RESEARCH METHODOLOGY PAPER

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The validity and reliability of the Stoma Self-Efficacy Scale: A methodological study

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Abstract

Aims: To assess the validity and reliability of the stoma self-efficacy scale for Turkish-speaking individuals with stoma.

Background: Self-efficacy in stoma care is one of the most important variables requiring compliance for an increase in the quality of life and well-being of individuals with stoma.

Design: A methodological study.

Methods: This study used translation and back translation for the scale's language equivalence and expert opinion for the content validity. An expert panel and 10 individuals with stoma evaluated the scale for face validity. The scale's reliability was assessed by internal consistency, Pearson correlation, and test–retest reliability in a sample of 174 individuals with stomas. The scale's construct validity was tested with confirmatory factor analysis and exploratory factor analysis.

Results: The content validity index was .96, and Cronbach's alpha was .95. In the test–retest analysis, the intraclass correlation coefficients were high. In the factor analysis, two factors emerged from the scale, and after the confirmatory factor analysis and scale modification, the fit indices of the model were found to provide a good level of validity.

Conclusion: The Turkish version of the stoma self-efficacy scale is a valid and reliable tool to determine the levels of self-efficacy in individuals with stoma.

KEYWORDS
individuals with stoma, nursing, scale, self-efficacy

SUMMARY STATEMENT

What is already known about this topic?

- Stoma creation is one of the most common surgical interventions.
- The ability to cope with the psychological, physiological and socio-cultural changes experienced by individuals with stoma after surgery is related to their levels of self-efficacy.

- Valid and reliable instruments are needed to determine the levels of self-efficacy of individuals with stoma.

What this paper adds?

- The Turkish version of the stoma self-efficacy scale is a valid and reliable tool to determine the levels of self-efficacy in individuals with stoma.

- The stoma self-efficacy scale can be used by nurses to evaluate the self-efficacy levels of Turkish-speaking individuals with stoma in any part of the world.

The implications of this paper:

- The stoma self-efficacy scale can be used to evaluate self-efficacy levels in individuals with stoma and for respective research.
- The adaptation of the stoma self-efficacy scale into Turkish may contribute to the dissemination of self-efficacy results of Turkish individuals with stoma internationally and to the comparative literature.

1 | INTRODUCTION

Despite advances in science, medical technology and surgical techniques, stoma creation is still one of the most common surgical treatments for colorectal cancer (Wang et al., 2018). Stoma creation may result in physiological, psychological and social problems, including uncontrolled gas output, malodor, fear of malfunction and leaks, which may affect social and work life. Furthermore, loss of control of excretion tends to result in a sense of general loss of control. Therefore, individuals often experience challenges that include change in body image, decrease in self-esteem, impaired sexual function, depression, anxiety, adjustment disorders, loneliness, fear and shame (Karadag et al., 2015; Sun et al., 2018; Wu, Chau, & Twinn, 2007). In addition, side effects from ongoing colorectal cancer treatment (e.g., chemo and radiotherapy) and stoma-related complications may further exacerbate the psychological and social problems, leading to poor quality of life (Baykara et al., 2014). The aforementioned problems reduce self-efficacy (limit personal care, stoma care and activities) and subsequently increase stress and financial burden (Sun et al., 2018).

The objectives related to the roles of Wound Ostomy and Continence Nurses (WOCNs) include ensuring that individuals who receive stomas for various reasons, including colorectal cancers, are competent to care for themselves, improving their quality of life, ensuring their reintegration into social life and supporting their return to work. WOCNs play an important role in reintegrating individuals with stoma into society as active and productive individuals. Working in these units, WOCNs help individuals adapt to these changes in their bodies and their lives by increasing their self-efficacy levels (Wound, 2018). The fact that individuals are coping with these problems and adapting to their new situations is related to their self-efficacy levels (Bazalinski, Salacinska, Wiech, & Kózka, 2014).

Self-efficacy is defined as the belief that people can effectively initiate the necessary activities and achieve results in the events related to their lives. In other words, it is the belief that the person is able to perform the necessary behaviours that may lead to the desired results (Bandura, 1994). If self-efficacy levels are high, individuals become active and make more efforts to cope with the situation.

