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The Edinburgh feeding evaluation in dementia (EdFED) scale: A Turkish validity and reliability study

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Abstract

Aim: The present study aimed to adapt the Edinburgh Feeding Evaluation in Dementia (EdFED) Scale to Turkish.

Method: This methodological study was reported using STARD (The STAndards for Reporting of Diagnostic Accuracy). The sample included 200 people with dementia. The data were obtained using the Personal Information Form, the Edinburgh Feeding Evaluation in Dementia Scale, and the Mini Nutritional Assessment Test. For the Turkish adaptation of the scale, construct validity (confirmatory factor analysis), criterion validity (concurrent scale validity) and reliability analysis (Cronbach's α coefficient, item-total score correlation) were performed, respectively.

Results: The three-factor model in the original scale was verified. The content validity index was 0.95. The Cronbach's α coefficient factors were as follows: 'Indicators of Patient Difficulty' α = 0.81, 'Patient's Need for Assistance' α = 0.79 and 'Indicators of Feeding Difficulty' α = 0.64, respectively. When the CFA fit indexes were examined, the model fit values were good. The three-factor structure was verified, compared with the original model and was compatible. No modification was needed in the model.

Conclusions: The Edinburgh Feeding Evaluation in Dementia Scale Turkish version provides reliable and valid measures of feeding difficulties in people with dementia. It has satisfactory psychometric properties and is suitable to use in clinical practice.

Implications for practice: Feeding is one of the most neglected subjects in caring for people with dementia. Screening is recommended to evaluate feeding and malnutrition, but, to our knowledge, there is no tool/scale to evaluate the feeding of the dementia patient in Turkish. The EdFED scale can serve healthcare professionals and caregivers as a practical tool for feeding difficulties in people with dementia.

KEYWORDS
dementia, EdFED, Edinburgh Feeding Evaluation in Dementia Scale, feeding difficulty, Turkish adaptation

1 | INTRODUCTION

Dementia is a priority public health problem (World Health Organization, 2012). Dementia is now the seventh leading cause of mortality globally (Gauthier et al., 2021). The number of people with dementia is rising rapidly, especially in low- and middle-income countries (Prince et al., 2015). There are 55 million people with dementia worldwide (Gauthier et al., 2021). Turkey has a double burden of dementia because it is one of the low- and middle-income countries and the rapidly increasing population of older people. In addition, the prevalence of people with dementia living at home in Turkey is 70%–94% (Wimo & Prince, 2010). Dementia and the care of people with dementia are among the priority public health problems for countries like Turkey.

Dementia is a clinical syndrome characterised by widespread impairment of progressive and largely irreversible mental functions and activities of daily living. Evaluation of activities of daily living provides the opportunity for people with dementia to plan intervention and the appropriate level of care required (Gauthier et al., 2021). Although malnutrition and low weight are common in people with dementia, nutrition is one of the neglected activities of daily living in managing dementia (Prince et al., 2014a). People with dementia are more affected by difficulties in eating unsuitable amounts, refusing to eat despite being hungry, failing to recognise/use the containers correctly, chewing or swallowing due to mental and cognitive disorders and physical disabilities (Watson, 1993). People with dementia who have difficulty feeding experience negative consequences, such as insufficient food intake, weight loss, dehydration, malnutrition, aspiration, and pulmonary complications and quality of life decreases (Watson & Deary, 1997; Chang & Roberts, 2008; Prince et al., 2014b).

Nutritional care and support are an integral part of dementia management. Although the level of evidence is very low, people with dementia are recommended to have undernutrition screening and close monitoring of body weight. Scans are advised to be administered every 3–6 months (Volkert et al., 2015). Nutritional assessment includes a patient with dementia, dietary assessment, weight history, physical anthropometry, screening questionnaires for nutritional status, nutritional biomarkers, and eating and feeding behaviour (Gauthier et al., 2021). Three tools in the literature assess the feeding difficulties of people with dementia: Edinburgh Feeding Evaluation in Dementia (EdFED), Feeding Behaviour Inventory (FBI), and Feeding Difficulty Index (FDI) (Spencer et al., 2021). The Edinburgh Feeding Evaluation in Dementia (EdFED) Scale is the most used tool in screening feeding problems in people with dementia (Gauthier et al., 2021; Lopez & Molony, 2018; Spencer et al., 2021).

