reduces hospital readmissions after ileostomy creation. *Surgery*, *160*(5), 1302–1308. https://doi.org/10.1016/j.surg.2016.05.007

Jaarsma, T., Strömberg, A., Dunbar, S. B., Fitzsimons, D., Lee, C., Middleton, S., … Riegel, B. (2020). Self-care research: How to grow the evidence base? *International Journal of Nursing Studies*, *105*, 103555. https://doi.org/10.1016/j.ijnurstu.2020.103555

Jansen, F., van Uden-Kraan, C. F., Braakman, J. A., van Keizerswaard, P. M., Witte, B. I., & Verdonck-de Leeuw, I. M. (2015). A mixed-method study on the generic and ostomy-specific quality of life of cancer and non-cancer ostomy patients. *Supportive Care in Cancer*, *23*(6), 1689–1697. https://doi.org/10.1007/s00520-014-2528-1

Jensen, B. T., Kiesbye, B., Soendergaard, I., Jensen, J. B., & Kristensen, S. A. (2017). Efficacy of preoperative uro-stoma education on self-efficacy after Radical Cystectomy; secondary outcome of a prospective randomized controlled trial. *European Journal of Oncology Nursing*, *28*, 41–46. https://doi.org/10.1016/j.ejon.2017.03.001

Jonkman, N. H., Westland, H., Groenwold, R. H. H., Ågren, S., Atienza, F., Blue, L., … Hoes, A. W. (2016). Do self-management interventions work in patients with heart failure? *Circulation*, *133*(12), 1189–1198. https://doi.org/10.1161/CIRCULATIONAHA.115.018006

Kandagatla, P., Nikolian, V. C., Matusko, N., Mason, S., Regenbogen, S. E., & Hardiman, K. M. (2018). Patient-reported outcomes and readmission after ileostomy creation in older adults. *The American Surgeon*, *84*(11), 1814–1818.

Karabulut, H. K., Dinç, L., & Karadag, A. (2014). Effects of planned group interactions on the social adaptation of individuals with an intestinal stoma: A quantitative study. *Journal of Clinical Nursing*, *23*(19–20), 2800–2813. https://doi.org/10.1111/jocn.12541

Krouse, R. S., Grant, M., McCorkle, R., Wendel, C. S., Cobb, M. D., Tallman, N. J., … Hornbrook, M. C. (2016). A chronic care ostomy self-management program for cancer survivors. *Psycho-Oncology*, *25*(5), 574–581. https://doi.org/10.1002/pon.4078

Lee, K. S., Lennie, T. A., Yoon, J. Y., Wu, J.-R., & Moser, D. K. (2017). Living arrangements modify the relationship between depressive symptoms and self-care in patients with heart failure. *The Journal of Cardiovascular Nursing*, *32*(2), 171–179. https://doi.org/10.1097/JCN.0000000000000327

Lee, S., & Riegel, B. (2018). State of the science in heart failure symptom perception research. *The Journal of Cardiovascular Nursing*, *33*(3), 204–210. https://doi.org/10.1097/JCN.0000000000000445

Liao, C., & Qin, Y. (2014). Factors associated with stoma quality of life among stoma patients. *International Journal of Nursing Sciences*, *1*(2), 196–201. https://doi.org/10.1016/j.ijnss.2014.05.007

Liu, C., Ren, H., Li, J., Li, X., Dai, Y., Liu, L., … Li, X. (2016). Predictors for quality of life of bladder cancer patients with ileal conduit: A cross-sectional survey. *European Journal of Oncology Nursing*, *21*, 168–173. https://doi.org/10.1016/j.ejon.2015.09.008

Maydick-Youngberg, D. (2017). A descriptive study to explore the effect of peristomal skin complications on quality of life of adults with a permanent ostomy. *Ostomy/Wound Management*, *63*(5), 10–23.

Nam, K. H., Kim, H. Y., Kim, J. H., Kang, K.-N., Na, S. Y., & Han, B. H. (2019). Effects of social support and self-efficacy on the psychosocial adjustment of Korean ostomy patients. *International Wound Journal*, *16*, 13–20. https://doi.org/10.1111/iwj.13038

Näsvall, P., Dahlstrand, U., Löwenmark, T., Rutegård, J., Gunnarsson, U., & Strigård, K. (2017). Quality of life in patients with a permanent stoma after rectal cancer surgery. *Quality of Life Research*, *26*(1), 55–64. https://doi.org/10.1007/s11136-016-1367-6

Ran, L., Jiang, X., Qian, E., Kong, H., Wang, X., & Liu, Q. (2016). Quality of life, self-care knowledge access and self-care needs in patients with colon stomas one month post-surgery in a Chinese Tumor Hospital. *International Journal of Nursing Sciences*, *3*(3), 252–258. https://doi.org/10.1016/j.ijnss.2016.07.004

Recalla, S., English, K., Nazarali, R., Mayo, S., Miller, D., & Gray, M. (2013). Ostomy care and management a systematic review. *Journal of Wound, Ostomy and Continence Nursing*, *40*(5), 489–500. https://doi.org/10.1097/WON.0b013e3182a219a1