Bandura (1994) defined the situations that shaped the belief of self-efficacy as the individual's actual performance, own experiences, experiences of people with similar characteristics, social persuasion, feedback from others, a perception of mood and physical condition (Bandura, 1994). As can be seen, almost all of these are inseparable elements of patient-centred care planned by WOCN for individuals undergoing stoma surgery (Wound, 2018). In other words, self-efficacy is an important factor that health professionals should consider when providing care to individuals with stoma. It may take time for individuals to adapt to the stoma in the postoperative period (Bazalinski et al., 2014). Therefore, comprehensive assessments should be made to determine the needs of the individuals. How they perceive their condition before and after surgery should be determined, and effective interventions specific to the individual should be planned to improve self-efficacy (Wu et al., 2007). Individuals showing advanced self-efficacy levels can successfully adapt to new behaviours such as self-care skills. Hence, individuals may be able to perform self-care successfully and maintain the necessary activities for improving their health (Lim, Chan, & He, 2015). Self-efficacy, compliance and quality of life in stoma care are considered important variables (Simmons, Smith, Bobb, & Liles, 2007; Su et al., 2017). Studies have shown that there is a positive correlation between self-efficacy and quality of life in patients with stoma (Bazalinski et al., 2014; Wu et al., 2007).

The problems of stoma patients have been extensively covered in the literature. However, as Wound Ostomy and Continence Nursing developed as a field of expertise, it became important to express these issues and nursing interventions to solve problems in a common language. In addition, although a human is a physiological being, meeting the excretion need is associated with privacy in many cultures. This requires prioritizing the cultural dimension of the approach to psychosocial problems in individuals with stoma (Houston, 2017). Thus, while WOCNs contribute to universal science using common language, they are expected to make specific adaptations of the assessment tools they use. On the other hand, when the related literature is reviewed, it can be seen that stoma self-efficacy is an underexamined area (Geng, Howell, Xu, & Yuan, 2017; Su et al., 2016; Wang et al., 2018; Wu et al., 2007; Xu et al., 2018). Studies conducted in Turkey are generally related to problems experienced by individuals with stoma, as well as their education (Altuntas et al., 2012), their compliance with stoma (Cengiz & Bahar, 2017; Karadag et al., 2015) and their quality of life (Kement et al., 2014). There is no study and tool available to assess self-efficacy levels.

The psychometric properties of the stoma self-efficacy scale (SE Scale) have been examined for the English (Bekkers, Van Knippenberg, Van Den Borne, & Van Berge-Henegouwen, 1996) and Chinese versions (Wu et al., 2007). This study was carried out to evaluate the validity and reliability of the 22-item Stoma SE Scale for Turkish-speaking individuals with stoma. This scale, for which reliability and validity testing has been performed, is intended to be used not only in Turkey but also in communities where Turkish is spoken. It is also thought that it will contribute to nursing science and patient-centred care.

The research question was as follows: Is the Stoma SE Scale a valid and reliable scale suitable for use in Turkish-speaking individuals with stoma?

2 | METHODS

2.1 | Aim

This study was conducted to evaluate the validity and reliability of the 22-item Stoma SE Scale for Turkish-speaking individuals with stoma.

2.2 | Design

This is a methodological study. The psychometric properties of the Stoma SE Scale were tested in order to determine if the scale could be used in Turkey and Turkish-speaking communities.

2.3 | Participants and sample size

A self-report survey was completed by 174 Turkish-speaking participants who had undergone stoma surgery. Individuals were eligible to participate if they had undergone a stoma surgery no less than 3 months earlier, had a history of ileostomy or colostomy, were older than 18 years and had no physical or psychological disabilities. A sample of 174 participants was deemed sufficient for the 22-item Stoma SE Scale according to the criteria of Child (2006) and Tavşancıl (2005), who recommend that the sample be at least five times the number of items in the scale. For test–retest, sample size was calculated using G*Power 3 assuming a test–retest correlation of .50 (ρ), power: 0.80 and α: .05; the sample size was determined to be 29 for test retest (Faul, Erdfelder, Lang, & Buchner, 2007; Shoukri, Asyali, & Donner, 2004). Considering possible missing participants, a total of 31 participants were included in the study.