The EdFED scale (six items) is the first scale for assessing feeding difficulty in people with dementia (Watson, 1994a). The scores on the original EdFED (11 items) showed significant correlations with nursing interventions and indicators of feeding difficulty (Watson, 1994b). Three models of the EdFED, with 2-, 3- and 4-factor structures, respectively, were compared; the three-factor model was the best fit (Watson & Deary, 1997). Validity and reliability studies of the EdFED

scale have been conducted in different cultures. The versions of the scale adapted for different cultures are as follows: The Chinese version (Lin & Chang, 2003; Lin et al., 2008; Liu et al., 2014), Italian version (Bagnasco et al., 2015), Spanish version (Figueredo et al., 2018), and Canadian–French version (Côté et al., 2018). It has been reported that in all the mentioned studies, the EdFED scale is valid and reliable.

To our knowledge, there is no scale and study assessing feeding problems in people with dementia in the literature in Turkish. This study was designed to answer the following questions: 'Is the Turkish form of The Edinburgh Feeding Evaluation in Dementia (EdFED) Scale a valid measurement tool?' and 'Is the Turkish form of The Edinburgh Feeding Evaluation in Dementia (EdFED) Scale a reliable measurement tool?'

What does this research add to existing knowledge in gerontology?

- The scale adaptation study is going to provide to evaluate the feeding difficulties of the dementia patient. With early diagnosis of feeding difficulties and effective interventions, the fragility of the patient with dementia can be reduced and the quality of life can be increased.

What are the implications of this new knowledge for nursing care with older people?

- Feeding is one of the most neglected subjects in the care of patients with dementia. The scale is a valid and reliable tool for evaluating feeding difficulties in patients with dementia.
- Screening is recommended to evaluate feeding and malnutrition. The scale can serve healthcare professionals and caregivers.
- The scale can be used as a practical tool for early detection and monitoring feeding difficulties in patients with dementia.

How could the findings be used to affect policy or practice or research or education?

- Early diagnosis and monitoring interventions for feeding difficulties in patients with dementia can help prevent and/or reduce the negative consequences of feeding difficulties.
- Thus, it can contribute to reducing the negative effects of dementia on the patient, the family, and the health system.
- This scale will provide language unity for either healthcare professionals with each other or health professionals with caregivers.
- It also facilitates multicultural and multicentre research on nutritional problems of patients with dementia and supports international cooperation.

2 | METHODS

2.1 | Study design

Using STARD (Figure S1), the present study was conducted between August 2019 and January 2020 in the cities of Manisa and Izmir.

2.2 | Study setting and sample

For the 11-item scale in the present study, we planned to involve at least 110 participants because it is suggested that the sample size be 10 times the number of items. The study sample was composed of 200 people with dementia. The sample included residents from a Nursing Home Elderly Care and Rehabilitation Center, an Alzheimer's Disease Counseling Center, and the neurology outpatient clinics and home care units of two hospitals. Data were collected by the same researcher. This study included mild, moderate or severe stage people with dementia according to the DSM-IV criteria. The caregivers included in this study were those responsible for the patient's primary care, including professional caregivers. Exclusion criteria were having diseases, such as mental illness, cancer that may affect the nutritional status, having behavioural problems that prevent interviews (e.g. shouting, wandering and being aggressive), being completely dependent on their caregiver for feeding, having communication problems (seeing, hearing) and patient and/or caregiver (health personnel, professional caregiver or family member) not being willing to participate in the present study.

2.3 | Instruments

2.3.1 | The personal information form

The form was prepared in light of the related studies in the literature (Bagnasco et al., 2015; Côté et al., 2018; Figueredo et al., 2018), which included 17 questions consisting of sociodemographic characteristics and information about people with dementia.

