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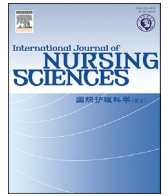
Original Article

Turkish validity and reliability of the Diabetes Self-Efficacy Scale

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ABSTRACT

Purpose: The aim of this methodological study was to determine the validity and reliability of the Diabetes Self-Efficacy Scale adapted to the Turkish community.

Methods: The study sample was completed with 319 patients who had been diagnosed at least 1 year before and hospitalized in the Malatya Turgut Ozal Health Center and Malatya State Hospital in Turkey. A questionnaire that consists of items on sociodemographic characteristics, drug use and information about the disease of patients and the Diabetes Self-Efficacy Scale were used for data collection in the study. In reliability analysis of the scale, the Cronbach's α coefficient was calculated and item analysis method was utilized. Factor analysis was used for the construct validity, and Principal Component Analysis and Varimax Rotation method were used for analyzing the factor structures.

Results: According to data obtained in the study, item-total correlation of the items of the scale was found to be at an adequate level (0.297−0.803). The scale's Cronbach's α reliability coefficient was found to be 0.86, and there was one factor that explains 52.38% of the total variance with an eigenvalue was greater than 1.0. As a result of the analysis, the factor loadings of the items of the scale were found to be between 0.59 and 0.81.

Conclusion: Diabetes Self-Efficacy Scale is a valid and reliable instrument for determining the self-efficacy of patients and providing a proper care. It can be suggested to investigate and evaluate the consistency of the scale by applying it to broader sample groups representing different socioeconomic levels.

1. Introduction

Diabetes mellitus is a chronic disease that caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced [1]. Diabetes affects whole life of the individual with its biological, psychological and social effects. Patients with diabetes must maintain a planned care throughout their lives and receive professional help from time to time. Acute and chronic complications that can occur as well as these restrictions and requirements decrease quality of life. Diabetes leads to a number of psychological problems and loss of joy of life in individuals. Individuals who feel loss of independent self-sufficiency become increasingly desperate, losing self-confidence [2,3].

According to the IDF (International Diabetes Federation) Diabetes Atlas published recently, the number of diabetics in the world was increased by sevenfold from 30 million in 1985 to 230 million in 2005. According to the IDF Diabetes Atlas, the total population of the world is 7.2 billion. And, this is expected to have risen to 8.7 billion by 2035. Based on the IDF data, it is estimated that the health expenses on diabetes and its complications in the world will exceed 627 billion USD by 2035, which was 548 billion USD in 2013. In 2013, 5.1 million people have lost their lives due to diabetes-related causes. According to the Diabetes Atlas, 382 million people around the world in the 20—79 year age group are estimated to be suffering from diabetes, and IDF expects that there will be more than 592 million diabetics by 2035. And, again according to the Diabetes Atlas, Turkey is the country with the highest prevalence of diabetes

among European countries. Similarly, Turkey ranks 3rd after Russia and Germany with its over 7 million people with diabetes in the rank of European Countries with higher prevalence of diabetics in the between 20 and 79 year age groups [4,5]. According to Turkey Diabetes Epidemiology Study (TURDEP-II) in 2010, Eastern Turkey has the highest prevalence of diabetes (18.2%), whereas Northern region has the lowest prevalence (14.5%) [6–8]. In addition, according to the results of TURDEP-II study, the Province of Malatya was in the first place among the provinces with higher prevalence with its more than 20% diabetes prevalence, which is a significant cause of mortality and morbidity [7,9]. According to the results of a study conducted in 2012 by SSI (Social Security Institution) in order to determine the cost of diabetes in Turkey, the cost of diabetes is approximately 10 billion TL for the SSI in 2012. The total cost of diabetes is increasing every year by 18% approximately, compared to the previous year. In the total health expenses by SSI, the rate of diabetes has increased from 16.4% in 2008 to 23% in 2012 [10,11].

Psychologist Albert Bandura suggested the concept of self-efficacy/sufficiency in 1977 with the scope of "Cognitive Behavior Change" for the first time. A strong sense of personal efficacy-sufficiency has been found to be associated with a higher level of health, higher achievement and social integration. Self-efficacy levels of individuals may increase or decrease the motivation to take action [12–14]. How individuals react to failures, how much effort they exert when faced with a problem or an unpleasant experience, and how much time they spend to cope with a problem are all affected by their self-efficacy/sufficiency levels [15,16].