2.4 | Measurements

A 12-item self-report questionnaire developed by the researchers that describes the sociodemographics (e.g., age, gender and marital status) and medical characteristics (e.g., chemotherapy and/or radiotherapy status, stoma creation date and type of stoma) of the individuals and the Stoma SE Scale were used (Bekkers et al., 1996).

2.5 | Stoma SE Scale

The Stoma SE Scale is a 22-item scale with two subscales. Items on this scale are measured on a 5-point Likert-type scale ranging from five (*Extremely Confident*) to one (*Not Being Confident at All*). The first subscale consists of the first 13 items and measures "Stoma Care Self-Efficacy" (Stoma Care SE), while the second subscale consists of the remaining nine items and measures "Social Self-Efficacy" (Social SE). Cronbach's alpha of the original Stoma Care SE and Social SE are .94 and .95, respectively. Possible scores on the scale range from 22 to 110 with higher scores indicating better self-efficacy levels (Bekkers et al., 1996).

2.5.1 | Language equivalence of the scale

The language adaptation of the scale was conducted by following the recommendations of the World Health Organization for adapting the instruments (WHO, 2008). These recommendations include forward translation, expert opinion, back translation, pilot testing and finalization of the scale. In the first stage, the scale was translated into Turkish by three academically qualified linguistics experts. All items were translated into a single text by the researchers then translated back to English by three bilingual (Turkish and English) linguistics experts each working independently. The aforementioned translation and back translation were completed by two different teams of translators. The instrument was reviewed by an expert panel prior to back translation.

2.5.2 | Content and face validity of the scale

The scale's content validity was assessed by seven nursing faculty who have stoma and wound care nursing certification, one nurse with WOCN certification and two physicians who work in the field of stoma surgery. Each was asked to score the items based on a 4-point Likert scale as follows: 4—*Very Relevant*, 3—*Relevant*, 2—*Partially Relevant* and 1—*Not Relevant*. Furthermore, they were asked to write any suggestions if something needed to be changed. For the pilot study, the final version of the scale was formed after considering the expert opinions (Polit & Beck, 2012; Tavşancıl, 2005). In order to determine the face validity of the scale items, 10 experts and 10 individuals with stoma were asked to rate the scale's comprehensibility (3—*Very Clear*, 2—*Slightly Clear* and 1—*Not Clear*) (Polit & Beck, 2012; Tavşancıl, 2005). No further changes were made following the pilot study. As a result, all the scale items were deemed comprehensible.

2.5.3 | Reliability of the scale

The Stoma SE Scale was evaluated for the reliability by using item analysis, internal consistency and test retest. Test–retest reliability was conducted with 31 individuals with stoma 2 weeks after the first interview in the stoma therapy units.

2.6 | Data collection

Data on sociodemographic and medical characteristics were collected using a 12-item self-report questionnaire developed for the study. Data on stoma self-efficacy were collected using the Stoma SE Scale; a 22-item psychometric measure. All data collection procedures took place in three stoma therapy units with WOCNs between March and October 2018; with an average completion time of 10 min.

Participation in the study was voluntary to those who provided written consent. If the education levels of the individuals with stoma were lower than high-school level, data collection was done by face-to-face interviews by the researchers; others filled out the questionnaire by themselves. Data were collected in the stoma therapy units in a private room. Of the participants, 174 completed the questionnaire during the initial phase. Then, the data collection for the test retest was performed with 31 individuals who volunteered to participate. The same 31 individuals were interviewed for the retest using the Stoma SE Scale 2 weeks after the first interview in the stoma therapy units.