2.3.2 | The Edinburgh Feeding Evaluation in Dementia (EdFED) Scale

The scale was developed by Watson (1994a, b). The EdFED scale helps question feeding difficulties in people with dementia. The scale establishes the feeding-associated behaviour of the person with dementia. The person is evaluated regarding psychological and clinical interventions, dietary changes, environmental changes and communication techniques according to the level of help needed. The scale can be used both as a caregiver report and a monitoring tool. Implementation of the scale takes less than 5 min.

The first 10 items on the scale address, in the last week, the patient's nutritional behaviour at meals; depending on how often they occur during feeding, each does 'not perform the behavior/never' zero point, if it is 'twice three times in a week sometimes' is one point if it 'more than four times in a week/often' is two points. The total score from the first 10 items ranges from 0 to 20. The scale score has neither a cut-off score nor reverse items. A high score means that the patient has a feeding difficulty. Points can be used to visualise the change. Finally, the 11th item indicates the level of assistance the patient needs and is evaluated as 0, 1 and 2. In Watson's (1996) study, Cronbach's α was calculated as 0.87 (Watson, 1996). In this study, Cronbach's α was 0.86.

2.3.3 | Mini Nutritional Assessment (MNA) Test

The Mini Nutritional Assessment Test was developed in 1994 with the cooperation between TOULOUSE University, New Mexico Medical School, and Nestle Research Center (Switzerland). The test consists of 18 items that include anthropometric measurements, dietary behaviour, global and subjective factors. According to the Preliminary Assessment Score obtained as a result of the preliminary assessment of the Mini Nutritional Assessment test over 14 points, the participants are classified as Normal Nutritional Status (N1) (12–14 points), Malnutrition Risk (MR1) (8–11 points), malnutrition (M1) (0–7 points). Participants scoring less than a Preliminary Assessment Score of 12 are evaluated for comprehensive evaluation. Comprehensive Evaluation Score (CES) is obtained as a result of the comprehensive evaluation over a total of 16 points. Malnutrition Indicator Score (MIS) is calculated by adding the preliminary assessment score and the comprehensive assessment score. The Malnutrition Indicator Score (MIS) range is 0–30. There is no risk of malnutrition between 24–30; a score between 17–23.5 indicates the risk of malnutrition, less than 17 points indicate malnutrition. Mini Nutritional Assessment (MNA) is a common screening tool used to determine nutritional status and malnutrition risk (Guigoz, 2006). Cronbach's α has been reported to be 0.65 in older people with dementia (Holm & Söderhamn, 2003). Mini Nutritional Assessment of long forms (MNA) and short forms (MNA-SF) have been tested test in older patients in Turkey; they have been demonstrated to be a valid method for screening the elderly. MNA results have been compared with the first clinician's decision of malnutrition and the Kappa coefficient was 0.68. Cronbach's α has not been considered in that study; selectivity and sensitivity have been evaluated. Sensitivity analysis has indicated that MNA has been 92% sensitive and 86% specific (Sarikaya et al., 2015). In this study, Cronbach's α was 0.74.

2.4 | Ethical consideration

To conduct the Turkish validity and reliability study of the scale, permission was obtained via e-mail from the owner of the scale.

Then, ethical approval was obtained from the Local Ethics Committee of the university to which the responsible author is affiliated (22.05.2019–20.478.486). Also, before the interview, necessary explanations to participants were made about the purpose of this research, the benefits to be provided from the research, the time it will spend for the interview, and their written and verbal consent was obtained.

2.5 | Data collection

The process of cultural adaptation was conducted by the recommendations of existing literature (Çapık et al., 2018; World Health Organization, 2017) in light of the following steps appropriate to adapting instruments.

2.5.1 | Forward translation

For language validity, the translation of the scale items from English into Turkish was done independently by two people. Later, a new Turkish scale draft was created by researchers to review each item regarding the most appropriate translation, language, meaningfulness and concept equivalence.

2.5.2 | Expert panel

The Turkish form was obtained after the translation was evaluated by 13 experts on dementia or elderly health regarding language and content validity.

