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# The 6-Item Self-Efficacy Scale in Chronic Disease Management in Women With Endometriosis: A Turkish Validity and Reliability Study

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## ABSTRACT

**Objective:** This study aimed to adapt the 6-Item Self-Efficacy Scale for Chronic Disease Management (SEMDC-6S) to women with endometriosis in the Turkish population and to evaluate its validity and reliability.

**Methods:** This methodological study comprised of 200 women with endometriosis. The construct validity of the scale was tested using the confirmatory factor analysis methods. The reliability of the scale was tested using Cronbach's alpha coefficient, item-total score correlations and test-retest reliability analysis.

**Results:** It was determined that the SEMDC-6S consisted of six items and one subscale. In the confirmatory factor analysis, the fit index values of the scale were found to be acceptable. The intraclass correlation coefficient of test–retest reliability was 0.95, and Cronbach's alpha coefficient was 0.76.

**Conclusion:** The Turkish version of the SEMDC-6S is a valid and reliable tool for assessing the self-efficacy of women with endometriosis.

## 1 | Introduction

Endometriosis is a chronic inflammatory disease characterised by the placement and growth of endometrial tissue, which is normally supposed to be inside the uterine cavity, outside this cavity [1]. It was reported that this disease affects approximately 10% of women of reproductive age in the world and 18.3% in Turkey [1, 2]. Pain and infertility symptoms are observed in most of those who are affected [3]. In the management of these symptoms, there are medical and surgical treatment options. However, because medical treatments are not curative, and there is a risk of recurrence after surgical treatments, current treatment options do not offer complete recovery [4]. For this reason, in addition to standard treatments, multidisciplinary care is recommended in the management of the disease [3].

Multidisciplinary care is a team approach that gathers the qualifications of experts from different disciplines to provide endometriosis patients with long-term, comprehensive, and patient-centred care [5]. The key members of such a team should include gynaecologists, general practitioners (specialising in gynaecologist), and nurses. Depending on the needs of the patient, this team should include pelvic floor physiotherapists, dietitians, and psychologists [6]. This form of care allows patients to understand their health status better, participate actively in the treatment process, and develop disease management skills and self-efficacy [5, 7, 8].

Self-efficacy is a concept that refers to the belief of the person that they can perform a certain health-related behaviour or keep their health under control. This concept is seen as an important determinant of health-related behaviours and is

associated with dedication to identify and reach goals, the belief that making an effort will lead to positive health outcomes, and the ability to overcome health-related difficulties [7, 8]. In women with endometriosis, self-efficacy can contribute to the management of the disease, a reduction in the usage of analgesics, and an increase in quality of life. Therefore, self-efficacy levels should be evaluated objectively. According to the results of these evaluations, patients should be given education about self-efficacy, positive collaboration between the patients and healthcare service providers should be promoted, and a treatment plan should be established together. This process should be a routine part of endometriosis care [7].

Based on the information in the literature, it is seen that there is no objective measurement instrument evaluating the self-efficacy levels of women with endometriosis, the "Self-Efficacy for Managing Chronic Disease 6-Item Scale" (SEMDC-6S) was developed by the Stanford Patient Education Research Center [9], this measurement instrument has been tested for validity and reliability in cases of migraine [10], as well as chronic diseases such as multiple sclerosis [11], hypertension, diabetes, asthma, and COPD [12]. The SEMDC-6S covers the fields of symptom management, role functioning, emotional functioning, and communication with doctors, which are common concepts in all chronic diseases [10]. Additionally, because it is unidimensional and consists of brief and comprehensible items, it is highly practical in implementation and assessment, and it can identify self-efficacy levels in a short time. Accordingly, the assessment of self-efficacy levels in endometriosis, which is a chronic disease, using an objective measurement instrument that can be administered in a short time is important in terms of the provision of the necessary healthcare services and the planning of relevant precautions. This way, this instrument can contribute to symptom management and a higher quality of life in women.