2.7 | Data analysis

Data were analysed using IBM SPSS Statistics version 22 and SPSS AMOS version. The data were evaluated using the Kolmogorov–Smirnov test, Q–Q graphs and histograms. Descriptive statistical methods (mean, standard deviation, frequency and percentage) were used to analyse sociodemographic characteristics of the participants. For the construct validity of the scale, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were carried out. Also, floor and ceiling effects were assessed by reviewing the distribution of the scores of each item. In the reliability analysis, Cronbach's alpha analysis was used for internal consistency analysis, and corrected item total correlation was used. An intraclass correlation coefficient (ICC) and paired sample t test were performed for test–retest reliability. Significance was evaluated as $P < .05$.

2.8 | Ethical considerations

In order to adapt the scale to Turkish, permission was obtained from the authors via e-mail. Approval was obtained from the Koç University Human Research Ethics Committee (Ethics Committee no: 2018.029. IRB3.019) for the application of the study, written informed consent was obtained from stoma therapy units to collect the data and verbal and written consent was obtained from the individuals who agreed to participate in the study.

3 | RESULTS

3.1 | Sociodemographic characteristics of individuals with stoma

The mean age of the sample was 54 (SD ± 14.53; range = 20–90). Of these, 59.8% (n = 104) were male, and 82.2% (n = 143) were married. Almost half, 44.3% (n = 77), were primary school graduates or lower; 97.7% (n = 170) had social security insurance (SSI), and 48.3% (n = 84) reported an adequate income. Most, 85.1% (n = 148), did not have continuing treatment; around half, 44.8% (n = 78), had a stoma for less than 1 year, and 54.6% (n = 95) had their stoma urgently created. The largest groups had a colostomy (63.2%, n = 110), had a stoma created

due to cancer (63.8%, n = 111) and had no stoma complications (72.4%, n = 126).

3.2 | Validity analysis

3.2.1 | Content validity analysis

According to expert opinions, the CVI of the Turkish version of the scale was .96, indicating excellent content validity (Polit & Beck, 2012).

3.2.2 | Construct validity

The EFA and CFA analyses were performed to determine the construct validity of the Turkish version of the scale. EFA was applied to determine the factor structure of the scale perceived by these patients. The suitability of the sample was evaluated before EFA was performed. In the analysis, the Kaiser–Mayer–Olkin (KMO) sample adequacy value of the scale was 0.91. This value revealed that the study sample was adequate for EFA. The results for Bartlett's test of sphericity were found to be statistically significant (x^2 = 3004.100; df = 231, P = .001; $P < .01$). This revealed that the data were suitable for EFA (Beavers et al., 2013; Kalaycı, 2010).

Varimax rotation was performed in the EFA and principal component analysis for factor extraction. Two factors emerged in accordance with the original scale. The first explained 31.70% of the total variance, while both factors explained 60.29% of the total variance. Factor loadings close to each other were assigned to factors in accordance with the scale's original subscales. Accordingly, items 1–13 comprised the subscales of Stoma Care SE, and items 14–22, the subscale of Social SE (Table 1).

Model fit of item–factor relationship obtained by EFA was tested by CFA. Thus, it was determined that the factor structure of the original Stoma SE Scale was confirmed in the Turkish sample. In the CFA, many compliance indexes are used to demonstrate the adequacy of the model tested. For the CFA performed in this study, chi-square fit, normed chi-square (NC), goodness of fit index (GFI), the root mean square error of approximation (RMSEA), comparison of model fit indices (CFI), normed fit index (NFI), relative fit indices (RFI) and incremental fit index (IFI) were analysed as fit indices. For the NC value, 2.5 or less is considered to be the perfect fit value. For the GFI, CFI, NFI, RFI and IFI indices, the acceptable fit value is 0.90, and the perfect fit value is 0.95. For RMSEA, 0.08 was accepted as an acceptable fit, and 0.05 was accepted as an excellent fit value (Çapık, 2014; Polit & Beck, 2012).