According to the Davis technique, the expert's scale assessed the clarity of each item, whether it was clear and correct, in the range of 1–4 points. According to the Davis technique, each item is defined as 1 = not suitable, 2 = the item has to be made suitable, 3 = appropriate but minor changes are required, 4 = very suitably. According to this technique, 80% of the scale items should be evaluated by experts as very suitable or very appropriate (Davis, 1992). While evaluating each item, the number of experts who mark the option (3) or (4) is divided by the total number of experts, and the content validity index (CVI) for each item is obtained. In line with expert opinions, item 3 was amended to ensure integrity and simplicity in the language. The CVI value obtained in this study was evaluated as 0.95, which indicates optimal content validity.

2.5.3 | Back-translation

The created Turkish draft was translated into English by two experts and compared with the original form. The re-translated form was reviewed by the owner of the scale.

2.5.4 | Pre-testing and cognitive interviewing

A pilot study of the scale was conducted with five people, selected by purposefully sampling. They were organised according to expert opinions, and these individuals were excluded from this study. Finally, the scale was named EdFED-TR.

2.6 | Analysis

The data were coded in the Statistical Package for the Social Sciences (IBM SPSS; Version 25.0, SPSS Inc., Chicago, IL, USA) and Linear Structural Relationships (Lisrel v8.5, Scientific Software International, Inc., Lincolnwood, IL). The percentage, distribution of personal information was calculated. The validity test of the scale was performed using language validity, content validity, construct validity (confirmatory factor analysis) and criterion (criterion) correlation validity. The reliability test was performed with mean, standard error, Cronbach's α coefficient and item-total score correlation. Two-tailed tests were used with p-values < 0.05 considered statistically significant. The desired criteria of the item-total correlation were >0.30 and α levels of 0.70. Acceptable levels of fit indices were determined as the ratio of chi-square to degrees of freedom (x^2/df) of three or less, Standardized root mean square residual (SRMR) below 0.08, Root mean square error of approximation (RMSEA) between 0.06 and 0.08, Comparative fit index (CFI) above 0.95, Goodness-of-fit index (GFI) above 0.95, Adjusted-goodness-of-fit index (AGFI) above 0.95, and NFI (Normed fit index) above 0.95 (Schermelleh-Engel et al., 2003; Schreiber et al., 2006).

3 | RESULTS

3.1 | Sample characteristics

Participants were a convenience sample of 200 people with dementia, with a mean age of 80.07 years (SD 9.12); most participants were over 80 years old (59.0%), female (73.5%) and single (67.5%). Participants were with a mean duration of dementia of 58.47 months (SD 41.85) and 56% of them were with disease duration of less than 58 months. The diagnosis of 84.0% of people with dementia was Alzheimer's disease and 37% of them were middle-stage people with dementia. Besides, the findings showed that 67% of the participants consumed a meal in less than 19 min, 64% lived at home and 62.5% were looked after by a family member (Table 1).

As a result of univariate analysis, the EdFED total score was higher in participants with difficulty swallowing, disease duration of 58 months and above, in participants with feeding duration of 19 min and above and live in the society. Also, the EdFED score was the highest in participants with severe dementia and people with dementia cared for by professional caregivers ($p < 0.05$, Table 2).

TABLE 1 Descriptive characteristics (n = 200)

	n	%
Age (years)		
(80.07 ± 9.12; 55–105)		
≥80 years	118	59.0
<80 years	82	41.0
Gender		
Female	147	73.5
Male	53	26.5
Marital status		
Married	65	32.5
Single	135	67.5
Swallowing difficulty		
No	157	78.5
Yes	43	21.5
Body mass index		
Weak	22	11.0
Normal	94	47.0
Overweight	53	26.5
Obese	31	15.5
Duration of dementia (Months)		
(58.47 ± 41.85; 2–288)		
≥58 Months	88	44.0
<58 Months	112	56.0
Type of dementia		
Alzheimer's disease	168	84.0
Senile dementia	11	5.5
Vascular dementia	11	5.5
Parkinson's disease dementia	7	3.5
Other	3	1.5
Stage of dementia		
Early	67	33.5
Moderate	74	37.0
Severe	59	29.5
Comorbidity		
Yes	139	69.5
No	61	30.5
Time to Consume a Meal/Min		
(19.11 ± 9.35; 5–60)		
≥19 min	66	33.0
<19 min	134	67.0
Location		
Society	128	64.0
Nursing home	72	36.0
Caregiver		
Family member	125	62.5
Caring professional	6	3.0
Health personnel	69	34.5

3.2 | Validity

In the validity analysis of the EdFED Scale, language validity, content validity, construct validity (confirmatory factor analysis) and criterion validity (concurrent scale validity) were performed.