In this study, it was aimed to adapt the SEMDC-6S to Turkish and test its validity and reliability in women with endometriosis. The hypothesis of the study was "SEMDC-6S is a valid and reliable tool for assessing the self-efficacy of women with endometriosis."

## 2 | Methods

### 2.1 | Study Design

This was a methodological study. The study adhered to the Consensus-Based Standards for the Selection of Health Measurement Instruments (COSMIN) guidelines [13].

### 2.2 | Participants

In the literature on scale development and adaptation, it is usually recommended that the sample size be at least five times, or preferably 10 times the number of items on the scale and data be collected from at least 200 individuals [14]. Therefore, 200 women with endometriosis were included in the study.

The sample of the study included women who had been diagnosed with endometriosis by a specialist physician, had pain and fatigue complaints, were receiving or had received treatment for endometriosis, were 18–49 years old, could speak and understand Turkish, and agreed to participate in the study.

### 2.3 | Data Collection Instruments

Participant Information Form: The form was created by the researchers based on the relevant literature [15, 16]. It included 13 questions about the sociodemographic, obstetric, and gynaecological characteristics of the participants.

SEMDC-6S: The scale was developed by the Stanford Patient Education Research Center. It is a unidimensional scale with six items. It has a 10-point Likert-type scoring system (1 = Not at all confident-10 = Totally confident). In the scoring of SEMDC-6S, a number is marked for each item. If two consecutive numbers are marked, the lower one is coded. If two numbers that are not consecutive are marked, the item is not included in the scoring. The total score of the scale is equal to the average of the scores of all six items. If two or more items are left unmarked, the scale is not scored. Higher scores indicate higher self-efficacy. In the original scale development study, Cronbach's alpha coefficient for the scale was reported as 0.91 [9].

### 2.4 | Translation and Cross-Cultural Adaptation of SEMDC-6S

According to the guidelines of WHO, the process of translating a measurement instrument in English into another language and adapting it consists of four main stages, which are forward translation, expert panel and back-translation, pre-testing and cognitive interviewing, and final version [17]. Based on these guidelines, in the forward translation stage of SEMDC-6S, the scale form was translated into Turkish by two faculty members at the Department of Foreign Languages who were fluent in English and Turkish. Moreover, the suitability of the translated forms of SEMDC-6S for Turkish speakers was evaluated by an expert in Turkish Language and Literature, and a few word adjustments were made based on the recommendations of the expert. The translated forms were then combined into a single form by a faculty member who was fluent in English and had expertise in the field of gynaecologist. In the back-translation stage, the scale form was back-translated into English, which is its original language, by a nurse who was a native speaker of English, was fluent in both languages and was not familiar with SEMDC-6S and a faculty member with expertise in gynaecologist. To test their conceptual equivalence, the back-translated form and the original form of SEMDC-6S were compared. As a result of the comparison, it was determined that the back-translated form of SEMDC-6S was almost the same as the original form, and it conveyed the meaning in the English form accurately. Consequently, no further change was made in the wording of the form.

To further assess conceptual equivalence, the original and back-translated items of SEMDC-6S were submitted to the review of five faculty members who were experts in the field of nursing.

The Davis technique was used to evaluate the assessments of the experts [18]. Accordingly, the experts assessed each item by rating it as "suitable", "needs minor revision", "needs major revision", or "unsuitable". Based on the assessments of the experts, the Content Validity Index (CVI) was calculated. The lower threshold of acceptable CVI values is accepted as 0.80 [19]. In this study, the CVI value of the scale was calculated as 1. Following this analysis, to confirm the comprehensibility of the scale items, a pilot implementation was made with the participation of 30 women. No change was made to the scale items after the pilot implementation. The group of women who participated in the pilot implementation was not included in the main sample and analyses.