In the CFA, the fit index of the Turkish form's two-factor model was examined. It was found that scale's fit indices were significant after modification (x^2 = 485.887; df = 202, P = .001; $P < .01$) The fit index values were found to be NC = 2.405; GFI = 0.904; RMSE = 0.090; CFI = 0.903; NFI = 0.846; RFI = 0.824; and IFI = 0.904. The fit indices of the model were moderate before modification

TABLE 1 Factor analysis of the Turkish version of the 22-item stoma self-efficacy scale

Items	Factor 1	Factor 2	Cronbach's alpha
Factor 1: Stoma Care SE			.92
1. Apply the stoma collection materials before leakages appear	0.810		
2. Prevent leakages (including manufacturing defects)	0.802		
3. Take care of the stoma correctly at home	0.828		
4. Prevent skin problems	0.731		
5. Prevent stoma bleeding and damage	0.751		
6. Apply the stoma collection materials in the way you are taught	0.772		
7. Prevent obstructions	0.497		
8. Follow the stoma therapist's instructions for managing the stoma	0.752		
9. Follow doctor's advice for taking care of your stoma and proper nutrition	0.516		
10. Take care of the stoma correctly outdoors	0.503		
11. Take care of the stoma when ill	0.533		
12. Wear most of the clothes you like	0.362		
13. Carry out light duties in and around the house (for instance washing up and gardening)	0.454		
Factor 2: Social SE			.93
14. Make new friends and acquaintances		0.827	
15. Travel by train or bus		0.691	
16. Tell close friends about the stoma		0.745	
17. Tell other people about the stoma		0.756	
18. Go out shopping and visit people		0.768	
19. Go out to a restaurant, cafe, or cinema the way you did before the stoma		0.808	
20. Sleep away from home at a friend's house where they know about the stoma		0.716	
Sleep away from home at a friend's house where they do not know about the stoma		0.745	
Go on holidays (just like you did before the stoma)		0.758	
Total scale			.95

Abbreviations: Social SE, social self-efficacy; Stoma Care SE, stoma care self-efficacy.

(Table 2). Modifications were conducted between items 1–2, 4–5, 8–9, 10–11, 16–17 and 20–21. It was found that the fit indices of the model provided a good level of validity after these modifications (Figure 1).

The following are the subscales and total mean scores of the scales and the floor and ceiling percentages, respectively: Stoma Care SE (0.6%–1.1%), Social SE (0.6%–2.9%) and total (0.6%–1.1%). Floor and ceiling effects show the proportion of individuals who achieve the highest or lowest possible numeric value of a score and are considered present when more than 15% of the individuals achieve these values (Wamper, Sierevelt, Poolman, Bhandari, & Haverkamp, 2010). There were no floor and ceiling effects in this study.

3.3 | Reliability analysis

3.3.1 | Item analysis and internal consistency results

Item analysis of the Stoma SE Scale was performed. The overall internal consistency coefficient of the scale (Cronbach's alpha) was found to be .95 and found to be very good (Polit & Beck, 2012). The Cronbach's alpha of the Stoma Care SE and Social SE subscales were .92 and .93, respectively. The item-total correlations were higher than the generally accepted value of .500 for all items except Item 9 (follow doctor's advice for taking care of your stoma and proper nutrition) (Özdamar, 2001) (Table 1). The Cronbach's alpha value obtained when

TABLE 2 Fit indices obtained from CFA for the stoma self-efficacy scale

	Fit indices obtained from CFA	
Indices	**Before modification** (χ^2 = 829.025/df = 208)	**After modification** (χ^2 = 485.887/df = 202)
NC	3.986	2.405
GFI	0.786	0.904
RMSA	0.131	0.090
CFI	0.787	0.903
NFI	0.737	0.846
RFI	0.708	0.824
IFI	0.789	0.904

Abbreviations: CFA, confirmatory factor analysis; CFI, comparative fit index; df, degree of freedom; GFI, goodness of fit index; IFI, incremental fit index; NC, normed chi-square; NFI, normed fit index; RFI, relative fit index; RMSE, root mean square error of approximation; χ^2, chi-square.

the items were deleted separately was not found to be higher than the general internal consistency coefficient (.95). Therefore, no item was removed (Table 3). There was a statistically significant relationship found in the scale's subscales (P < .01). The results are shown in Table 4.