3.2.1 | Structure validity

Exploratory factor analysis (EFA) is related to theory development, whereas confirmatory factor analysis is related to conducting a theory test (Brown, 2006; Tabachnick & Fidell, 2012). Confirmatory factor analysis (CFA) is recommended as a priority in scale adaptation studies. It was suggested that in the measurement of cross-cultural scale adaptation processes, instead of exploratory factor analysis, the model fit should be examined with confirmatory factor analysis on the data collected by reaching a sufficient sample size after the completion of the valid language procedures. In the confirmatory factor analysis, if the model of the original scale size structure is not confirmed or if the model fit is insufficient, it is stated that the exploratory factor analysis is performed (Çokluk et al., 2018). Therefore, in this study, confirmatory factor analysis was used to test whether the scale structure was valid for data sets obtained in other cultures.

In this study, the three-factor model of the original scale (11 items) (Watson & Deary, 1997) was evaluated with first-level confirmatory factor analysis. Maximum likelihood was used as the estimation method. In the analysis, we found that the three-factor structure was verified compared with the original model and was compatible with the original model. When scale confirmatory factor analysis fit indices were examined, χ^2/sd value was 1.90, SRMR value was 0.049, CFI value was 0.98 and NFI value was 0.96. These fit index values were good. On the contrary, the RMSEA value was 0.067; the GFI value was 0.93 and the AGFI value was 0.89. This fit index seemed to be acceptable. In light of these results, no modification was needed in the model (Figure 1, Table 3).

3.2.2 | Criterion validity

The relationship between the Mini Nutritional Assessment Test screening factor score, the MNA Test rating factor score and the MNA Test total score with the EdFED Scale were examined. When the results of the Pearson Moments Product Correlation Analysis method was applied, it was determined that there was a moderate negative relationship between the total score of the EdFED Scale with the MNA Test screening factor score ($r = -0.54$, $p < 0.01$); and the MNA Test assessment factor score ($r = -0.58$, $p < 0.01$); and a high negative correlation ($r = -0.61$, $p < 0.01$) between the total score of the MNA Test.

TABLE 2 Analysis assessing the mean scores on the EdFED according to some characteristics (n = 200)

	The EdFED scale scores	
	Mean ± SD	Test and p-value
Swallowing difficulty		
No	5.18 ± 4.02	t = −4.536[*],
Yes	8.37 ± 4.34	p < 0.001
Body mass index		
Weak	6.86 ± 3.58	X^2 = 3.959[***],
Normal	6.11 ± 4.51	p = 0.266
Overweight	5.53 ± 4.21	
Obese	5.00 ± 4.16	
Type of dementia		
Alzheimer's disease	5.73 ± 4.30	X^2 = 3.495[***],
Senile dementia	4.82 ± 2.48	p = 0.479
Vascular dementia	8.09 ± 5.19	
Parkinson's disease dementia	7.14 ± 4.88	
Other	6.67 ± 2.08	
Duration of dementia (months)		
≥58 months	7.10 ± 4.36	t = 3.734[*],
<58 months	4.89 ± 3.99	p < 0.001
Stage of dementia		
Early (a)	3.28 ± 3.02	F = 38.872[**],
Moderate (b)	5.69 ± 3.91	p < 0.001
Severe (c)	9.02 ± 3.95	c > b > a[1]
Time to consume a meal (min)		
≥19 min	7.23 ± 4.72	t = 3.228[*],
<19 min	5.19 ± 3.90	p = 0.001
Location		
Society	6.38 ± 4.56	t = 2.302[*],
Nursing home	4.94 ± 3.62	p = 0.022
Caregiver		
Family member	6.31 ± 4.57	X^2 = 11.067[***],
Professional caregiver	10.17 ± 3.07	p = 0.004 c > a = b[1]
Health personnel	4.68 ± 3.41	

*Independent t-test.; **One-way ANOVA test.; ***Kruskal–Wallis test.
[1]Tukey B test.