Riegel, B., Jaarsma, T., & Strömberg, A. (2012). A middle-range theory of self-care of chronic illness. *Advances in Nursing Science*, *35*(3), 194–204. https://doi.org/10.1097/ANS.0b013e318261b1ba

Riegel, B., Lee, C. S., Dickson, V. V., & Carlson, B. (2009). An update on the self-care of heart failure index. *Journal of Cardiovascular Nursing*, *24*(6), 485–497. https://doi.org/10.1097/JCN.0b013e3181b4baa0

Seo, H.-W. (2019). Effects of the frequency of ostomy management reinforcement education on self-care knowledge, self-efficacy and ability of stoma appliance change among Korean hospitalised ostomates. *International Wound Journal*, *16*, 21–28. https://doi.org/10.1111/iwj.13047

Siegel, R. L., Miller, K. D., Fedewa, S. A., Ahnen, D. J., Meester, R. G. S., Barzi, A., & Jemal, A. (2017). Colorectal cancer statistics, 2017. *CA: A Cancer Journal for Clinicians*, *67*(3), 177–193. https://doi.org/10.3322/caac.21395

Su, X., Qin, F., Zhen, L., Ye, X., Kuang, Y., Zhu, M., … Wang, H. (2016). Self-efficacy and associated factors in patients with temporary ostomies. *Journal of Wound, Ostomy and Continence Nursing*, *43*(6), 623–629. https://doi.org/10.1097/WON.0000000000000274

Su, X., Zhen, L., Zhu, M., Kuang, Y., Qin, F., Ye, X., … Wang, H. (2017). Determinants of self-efficacy and quality of life in patients with temporary enterostomy: A cross-sectional survey. *Journal of Clinical Nursing*, *26*(3–4), 477–484. https://doi.org/10.1111/jocn.13469

Sun, V., Ercolano, E., McCorkle, R., Grant, M., Wendel, C. S., Tallman, N. J., … Krouse, R. S. (2018). Ostomy telehealth for cancer survivors: Design of the Ostomy Self-management Training (OSMT) randomized trial. *Contemporary Clinical Trials*, *64*, 167–172. https://doi.org/10.1016/j.cct.2017.10.008

Sun, V., Grant, M., McMullen, C. K., Altschuler, A., Mohler, M. J., Hornbrook, M. C., … Krouse, R. S. (2013). Surviving colorectal cancer. *Journal of Wound, Ostomy and Continence Nursing*, *40*(1), 61–72. https://doi.org/10.1097/WON.0b013e3182750143

Vellone, E., Fida, R., D'Agostino, F., Mottola, A., Juarez-Vela, R., Alvaro, R., & Riegel, B. (2015). Self-care confidence may be the key: A cross-sectional study on the association between cognition and self-care behaviors in adults with heart failure. *International Journal of Nursing Studies*, *52*(11), 1705–1713. https://doi.org/10.1016/j.ijnurstu.2015.06.013

Villa, G., Mannarini, M., Della Giovanna, G., Marzo, E., Manara, D. F., & Vellone, E. (2019). A literature review about self-care on ostomy patients and their caregivers. *International Journal of Urological Nursing*, *13*(2), 75–80. https://doi.org/10.1111/ijun.12182

Villa, G., Vellone, E., Sciara, S., Stievano, A., Proietti, M. G., Manara, D. F., … Pantaleo, G. (2019). Two new tools for self-care in ostomy patients and their informal caregivers: Psychosocial, clinical and operative aspects. *International Journal of Urological Nursing*, *13*(1), 23–30. https://doi.org/10.1111/ijun.12177

Vonk-Klaassen, S. M., de Vocht, H. M., den Ouden, M. E. M., Eddes, E. H., & Schuurmans, M. J. (2016). Ostomy-related problems and their impact on quality of life of colorectal cancer ostomates: A systematic review. *Quality of Life Research*, *25*(1), 125–133. https://doi.org/10.1007/s11136-015-1050-3

Wen, S., Li, J., Wang, A., Lv, M., Li, H., Lu, Y., & Zhang, J. (2019). Effects of transtheoretical model-based intervention on the self-management of patients with an ostomy: A randomised controlled trial. *Journal of Clinical Nursing*, *28*(9–10), 1936–1951. https://doi.org/10.1111/jocn.14731

Xian, H., Zhang, Y., Yang, Y., Zhang, X., & Wang, X. (2018). A descriptive, cross-sectional study among Chinese patients to identify factors that affect psychosocial adjustment to an enterostomy. *Ostomy/Wound Management*, *64*(7), 8–17. https://doi.org/10.25270/owm.2018.7.817

Xu, S., Zhang, Z., Wang, A., Zhu, J., Tang, H., & Zhu, X. (2017). Effect of self-efficacy intervention on quality of life of patients with intestinal stoma. *Gastroenterology Nursing*, *41*(4), 341–346. https://doi.org/10.1097/SGA.0000000000000290

Zhang, Y., Xian, H., Yang, Y., Zhang, X., & Wang, X. (2019). Relationship between psychosocial adaptation and health-related quality of life of patients with stoma: A descriptive, cross-sectional study. *Journal of Clinical Nursing*, *28*(15–16), 2880–2888. https://doi.org/10.1111/jocn.14876

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