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## VALIDATION OF EDMONTON FRAIL SCALE INTO ELDERLY TURKISH POPULATION



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### ABSTRACT

**Purpose:** The purpose of this methodological study was to assess the validity and reliability of Turkish version of the “Edmonton Frail Scale” (EFS).

**Method:** 130 individuals aged 65 and over residing at the Izmir Narlıdere Nursing Home between September 2011 – April 2012 who agreed to participate in the study constituted the sample for the research. Individuals with communication problems (deafness, blindness or language barriers) and problems with manual dexterity were not included in the study. The EFS is composed of 11 items, with a minimum score of zero and a maximum score of 17. Initially, the scale was translated into Turkish and then back translated in order to ensure language equivalence. Six experts were consulted with regard to content validity and agreement among the experts was assessed using Kendall's W. When testing the reliability of the EFS, the scale was re-administered to 30 participants two-three weeks after the initial administration in order to determine its consistency over time and agreement between the first and second administration was analysed using the kappa statistic. Pearson's Moment Correlation Coefficient and Cronbach's Alpha were also used to establish reliability.

**Findings:** The overall Cronbach's alpha value for the scale was 0.75. An “item analysis” calculated item-total correlation coefficients of between 0.12–0.65 for scale items, and the item-total correlation for item six was found to be less than 0.20. This item solicits the number of medications used by the subject, and since the number of medications used is significant in the determination of frailty it was not removed from the scale. The scale was found to be highly consistent over time (Kappa ( $\kappa$ ) = Min: 0.95, Max: 1.00)

**Conclusion:** EFS indicators were found to be sufficiently reliable and valid for the Turkish population. Accordingly, it is recommended that this scale be used in determining the frailty of older individuals.

### 1. Introduction

Frailty is a dynamic process in which a loss in one or more areas of physical, psychological and social functioning has an undesirable impact on the health of an elderly individual (Buckinx, Rolland, Reginster, Ricour, & Petermans Bruyère, 2015). Frailty increases the unwanted impacts of stressful events, such as weakened haemostasis, increased sensitivity, falls, delirium, and disability (Clegg, Young, Iliffe, Rikkert, & Rockwood, 2013). Frailty is not an inevitable part of aging; like diabetes or Alzheimer's, it is comorbidity. (British Geriatrics Society, 2014) In relation to reductions in homeostatic reserves, the frailty process may be defined as having three stages; the pre-frail stage, the frail stage and the stage in which complications of frailty are experienced (Lang, Michel, & Zekry, 2009). Once begun, the stage of frailty complications may turn into a self-perpetuating vicious circle ultimately

leading to death (Lang et al., 2009; Kinney, 2004). The frailty cycle can potentially start from various points. Any stress can accelerate the transition from the pre-frail stage to the frail stage and subsequently to the frailty complications stage (Lang et al., 2009; Kinney, 2004). Frailty can be measured in various ways, including rules-based scales and algorithms derived from clinical judgement. However many of these scales are not practical for bedside implementation by primary healthcare practitioners. This is because they require multidimensional clinical data provided by comprehensive geriatric assessments, which require specialist knowledge of the subject. Other negative aspects of these scales are that they are time-consuming and not universally applicable. Taking these facts into consideration, the user-friendly Edmonton Frail Scale (EFS), which can be easily administered in a short time to either hospitalised and out-patient subjects, was developed at Alberta University in the Canadian city of Edmonton by Rolfson et al. in

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2006 (Appendix A) (Rolfson, Majumdar, Tsuyuki, Tahir, & Rockwood, 2006). Existing frailty scales generally do not include social and psychological indicators. Only the physical domain of frailty is used in making an assessment (Steverink, Slaets, Schuurmans, & Lis van, 2001). Another purpose in selecting the EFS is that it is an easy-to-use screening tool that includes psycho-social components. There is no tool used to evaluate frailty in old age in Turkey. The EFS is a measurement tool that aims to measure frailty in the elderly and helps to identify frail individuals. The purpose of this study is to assess the validity and reliability of Turkish version of the EFS.

## METHOD

### 1.1. Type and place of research

This study was planned as a methodological research with the aim of determining the validity and reliability of the Turkish version of the EFS. It was carried out the Elderly residing at the İzmir Narlıdere Nursing Home.

### 1.2. Research sample

The research sample was composed, using the simple random sampling method, of individuals aged 65 and over who agreed to take part in the study. The domains of cognition tested using performance-based item; the 'clock test'. Therefore exclusion criteria for the study were determined as illiteracy, lack of manual dexterity, a hearing-visual disability and communication problems. In determining the sample size, taking the number of items in the scale as a basis, it was aimed to recruit at least ten times the number of items (İltu, 2007; Wood & Haber, 2002; Yıldırım, 2007). Accordingly, since there are 11 items in the scale, it was planned to administer it to at least 110 subjects. By the end of the study, the scale had been administered to 130 people who had provided their verbal agreement to participate in the study between September 2011 and April 2012. Given the prospect that at the end of the survey process it might be impossible for various reasons to include some forms in the assessment, and that an increased sample size would contribute to the validity and reliability level, the sample size was increased.