3.3 | Reliability

Cronbach's α coefficient was calculated in the assessment of scale reliability. The Cronbach's α coefficient determined for 11 items of the scale was 0.86. Cronbach's α coefficient regarding the scale factors were as follows: the first factor was 0.81, second factor was 0.79 and third factor was 0.64.

For the item-total score correlation to be sufficient, the minimum value required is specified as 0.20 (Çokluk et al. 2018). When the item-total score correlations of the 11-item scale were analysed in this study, we observed that there was no item below the scale of

0.20, and the correlation coefficients of the scale items with the total score of the scale items were between 0.48–0.69 (Table 4).

4 | DISCUSSION

In this study, the psychometric properties of the EdFED were analysed with three basic approaches. The first of these approaches is the basic distribution characteristics of the substances that make up the EdFED, the second is the validity findings, and finally, the reliability findings.

4.1 | Findings related to the validity of the scale

The sample size of the present study was calculated at least 5–10 times the number of scale items as suggested in the literature. After obtaining the opinions of 13 experts, the calculated CVI value was 0.95. This finding was interpreted as the Turkish version of the scale reflected the consensus among experts that it met the purpose of measurement. The data obtained from the scale applied after language adaptation and pilot application were first evaluated regarding descriptive features.

In the confirmatory factor analysis, we found that the three-factor structure was verified and compatible with the original model. Therefore, there was no need for explanatory factor analysis and modification. The results obtained in other studies in which the EdFED scale was adapted are as follows: the Chinese version was a 2-factor model (Factor 1: 5–10 items, Factor 2: 1–4, 11 items) (Lin et al., 2008); the Mainland Chinese version was the 3-factors model (Factor 1: 5–10 items; Factor 2: 1,2,11 items; Factor 3: 3,4 items) (Liu et al., 2014); the Spanish version was the three-factors model (Factor 1: 1–4 items; Factor 2: 8–10 items; Factor 3: 4–7 items) (Figueredo et al., 2018). In the present study, the second factor was changed in the naming of the scale's factors. The originally named 'Nursing Initiatives', the factor name was expressed as 'The Need Needed by the Patient'. Especially this statement was preferred because the scale included people with dementia receiving care in the hospital or institution and people with dementia living in the community because in Turkey/Turkish community, 'nursing interventions' expression is perceived just the interventions performed by nurses. However, the concept expressed here is not limited to the nursing interventions performed by nurses; it covers all the help needs of the patient. This need for help can also be provided by the patient's caregiver. Figueredo et al. (2018) have found being reliable of the scale for nurses and caregivers.

A moderately-significant correlation was found between the total score of the EdFED Scale and the MNA Test score, which is consistent with Figueredo et al.'s study (2018). A high MNA test score indicates normal malnutrition, while an increase in the EdFED score indicates an increase in nutritional problems. In line with the findings, it can be said that the criterion validity of the EdFED scale was ensured.

The minimum score of 0 and the highest score of 20 can be obtained from the scale. In this study, the EdFED total scale score was