## 2.5 | Data Collection

This study was carried out at the endometriosis outpatient clinic of a research and training hospital between March and September 2024. In this stage, the researchers talked to women who were attending follow-ups for their endometriosis diagnosis and explained the purpose and procedures of the study to those who met the inclusion criteria. Written and verbal consent was received from those who agreed to participate in the study. The researchers collected the contact information of the women for the retest. Afterward, the researchers gave the participants the "Participant Information Form" and "SEMDC-6S". They explained how the forms should be filled out and answered all questions asked by the participants during the data collection process. It took each participant approximately 10–15 min to complete the forms.

Throughout the data collection process, 210 women were interviewed in total. Because eight of these women did not want to participate in the study, and two could not speak Turkish, the study was completed with 200 women. To evaluate the test-retest reliability of SEMDC-6S, 2 weeks after the first data collection process, 30 randomly selected participants were contacted by phone calls, and the scale was administered again.

## 2.6 | Data Analysis

The data were analysed using the IBM SPSS Statistics 23 and IBM SPSS AMOS 23 programmes. During the analyses, descriptive statistics were calculated for the categorical variables (frequency and percentage) and the numeric variables (mean and standard deviation). A confirmatory factor analysis (CFA) was conducted to test validity. In the CFA, model fit was evaluated using various fit indices. Among these indices, the ratio of the chi-squared value to the degrees of freedom ($\chi^2$/df) is considered excellent for values of $\leq 2$ and acceptable for values of $3 < \chi^2/df \leq 5$. Root Mean Square Error of Approximation (RMSEA), Standardised Root Mean Square Residual (SRMR), and Root Mean Square Residual (RMR) values are considered excellent for $\leq 0.05$ and acceptable for 0.05–0.08. Goodness of Fit Index (GFI), Tucker Lewis Index (TLI), Incremental Fit Index (IFI), and Comparative Fit Index (CFI) values are considered excellent for $\geq 0.95$ and acceptable for $\geq 0.90$ [14, 20].

**TABLE 1** | Sociodemographic, obstetric, and gynaecological characteristics of the participants ($n = 200$).

| | | $\overline{X} \pm SD$ | |
|---|---|---|---|
| Age, years | | $31.4 \pm 6.9$ | |
| Menarş, years | | $13.0 \pm 1.6$ | |
| Number of pregnancies | | $1.7 \pm 1.1$ | |
| Endometriosis diagnosis duration, years | | $4.4 \pm 4.5$ | |
| | | ***n*** | **%** |
| Education | Primary school | 20 | 10.0 |
| | Secondary school | 6 | 3.0 |
| | High school | 47 | 23.5 |
| | University and above | 127 | 63.5 |
| Employment | Employment | 115 | 57.5 |
| | Unemployed | 85 | 42.5 |
| Marital status | Married | 104 | 52.0 |
| | Single | 96 | 48.0 |
| Menstrual cycle | Regular | 144 | 72.0 |
| | Irregular | 56 | 28.0 |
| | Dysmenorrhoea | 190 | 95.0 |
| | Chronic pelvic pain | 167 | 83.5 |
| Symptoms of endometriosis | Dyspareunia | 125 | 62.5 |
| | Dyschezia | 101 | 50.5 |
| | Dysuria | 75 | 37.5 |

Abbreviations: SD, standard deviation; $\overline{X}$, mean;

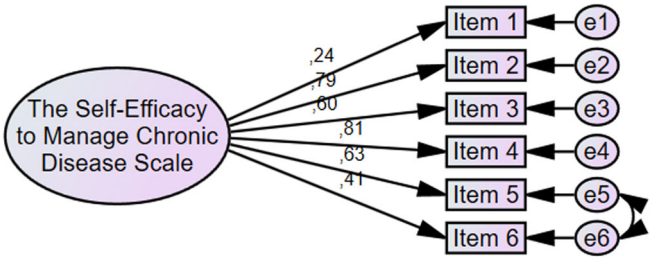


**FIGURE 1** | Confirmatory factor analysis results of Self-Efficacy for Managing Chronic Disease 6-Item Scale (SEMDC-6S).