### 1.3. Data collection tools

**Geriatric Information Form;** The information form prepared by the investigator included 22 introductory questions containing assessments aimed at defining the socio-demographic characteristics and frailty-related variables of the elderly subjects.

**Socio-demographic data on elderly subjects;** consisted of questions including information such as the gender, age, educational status, social security, income status, sources of revenue and number of children of the elderly subjects.

**Frailty-related variables;** this form was prepared in the light of information in the literature and consists of questions regarding the presence of chronic illness, number of medications, frequency of falls, duration of hospitalisation, perception of old age etc.

**The Edmonton Frail Scale (EFS)** was developed by Rolfson et al. (2006) at Alberta University, Canada (Appendix A) (Rolfson et al., 2006; Fabrício-Wehbe et al., 2009) It was developed for routine use by healthcare practitioners with no specialist training in geriatrics and gerontology in order to measure frailty in older persons. The scale consists of the nine frailty domains that are included in a Comprehensive Geriatric Assessment and are considered to be determinants of frailty. Of these frailty domains, general health status and medication use are assessed with two questions while the other domains are assessed with a single question. The scale consists of a total of 11 items. The two domains of cognition and functional performance are tested using performance-based items; the 'clock test' for cognitive status and the 'Timed Get Up and Go' test for functional performance (Rolfson

et al., 2006; Fabrício-Wehbe et al., 2009; Brodaty & Moore, 1997;; Podsiadlo & Richardson, 1991;; Strandberg, Pitkala, & Tilvis, 2011). Furthermore, the content validity of the original scale was tested with a 70-question frailty scale called the Geriatrician's Clinical Impression of Frailty (GCIF). It was found that the EFS displayed a high correlation with the GCIF ( $r: 0.64$   $p < 0.0001$ ). Cronbach's alpha for the original scale was 0.62 and it was found to be a valid and reliable tool (Ercan & Kan, 2004). It takes less than five minutes to administer the EFS. It has a minimum total score of zero and a maximum score of 17. An increase in the total score obtained from the scale indicates an increase in the severity of frailty. The EFS frailty level scoring consists of five levels; not frail, vulnerable, mild frailty, moderate frailty and severe frailty (Fabrício-Wehbe et al., 2009; Rolfson et al., 2006).

### 1.4. Research ethics

Permission to perform the study was obtained from the Scientific Ethics Committee of Ege University's Faculty of Nursing (Permission no: 2011) and in writing from the Management of İzmir Narlıdere Rest and Nursing Home. Both verbal and written information regarding the study and the fact that their names would be kept confidential was provided to the individuals whom it was planned to recruit to the study, and the written approval of the informed individuals was obtained on a voluntary basis.

### 1.5. Procedure

The first stage of the study was to test language validity. The translation method was used to minimise conceptualisation and differences of expression in the adaptation of the scale's language. According to Aksayan and Gözüm, at least two independent translators are necessary under this method (Aksayan & Gözüm, 2002). Accordingly, the translation of the scale from its English original into Turkish was performed by an English language instructor familiar with both languages and six specialist faculty members, one a nurse and the other doctors. After these translations were arranged by the investigator, a back translation into English of the prepared form was made by a translator fluent in both languages (Turkish-English) employed by the UK-based Turkish translation company TTC wetranslate Ltd. After comparing the expressions in this back translation with the original English expressions, the Turkish translation was revised (Appendix B). The content validity of the EFS was tested by six experts. The experts were asked to score the measurement level of each item in the scale out of ten. After recommendations were received and modifications made, 15 individuals who were not included in the scope of the study were recruited for pretesting. They were asked to assess the survey with regard to items that were hard to comprehend and hard to read and the format of items, and the scale was finalised based on their suggestions. In order to assess the scale's consistency over time the EFS was administered twice to 30 same subjects of 65 years and over resident. Finally EFS were given to 130 elderly and a validity technique to determine the validity of the tool (criterion-related validity), a reliability technique to determine the internal consistency (item-total score correlation) and Cronbach's alpha were calculated.

### 1.6. Statistical analysis

A statistician conducted the statistical analysis. The data obtained in the research were analysed using the SPSS (Statistical Package for Social Sciences for Windows), Version 16.0. The patients' descriptive information was calculated as a distribution in number and percentage. Frailty-related variables Man-Whitney *U* test and Chi-Square were used in relation to frailty level and some variables. The Kendall's *W* correlation coefficient was calculated with regard to content validity. Spearman Correlation Test and Kappa statistic was calculated to determine test-retest reliability. To determine the internal consistency of

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