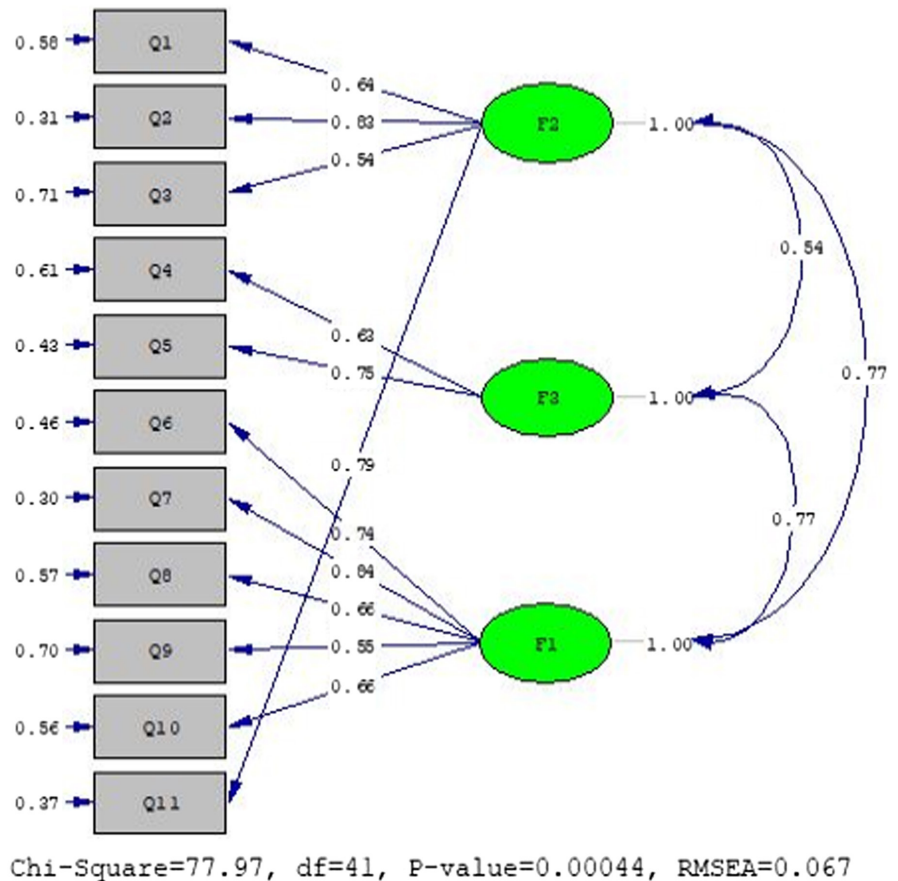**FIGURE 1** Confirmatory factor analysis model of EdFED scale

Chi-Square=77.97, df=41, P-value=0.00044, RMSEA=0.067

TABLE 3 Goodness-of-fit statistics of the Turkish version of the EdFED scale

The criterion of model fit	Good	Acceptable	Fit in the study	Fit
X^2/df	χ^2/SD ≤ 2	χ^2/SD ≤ 3	1.90	Good
RMSEA	RMSEA ≤ 0.05	RMSEA ≤ 0.08	0.067	Acceptable
SRMR	0.00 ≤ SRMR ≤ 0.05	0.05 ≤ SRMR ≤ 0.10	0.049	Good
CFI	0.97 ≤ CFI	0.95 ≤ CFI	0.98	Good
GFI	0.95 ≤ GFI	0.90 ≤ GFI	0.93	Acceptable
AGFI	0.90 ≤ AGFI	0.85 ≤ AGFI	0.89	Acceptable
NFI	0.95 ≤ NFI	0.90 ≤ NFI	0.96	Good

Abbreviations: AGFI, Adjusted-goodness-of-fit index; CFI, Comparative fit index; GFI, Goodness-of-fit index; NFI, Normed fit index; RMSEA, Root mean square error of approximation; SRMR, Standardized root mean square residual; χ^2/df, Chi-square to the degree of freedom.

5.87 (SD 4.29). From the scale score obtained in the present study, it should not be judged that there is no feeding difficulty problem. This was thought to be because the scale could not be applied to people with dementia being completely dependent on their caregiver for feeding.