Cronbach's alpha coefficient, item-total score correlation analysis, and the intraclass correlation coefficient (ICC) were used to test the reliability of the scale. Cronbach's alpha coefficient indicates that the scale needs to be shortened for values much higher than 0.90, whereas it is considered very good for values of $0.90 > \alpha \geq 0.80$, good-respectable for $0.80 > \alpha \geq 0.70$, minimally acceptable for $0.70 > \alpha \geq 0.65$, not preferable for, $0.65 > \alpha \geq 0.60$, and unacceptable for values smaller than 0.60 (21). In item-total score analyses, correlation coefficients are calculated, and values of $\geq 0.30$ are considered good. If a correlation coefficient is $< 0.30$, the effect of the item on $\alpha$ needs to be

**TABLE 2** | SEMDC-6S reliability.

| | Items | Corrected item-total correlation | Cronbach's alpha if item deleted | Cronbach's alpha |
|---|---|---|---|---|
| SEMDC-6S | 1. How confident are you that you can keep the fatigue caused by your disease from interfering with the things you want to do? | 0.15 | 0.81 | |
| | 2. How confident are you that you can keep the physical discomfort or pain of your disease from interfering with the things you want to do? | 0.66 | 0.68 | |
| | 3. How confident are you that you can keep the emotional distress caused by your disease from interfering with the things you want to do? | 0.51 | 0.72 | 0.76 |
| | 4. How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do? | 0.65 | 0.68 | |
| | 5. How confident are you that you can do the different tasks and activities needed to manage your health condition so as to reduce you need to see a doctor? | 0.63 | 0.68 | |
| | 6. How confident are you that you can do things other than just taking medication to reduce how much your illness affects your everyday life? | 0.45 | 0.74 | |

Abbreviation: SEMDC-6S, The Self-Efficacy for Managing Chronic Disease 6-Item Scale.

**TABLE 3** | Intraclass correlation (ICC) coefficient of SEMDC-6S.

| | | 95% confidence interval | | |
|---|---|---|---|---|
| | ICC | Lower | Upper | *p*-value |
| SEMDC-6S | 0.95 | 0.89 | 0.97 | 0.000 |

Abbreviation: SEMDC-6S, The Self-Efficacy for Managing Chronic Disease 6-Item Scale.

evaluated [21, 22]. The ICC value should be greater than 0.70 [23].

### 2.7 | Ethics

Before starting the study, ethics committee approval was obtained (Decision no: 44, Date: 29.02.2024). The SEMDC-6S was used without obtaining permission, as it is freely available for use (Supporting Information: S1). The study was carried out in compliance with the principles of the Declaration of Helsinki.

## 3 | Results

### 3.1 | Sociodemographic, Obstetric, and Gynaecological Characteristics

The sociodemographic, obstetric, and gynaecological characteristics of the participants are presented in Table 1. The mean age of the participants was $31.4 \pm 6.9$, 63.5% of them had university or higher degrees, and 57.5% were working. Additionally, 52.0% of the participants were married, and their mean number of pregnancies was $1.7 \pm 1.1$. It was determined that the menstrual cycles of 72% of the participants were regular, and the mean duration of their endometriosis diagnosis was $4.4 \pm 4.5$ years. While 95.0% of the participants had symptoms of dysmenorrhoea, 83.5% had symptoms of chronic pelvic pain.

### 3.2 | Validity

In the CFA of SEMDC-6S, the $\chi^2$/df value was found to be 3.43. Other goodness-of-fit indices were calculated as GFI = 0.95, TLI = 0.92, IFI = 0.95, CFI = 0.94, RMSEA = 0.11, and SRMR = 0.06. The single-factor structure of the scale was confirmed based on these results. The path diagram of the confirmed model is presented in Figure 1.

