Original Article

Predictors of Self-care among the Elderly with Diabetes Type 2: Using Social Cognitive Theory

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ABSTRACT

Introduction: Diabetes is one of the most common chronic diseases among the elderly and is also a very serious health problem. Adopting theory-based self-care behaviors is an effective means in managing such diseases. This study aimed to determine the predictors of diabetes self-care in the elderly in Kerman based on a social cognitive theory.

Material and methods: In this cross-sectional study, 384 elderly diabetic patients who had referred to health screening centers in Kerman were chosen via cluster sampling. To collect information about self-care and its predictors, Toobert Glasgow's diabetes self-efficacy scale as well as a questionnaire was used which was based on social cognitive theory constructs. The validity and reliability of the questionnaire was confirmed. The data were analyzed using Pearson correlation and linear regression analysis in SPSS software 17.

Findings: Among the subjects, 67.37% (252) had poor self-care ability; 29.14% (109) had average ability, and 3.40% (13) enjoyed a proper level of self- care ability. There was a significant relationship between the constructs of the social cognitive theory (knowledge, self- efficacy, social support, outcome expectations, outcome expectancy and self-regulation) and the self-care score. Furthermore, the mentioned constructs could predict 0.47% of the variance of the self-care behaviors.

Conclusion: self-care behaviors in this study were poor. Therefore, it is necessary to develop an educational intervention based on cognitive theory constructs with the goal of properly managing diabetes in the elderly patients.

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1. Introduction

Diabetes is a chronic and non-communicable disease, which is considered to be one of the most salient issues regarding public health and is also the fifth cause of fatalities in the world [1]. According to a report issued by International Diabetes Federation, it is predicted that by 2025, the population of diabetic patients will exceed 330 million people. 75% of this increase will happen in developing countries [2]. Among the factors that influence the increase of the diabetic patients' population, one could refer to demographic transition and aging of societies [3]. The prevalence of diabetes increases with age in all societies, and it is most prevalent in the oldest age groups [4]. In Iran, the prevalence of

diabetes in the elderly is estimated at least 14% in different studies [5–7].

Diabetes is a very important issue due to its high disease burden, irreparable effects, direct and indirect expenses imposed on health system and its impact on the patients' life quality. The direct costs of the disease comprise 2.5-15% of the total health budget in a country [2]. However, according to recent studies, the most important factor causing the increase of morbidity and mortality in diabetic patients is the lack of self-care [8]. Self-care is an active process which should be used on a daily basis by diabetic patients to control their disease more efficiently. This process consists of proper diet, taking medicine on time, self- monitoring of blood glucose or urine, regular physical activity and foot care [9]. The findings of many studies suggest that diabetic patients with less self-care skills are more exposed to the negative consequences of this disease [10]. This problem is more acute in the elderly since providing care for them is more difficult due to numerous physical

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and psychological problems that lead to various and sometimes irreversible consequences [11].

As a result, the study of self-care in the elderly with diabetes is necessary, and in the meantime, it seems important to base such studies on a much more effective framework or pattern rather than to use of traditional measures [12].

Social cognitive theory is one of the most commonly used models and theories for improving self-management behaviors in patients with known chronic diseases [13]. It is composed of multiple constructs including knowledge, self- efficacy, social support, outcome expectations, outcome expectancy and self-regulation [13]. So far, many studies have been done to identify the important factors in defining self-care behaviors in diabetic patients based on these constructs. Various studies have shown that there is a significant relationship between the age of the diabetic patients and their level of knowledge, and as the age increases, the level of the patient's knowledge of self-care behaviors drops [14]. Self-efficacy is also another major risk factor and predictor of self-care behaviors in diabetic patients [15]. Self-efficacy is a direct predictor of intention and subsequent behavior, and it deals with one's judgment on is capabilities in doing a particular action [16].

Social support is received from the social network surrounding the individuals and especially their family members and friends, which directly influences their behavior [17]. It has a positive statistical correlation with chronic disease self-care [18]. Outcome expectation is one's belief regarding the probability of the occurrence of particular behavior consequences, and expectancy is the importance and value that the person gives to this outcome [19]. This construct is also one important predictor of self-care in patients with diabetes [20]. Self- regulation is to control one's own process by applying a set of mechanisms such as self-monitoring, goal-setting, feedback, self-reward, self- instruction, identification of social support [19]. Self-regulation is considered to be one of the important determinants of self-care (22).