4.2 | Findings related to the reliability of the scale

When the reliability findings were examined, the Cronbach's α value of 0.86 was calculated for the whole scale. The analysis results showed that the internal consistency of the Turkish form was at a sufficient level. The Cronbach's α values found in the original scale study and adaptation studies in different cultures were as follows: for the original scale study was 0.87 (Watson & Deary, 1994); for the Chinese version of the scale was 0.75 (Lin et al., 2008); for the Mainland Chinese version was 0.91 (Liu et al., 2008); and for the Spanish version was 0.88 (Figueredo et al., 2018). Cronbach's α coefficients of the scale factors were the first factor; 'Patient Difficulty Indicators' α = 0.81, second factor; 'Patient's Need for Help' α = 0.79, third factor; 'Nutritional Difficulty Indicators' were α = 0.64. These α values are above the cut-off point of 0.70, which is recommended only for the dimension of 'Nutritional Difficulty Indicators'. The low Cronbach's α coefficient of the third factor (Nutritional Difficulty Indicators) was thought to be caused by the fact that this factor consists of two items. The low number of questions has been reported

Item	Score X ± SD	Correlation with total	Cronbach's α 'if deleted	Cronbach's α
EdFED total	5.87 ± 4.29			0.86
Indicators of patient difficulty	1.27 ± 1.97			0.81
Item 6	0.29 ± 0.55	0.62	0.85	
Item 7	0.32 ± 0.57	0.70	0.84	
Item 8	0.25 ± 0.51	0.58	0.85	
Item 9	0.22 ± 0.52	0.49	0.86	
Item 10	0.22 ± 0.47	0.56	0.85	
Patient's need for assistance	4.14 ± 2.58			0.79
Item 1	1.48 ± 0.75	0.52	0.86	
Item 2	0.96 ± 0.86	0.68	0.84	
Item 3	0.90 ± 0.85	0.51	0.86	
Item 11	0.81 ± 0.82	0.66	0.84	
Indicators of feeding difficulty	1.27 ± 1.23			0.64
Item 4	0.77 ± 0.77	0.48	0.86	
Item 5	0.51 ± 0.67	0.49	0.86	

TABLE 4 Descriptive statistics of the EdFED scale, item-Total correlation coefficients, Cronbach's α values of dimensions

as one of the reasons for the low Cronbach's α value (Tavakol & Dennick, 2011). Cronbach's alpha if Item Deleted values were less than 0.86. Thus, we did not delete any of them. According to the Cronbach's α values, the items on the scale were consistent with each other. One of the most commonly used item analysis techniques is item analysis based on item-total score correlation. In the item analysis method based on the item-total score correlation, the correlation relationship of an item with the entire scale is determined (Kartal & Bardakçı, 2018). The item-total score correlation coefficient of an item is generally accepted in the literature; items with a value less than 0.20 should be excluded from the scale, items with a value between 0.20 and 0.30 should be included in the scale if it is deemed necessary. High-value items should be kept in the scale by concluding that the scale moves in the same direction as the whole (Çokluk et al., 2018; Kartal & Bardakçı, 2018). In our study, the item-total score correlation was between 0.48 and 0.70, no items were removed from the scale, and no negative items were found. These values were interpreted as the items worked at the desired level and in the same direction and were reliable.

4.3 | Limitation

The limitation is that this study has not included people with dementia being completely dependent on their caregiver for feeding.

5 | CONCLUSION

In line with the findings obtained in the present study, the validity and reliability of the Turkish version of the EdFED Scale have been proven. It can be suggested to be used to evaluate the feeding difficulties in people with dementia care, both institutional and community care, and to be tested with experimental studies.

The EdFED scale can serve healthcare professionals and caregivers as a practical tool for feeding difficulties in people with dementia. Early diagnosis and monitoring interventions for feeding difficulties in people with dementia can help prevent and/or reduce the negative consequences of feeding difficulties. Thus, it can contribute to reducing the negative effects of dementia on the patient, the family and the health system.

Under the end, the poverty goal of the sustainable development goals and good nutrition of vulnerable groups, including the elderly with dementia, are discussed. In addition, another global sustainable goal is to reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being. It is understood that both goals aim to improve the quality of life of not only the patient but also the caregiver. The nutrition of the patient with dementia should be taken seriously to care for the aforementioned global targets. The EdFED scale can reduce/prevent the negative effects of malnutrition by providing early detection of feeding difficulties. Thus, it can be ensured that the care given is sustainable.

AUTHOR CONTRIBUTIONS

D.Ö involved in planning, data analysis, interpretation and reporting; F.U involved in planning, data collection, data analysis, interpretation and reporting; R.W involved in reporting and English language control.

CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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