### 3.3 | Reliability

Cronbach's alpha coefficient, which was calculated to test the reliability of SEMDC-6S, was 0.76. The item-total score correlation coefficients of the scale varied from 0.15 to 0.76 (Table 2). The ICC value calculated between the test scores and retest scores of SEMDC-6S was 0.95, which indicated a statistically significant agreement rate (Table 3).

## 4 | Discussion

In Turkey, there is no measurement instrument that assesses the self-efficacy levels of women with endometriosis. In this

study, it was aimed to adapt SEMDC-6S to Turkish and test its validity and reliability in Turkish in a sample of women with endometriosis. To test the construct validity of the scale, a CFA was performed. CFA is used to test the extent to which the designed model is compatible with actual measurements and reveal the construct validity of the model [24]. Among the goodness-of-fit indices that were calculated to determine the fit of the model in this study, the GFI and IFI values indicated an excellent fit, while the $\chi^2$/df, TLI, CFI, and SRMR values indicated an acceptable fit. In a study in the literature in Turkish in which SEMDC-6S was adapted with a different sample, the fit indices obtained by CFA were reported to show an acceptable fit [11]. In another study, IFI, GFI, CFI, and SRMR values were reported to show an excellent fit [12]. These results showed that in this study, which was conducted with the participation of women with endometriosis, like other studies conducted with different samples to adapt SEMDC-6S, adequate goodness-of-fit values were obtained.

In addition to being valid, a measurement instrument must also be reliable. The reliability of a scale is usually tested using "Cronbach's alpha internal consistency coefficient" [14]. In this study, the Cronbach's alpha coefficient of SEMDC-6S was found to be good-respectable. This coefficient was determined to be excellent in the original scale development study [9] and the studies in which it was adapted to Turkish in samples of individuals with different chronic diseases [10–12]. These results demonstrated that SEMDC-6S was a reliable scale. It is believed that differences in Cronbach's alpha coefficients reported in different studies have stemmed from the diversity of their samples. Furthermore, Cronbach's alpha values may have also varied due to the fact that not all items of the scale are scored in some cases.

In general, corrected item-total score correlation analyses are used to determine the degree to which an item represents the entire scale [14]. In this study, the item-total score correlation coefficient of item 1 was seen to be below the standard threshold, but because Cronbach's alpha coefficient did not change significantly when this item was removed in the item analysis, it was decided to keep the item in the scale. For the remaining items, the item-total score correlation coefficients were above the standard threshold (Table 2). This revealed that the scale was adequate and effective in measuring self-efficacy in women with endometriosis.

The test-retest method is used to test the time-invariance of a scale, and ICC is calculated to evaluate the agreement between multiple measurements [14]. If there is a high correlation between the results of two measurements, the errors originating from time are accepted to be minimal [25]. In this study, a strong correlation was identified between the test and retest scores of the participants on SEMDC-6S (Table 3). According to these results, SEMDC-6S could make measurements consistently over time, and it was reliable in this context.

### 4.1 | Limitations

The main limitation of this study was that its sample consisted of women diagnosed with endometriosis who were being followed up at one research and training hospital. Thus, the results of the study may not be generalised to samples other than this group.

## 5 | Conclusion

SEMDC-6S was found to be a valid and reliable measurement instrument that can be used to measure the self-efficacy levels of women with endometriosis in Turkey. Like the original scale, the Turkish form of the scale also consists of a single dimension and six items. Higher total scale scores indicate higher levels of self-efficacy in women with endometriosis. Hence, SEMDC-6S can be used in different studies aiming to evaluate the self-efficacy levels of women with endometriosis and implement various education/counselling interventions when necessary. It is recommended that SEMDC-6S be adapted for different cultures and samples.

#### Conflicts of Interest

The authors declare no conflicts of interest.

#### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## Supporting Information

Additional supporting information can be found online in the Supporting Information section.