3.3.2 | Test–retest reliability

For retest reliability, the scale was repeated with 31 patients at a 2-week interval, and ICC was calculated. It is recommended that the

ICC value be equal to or greater than .80 (Polit & Beck, 2012). Values of ICC .97 (95% confidence interval [CI: 0.94–0.98]) for Stoma Care SE, ICC .97 (95% confidence interval [CI: 0.93–0.98]) for Social SE and ICC .97 for total items of the scale (95% confidence interval [CI: 0.94–0.98]) were found. All subscales and the ICC coefficients obtained for the scale were found to be high and statistically significant (P < .01). In addition, the results of the paired sample t test showed there was no significant difference between the mean total scores of the scale (t = 0.803; P = .428). Also, there were no significant differences between the Stoma Care SE (t = 0.858; P = .398) and Social SE (t = 0.496; P = .623) test–retest mean scores (Table 5).

4 | DISCUSSION

The literature describes some findings from individuals who do not undertake their stoma care adequately; reasons include that their stoma care and some daily activities, such as shopping, are done by family or caregivers (Karabulut, Dinç, & Karadag, 2014; Karadag et al., 2015). Self-efficacy is one of the most important elements that should be considered in the provision of care for individuals with stoma. Stoma nurses need to perform a comprehensive assessment and determine the level of the self-efficacy of these individuals for improving their quality of life (Wu et al., 2007). Therefore, valid and reliable instruments are needed to determine the levels of self-efficacy of individuals with stoma. The Stoma SE Scale is a tool developed in 1996 (Bekkers et al., 1996). There are no instruments to measure self-efficacy specific to individuals with stoma in Turkey. As a
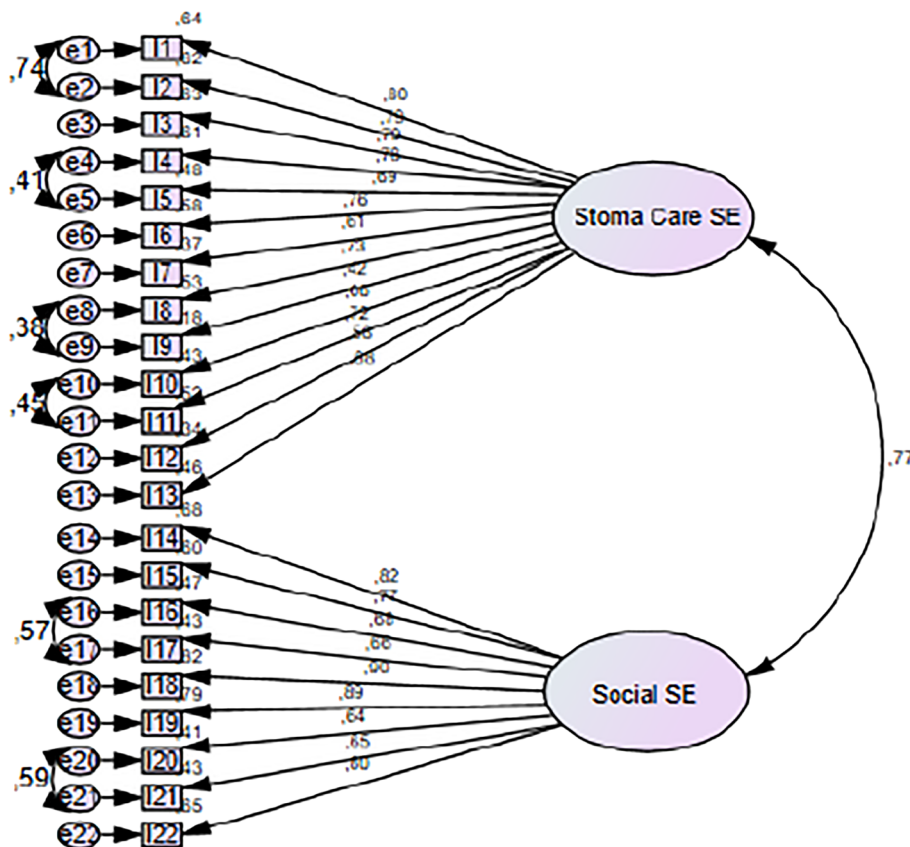