Given the importance of identifying the factors affecting diabetes care in elderly diabetic adults, the present study aimed at determining the predictors of diabetes self-care in the elderly with diabetes in Kerman, Iran based on a social cognitive theory so as to plan effective and efficient diabetes care interventions for this age range.

2. Method

We performed an observational cross-sectional population-based survey among elderly ($\geq$60 years of age) subjects with diagnosed diabetes mellitus in Kerman city, Iran between December 2015 and March 2016. Participants were obtained from the primary healthcare centers (PHCs) which are responsible for the implementation of diabetes care program in Kerman city. Kerman is the capital city of Kerman Province, located in the southeast of Iran.

There are in total 18 diabetes-unit PHCs that run formal diabetes care program in Kerman city that covers entire population. Sample size was calculated by using assumptions as follows: prevalence of positive self-care of 50% and a relative precision of 7% and a 95% confidence level. The estimated sample size was 391; however 400 subjects meeting inclusion criteria were aimed to be included for evaluation during this survey. Out of 18 PHCs, 10 PHCs (clusters) were selected by using population proportional to size and within each cluster (i.e. PHC), 40 subjects were selected by using simple random sampling by allocating each patient record a random number. Inclusion criteria were: age equal or above 60 years, complete record file, diagnosed with type-II diabetes for at least one year, citizen of Iran, and ready to provide informed consent to use data and participate. Those not meeting these requirements were not included in our survey. Each of 400 subjects was then contacted at-home through house visits and required additional data was collected and participation was requested. Verbal informed consent was obtained for this survey. All invited subjects were explained about the purpose of this survey and those willing to participate were included in the survey. Ethical permission was obtained from the Institutional Review Board of the University of social welfare and rehabilitation sciences.

To collect information on the status of the self-care behaviors in the patients with diabetes, Toobert Glasgow's diabetes self-efficacy scale was used. This part included 12 questions that measured the self-care behaviors in the diabetic patients. The score for each individual was between 0 and 84 [21]. To determine the level of self-care, means score was used, and the obtained score range was divided into three parts. Scores between 0 and 28 were considered as poor scores; 28 and 56 as average and 56-84 as appropriate. The scale was based on the constructs of a social cognitive theory including knowledge (20 items), self-efficacy (20 items), social support (12 items), outcome expectations (20 items), outcome expectancy (20 items) and self-regulation (20 items). The content and face validity of the questionnaire was confirmed using a panel of experts. A preliminary study of 30 patients was used to determine internal consistency. Cronbach's alpha for the self- care questionnaire was 0.77 and the alpha range for the constructs was between 0.71 and 0.88. Finally, 374 questionnaires that were completed correctly were analyzed.

Analyses were obtained from SPSS 17.0 (Statistical Package for The Social Sciences Windows). Descriptive statistics such as mean and percentages were used for variables, respectively. Proportions of patients following selected self-care domains were presented as percentages. Tests of normality were obtained by Kolmogrov-Smirnov test and were determined to show normal distribution. Pearson correlation was used to analyze relationship between parameters of cognitive theory constructs with self care. Variables were entered into a liner regression model and ability to predict self care by variables was calculated. $P < 0.05$ was accepted as the statistically significant.

3. Results

In total, 374 questionnaires that was completed fully and correctly were analyzed. Table 1 shows the self-care mean scores and each of the constructs of the social cognition theory in the elderly diabetic patients. In this study, 67.37% (n = 252) of the participants had poor self-care abilities; 29.14% (n = 109) were average, and 3.49% (n = 13) enjoyed an appropriate level of self-care ability.

The findings showed that there is a significant positive relationship between the constructs of the social cognitive theory (knowledge, self-efficacy, social support, outcome expectations, outcome expectancy and self- regulation) and the self-care score (Table 2).

The findings showed that the mentioned constructs predicted 0.47% of the self-care behaviors variance. The predictive ability of knowledge, self- efficacy, social support, outcome expectations

Table 1
Total score of self-care and social cognitive construct.

SD	Mean	Variables
19.42	41.59	Self-Care
4.47	11.41	knowledge
12.4	34.45	Social Support
24.5	86.18	Self-efficacy
12.39	59.89	Outcome Expectation
12.7	65.28	Outcome Expectancy
13.24	65.05	Self Regulation