Diabetes is a chronic health problem. The self-efficacy beliefs and expectations of the individuals with health problems that require complex treatment and care, such as diabetes, play an important role to take steps for making changes in lifestyle and learning new skills to cope with the disease process. People with diabetes are expected to have a sufficient level of self-efficacy to cope with the complex diabetes care and treatment effectively. Behaviors of diabetics on self-care can be improved and developed by increasing their self-efficacy levels [17–19]. In a study by Bernal et al. on the relationship between self-efficacy and self-care in people with diabetes, the nutrition-and-insulin-treatment-related self-efficacy perceptions of patients who were visited by home care nurses and attending diabetes education programs were found to increase [20]. And, in a study by Johnston-Brooks et al., it was found that the individuals with low levels of self-efficacy have insufficient self-care behaviors for diabetes and have failed to manage diabetes [21].

The aim of this study was to evaluate the validity and reliability of the Diabetes Self-Efficacy Scale, which was developed to determine the levels of self-efficacy of people with diabetes in Turkish society.

2. Methods

2.1. Research type

This study was conducted methodologically to adopt the "Diabetes Self-Efficacy Scale" to Turkish, and to determine its validity and reliability.

2.2. Research place and time

The study was carried out between in November 2013 and January 2015 in the Malatya Turgut Ozal Health Center and Malatya State Hospital in Turkey.

2.3. Study population and sample selection

The study population consisted of 420 patients with diabetes who had been diagnosed at least 1 year before and hospitalized in the Malatya Turgut Ozal Health Center and Malatya State Hospital in Turkey. No sampling was performed in the study, and the study was completed with 319 patients who agreed to participate in the research.

The Inclusion Criteria for the Study.

- Literate
- Have no history of psychiatric diseases
- Have no audio/visual impairment

2.4. Data collection tools

A questionnaire and Diabetes Self-Efficacy Scale were used for data collection in the study.

2.4.1. Questionnaire
The 16 items questionnaires, prepared by the researcher, consist of items on sociodemographic characteristics, drug use and information about the disease of patients.

2.4.2. Diabetes Self-Efficacy Scale
Lorig et al. developed Diabetes Self Efficacy Scale (DSES) in 2009 in South Korean [22]. The scale was developed to determine the self-efficacy of the patients with diabetes. The Likert-type scale consists of 8 items. The items of the scale are scored between 1 and 10 (1 = Not at all confident, 10 = Totally confident). The scale is usually applied within 5–6 min. The Cronbach's α coefficient of the scale, which was developed by Lorig et al., is 0.89 [22]. And, in this study, Cronbach's α reliability coefficient was found to be 0.86.

2.4.3. Validity and reliability of the Diabetes Self-Efficacy Scale
The validity and reliability analysis of the Diabetes Self-Efficacy Scale was performed in accordance with the expert opinions and related literature [23].

2.4.4. Linguistic validity
Translation of a scale into another language changes the nature of that scale. This inevitable change is due to the conceptualization and expression differences. The scale items should be carefully examined to minimize the differences, necessary linguistic transformations should be performed to achieve the same meaning in the target language, and the language of translation should be standardized according to the norms of individuals in that language for adapting the scale to a new culture [24].

In translating the language of Diabetes Self-Efficacy Scale, first the scale was translated from English to Turkish by researchers. Then, an expert linguist translated it because of back to English. This back-translation was compared with the original, revised and translated scale was finalized.

2.4.5. Internal consistency
The item-total score correlations, Cronbach's α, and factor analysis were used for the internal consistency test of the scale. The item-total score correlations indicate whether each item in the scale contributes to the overall internal consistency [25,26]. And, the Cronbach's α reliability coefficient is a measure of internal consistency, homogeneity of items in the scale. The items in a scale are considered consistent and homogeneous in measuring the very same feature as the Cronbach's α reliability coefficient of the scale increases [27]. In the literature, a correlation coefficient smaller