FIGURE 1 Road diagram and factor loads after modification (standardized estimations)

TABLE 3 Items analysis of the stoma self-efficacy scale

Item	Min–max	Mean ± SD (median)	Item total correlation	Cronbach's alpha if item deleted
Item 1	1–5	3.43 ± 1.10 (3.5)	.704	.947
Item 2	1–5	3.34 ± 1.07 (3)	.693	.947
Item 3	1–5	3.66 ± 0.94 (4)	.642	.948
Item 4	1–5	3.38 ± 0.96 (3)	.719	.947
Item 5	1–5	3.51 ± 0.93 (4)	.605	.948
Item 6	1–5	3.79 ± 0.86 (4)	.641	.948
Item 7	1–5	3.68 ± 1.00 (4)	.586	.948
Item 8	1–5	3.76 ± 0.84 (4)	.633	.948
Item 9	1–5	3.72 ± 0.97 (4)	.381	.950
Item 10	1–5	3.29 ± 1.09 (3)	.648	.948
Item 11	1–5	3.13 ± 1.09 (3)	.723	.947
Item 12	1–5	3.03 ± 1.11 (3)	.629	.948
Item 13	1–5	3.43 ± 1.03 (3)	.689	.947
Item 14	1–5	3.16 ± 1.27 (3)	.723	.947
Item 15	1–5	2.94 ± 1.27 (3)	.753	.946
Item 16	1–5	3.39 ± 1.14 (4)	.674	.947
Item 17	1–5	3.01 ± 1.35 (3)	.606	.949
Item 18	1–5	3.32 ± 1.18 (3)	.826	.945
Item 19	1–5	3.10 ± 1.21 (3)	.795	.946
Item 20	1–5	2.79 ± 1.34 (3)	.621	.948
Item 21	1–5	2.39 ± 1.34 (2)	.640	.948
Item 22	1–5	2.98 ± 1.28 (3)	.715	.947

TABLE 4 Correlation evaluation of the stoma self-efficacy scale between subscales

Subscales and total	Stoma Care SE r; P	Social SE r; P	Total r; P
Stoma Care SE	1	-	-
Social SE	.708; .00	1	
Total	.927; .001[*]	.921; .001[*]	1

Abbreviations: *r*: Pearson correlation coefficient; Social SE, social self-efficacy; Stoma Care SE, stoma care self-efficacy.
*P < .01.

approaches to assessing content validity; this study used the Davis method to calculate the CVI. The CVI value being above 0.80 is accepted as adequate (Polit & Beck, 2012). CVI calculated in this study (CVI-0.96) revealed that the scale had an excellent level of content validity. The reason for this can be the fact that the translation and back translation of the scale were performed by those who knew the two languages very well and worked independently and that the opinions of the stoma experts were considered. In addition, the scale items are simple and clear. Therefore, the scale items were answered in about 10 min by the participants.

The construct validity of the scale was tested using EFA and CFA. EFA has a very important role in construct validity. It gives information about how many different factors are included in the scale items (Çapık, 2014; Polit & Beck, 2012). That is why EFA was conducted to determine the factor structure of the scale as perceived by individuals in Turkish culture. In this study, scale items were collected under two factors such as the original scale (Bekkers et al., 1996) (Table 1) and the Chinese version (Wu et al., 2007). The two factors explained 60.29% of the total variance together. When performing EFA, the suitability of the sample was evaluated by using KMO measure. KMO needs to be 0.80 and higher (Kellar & Kelvin, 2013). In this study, KMO was found to be high. CFA has a significant value in scale adaptation studies and helps to determine the suitability of the theoretical models (Çapık, 2014; Polit & Beck, 2012). In the CFA, the fit index of the Turkish form's two-factor model was examined. While the fit indices of the model were moderate before the modification (Table 2), it was found that the fit indices of the model provided a good level of validity after modification (Figure 1). In addition, floor and ceiling effects were assessed by reviewing the distribution of the scores of each item, and it was found that there were no floor and ceiling

TABLE 5 Test–retest reliability analysis of the stoma self-efficacy scale

Subscales and total scale	Test Mean ± SD	Retest Mean ± SD	t	P
Stoma Care SE	51.62 ± 10.44	51.23 ± 11.27	0.858	.398
Social SE	32.26 ± 7.18	32.10 ± 7.59	0.496	.623
Total scale	83.87 ± 15.45	83.32 ± 16.63	0.803	.428

Abbreviations: Social SE, social self-efficacy; Stoma Care SE, stoma care self-efficacy; *t*, paired sample *t* test.

result of this study, it has been determined that the Turkish-language version of the Stoma SE Scale is a valid and reliable tool for assessing the self-efficacy of Turkish-speaking individuals with stoma.

Before using culture-specific measurement tools in a different culture, it is necessary to ensure language equivalence and to assess whether it is a reliable and valid tool for this society. There are many

effects in the study. These results show that the Stoma SE Scale is a valid tool.

One of the most commonly used methods to evaluate the reliability of the measurement tool is to evaluate the internal consistency of the scale. The acceptable Cronbach's alpha value for internal consistency is a value between .80 and 1.00 (Polit & Beck, 2012; Tavşancıl, 2005). Cronbach's alpha values in this study (Stoma Care SE: .97; Social SE: .95) indicate high internal consistency. The internal consistency is similar to the original form of the scale (Stoma Care SE: .94; Social SE: .95) (Table 1) as well as the Chinese version (Stoma Care SE: .97; Social SE: .89) (Wu et al., 2007).

The aim of item analysis in scale studies is to evaluate the contribution of each item to the scale's total score and to determine to what extent it is completely related. The standard advice is to eliminate items whose item-scale correlation is less than .300, but some recommend a criterion as high as .500 (Polit & Beck, 2012). In this study, the item total correlation coefficient values were found to be between .606 and .826 except Item 9. As a result of item analysis, because the item total correlation of Item 9 was found to be less than .500, Cronbach's alpha value was assessed when this item was deleted as recommended in the literature. Because Cronbach's alpha value did not change, Item 9 was not removed from the scale (Table 3). In addition to these results, there was a correlation between the two subscales of the scale in our study (Table 4) as well as in the original scale (Bekkers et al., 1996).

Test–retest reliability is an important measurement used to evaluate the scale's time invariance (Polit & Beck, 2012). To assess the test–retest reliability, an instrument is given to the same participants more than once under similar circumstances (Heale & Twycross, 2015). Therefore, the scale was reapplied to 31 individuals with stoma at 15-day intervals, and ICC was calculated. In this study, ICCs for all subscales and for the scale in general were found to be quite high; there was a significant positive correlation between test and retest. In addition, test and retest total scores did not differ significantly (Table 5). These results showed that test–retest reliability was always consistent and that the scale was invariant in time.

4.1 | Limitations of the study

This scale's use is limited to individuals with colostomy and ileostomy. It does not include other individuals with stoma. Moreover, because the study was conducted with 174 patients, the results of the study could not be generalized nationally.

5 | CONCLUSION

The results of this study show that the original form of the Stoma SE Scale with 22 items and two subscales translated to Turkish is suitable for use in Turkish society and has acceptable psychometric properties. Based on these results, the scale can be used in the evaluation of stoma-specific self-efficacy levels of Turkish-speaking individuals with

stoma and in research. The scale is thought to be a guide, especially for WOCNs seeking to achieve patient-centred care planning and better patient outcomes. The adaptation of the Stoma SE Scale into Turkish allows the comparison of self-efficacy among individuals with stoma and can contribute to the creation of not only a common language but also further comparable studies worldwide.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHORSHIP STATEMENT

We declare that me and my co-authors, Eylem Toğluk Yiğitoğlu and Ayişe Karadağ, meet the authorship criteria, and we agreed with the content of the manuscript. All the authors, and particularly me, contributed to the study planning; data collection and data analysis were conducted by me, Eylem Toğluk Yigitoglu and Ayişe Karadağ. Preparation of the manuscript was conducted by all the authors. Authors' addresses are not different from as stated above.

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