

Adaptation of Chronic Kidney Disease-Self Management Knowledge Tool (CKD-SMKT) into Turkish

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ABSTRACT

Objective: The aim of the study is adaptation of Chronic Kidney Disease-Self Management Tool (CKD-SMKT) into Turkish language.

Methods: The study was conducted with chronic kidney disease patients in a training and research hospital. Initially, translation and cultural adaptation of the Turkish tool was performed, afterwards the internal consistency was evaluated with Kuder-Richardson (KR-20) coefficient.

Results: The total of 48 patients (mean of age [years]: 62.13±15.19) were included the study. An acceptable internal consistency with a KR-20 value of 0.71 was determined for the tool. 62.5% of participants answered correctly to all self-management knowledge items, however only 10.4% of them indicated that they behaved in line with the correct answers of all self-management knowledge items.

Conclusion: The Turkish version of CKD-SMKT is a reliable and appropriate tool to assess the self-management knowledge of chronic kidney disease patients.

Keywords: Chronic kidney disease, knowledge, self-management.

1. INTRODUCTION

Chronic kidney disease (CKD) is a serious worldwide public health condition affecting 12-15% of the adult population (1). CKD is defined as an abnormality in renal structure or function for 3 months or longer, with implications for health (2).

Since CKD has several complications (e.g., anemia, bone-mineral disorders, cardiovascular disease) in addition to medical conditions (e.g., diabetes mellitus, hypertension) that accompany the development of CKD, self-management of CKD is a multifaceted and complicated process. Therefore, adults with CKD often have complex medication regimens and need to adapt a compelling treatment regimen that even conscious patients may have difficulty with it (3). In that case, they should be aware of their medications and access recent information about their treatment. The patients also should regularly monitor their diseases with various parameters, control fluid and dietary intake, adopt the regular physical activity habits and regularly communicate with their health care providers (4).

It is important for patients to have sufficient knowledge about their diseases in order to carry out the self-management process (5). The tools that measure the knowledge of

patients with chronic kidney disease are present in the literature, however most of these tools are intended only for patients receiving dialysis treatment (6-10). Although there are several tools for pre-dialysis stages, the focus of them is not the knowledge of the basic behaviors in the management of kidney disease which is the most important factor that may affect the patients' treatment outcomes. The major concern of these tools is the knowledge of renal disease and/or function of kidney (11-13). Only a few tools were available to directly target the evaluation of CKD self-management knowledge (14-16).

Chronic Kidney Disease Self-Management Knowledge Tool (CKD-SMKT) was developed by Devraj et al. (16) to meet the instrument need regarding evaluation of CKD self-management knowledge. This tool includes items related with knowledge of patients' self-management behaviors, also past performance on those essential behaviors.

A tool that measures self-management knowledge for the general population of chronic kidney patients was not available in Turkish language. Although there are various studies on this topic, these studies only include patients treated with dialysis (17-20). To address this gap, it is

aimed to adapt the CKD-SMKT into Turkish language for the evaluation of self-management knowledge of patients with CKD in Turkey.

2. METHODS

2.1. Study Population

This study was conducted between the dates of April 2018 – October 2018 in a training and research hospital in Istanbul. Adult CKD patients (≥ 18 years) hospitalized for more than 24 hours during the study period with at least one medication use were evaluated for including in the study. The patients on routine dialysis treatment and using no antihypertensive agent were excluded.

The sociodemographic and clinical information of the patients were obtained from manual patient records or the electronic database of the hospital and through face-to-face interviews. Chronic kidney disease stage was determined with estimated glomerular filtration rate (eGFR) according to KDOQI guidelines (2). The self-management knowledge of the study population regarding chronic kidney disease was evaluated using the Chronic Kidney Disease Self-Management Knowledge Tool. The original tool was targeted for patients with CKD stage 1-4, but we included the patients with CKD stage 5 also (non-dialysis). Initially the tool was adapted to Turkish and then applied to the participants.

The study protocol was approved by Clinical Researches Ethical Committee of Marmara University Faculty of Medicine with number of 09.2018.165 and written informed consent was obtain from all participants.

2.2. Chronic Kidney Disease Self-Management Knowledge Tool (CKD-SMTK)

The tool, developed and validated by Devraj et al. (16), measures the knowledge of self-management behaviors such as nutrition, exercise, smoking avoidance, fluid intake management, alcohol consumption restriction and nonsteroidal anti-inflammatory drug use. It also provides information related with patient's past performance on these behaviors. The scale consists of 10 items. A general question about how much information patients have about their kidney health is also included in the scale (4).

2.3. Adaptation Process

CKD-SMKT was translated from the original language (English) into Turkish by two fluent English-speaking pharmacists whose native language is Turkish and who knew the purpose and scope of the study after obtaining permission for adaptation from the researcher who developed the tool. The translations were reconciled as a single translation under the supervision of an expert on the subject. This Turkish translation was translated into English by professional

translators whose native language are English, and who have a medical background, also speak Turkish fluently but do not know the purpose and scope of the study.

The differences between the English translations and the original scale were evaluated, and then the latest version was translated back to Turkish. Next, the latest Turkish translation was overviewed for grammar correction and revised for cultural and conceptual content and equivalence.

For cultural adaptation of the Turkish version of CKD-SMTK as the last step of translation process; it was applied to a group of individuals who were independent of the study population ($n=15$; including nurse, nephrologist, physician and pharmacist) and evaluated in terms of language and comprehensibility by receiving feedback.

Since, questioning self-management behavior information and past performances related to these behaviors in a one item complicate the comprehensibility in Turkish, participants were questioned separately for their knowledge and past performance. Kuder-Richardson-20 (KR-20) coefficient was used to evaluate the internal consistency of the Turkish version, which was finalized by the mentioned stages.

2.4. Statistical Analysis

Descriptive statistics were calculated as mean \pm SD (standard deviation) and median (interquartile range) or frequency and percentage for categorical variables. To examine differences in participant characteristics and continuous data was evaluated through Kruskal-Wallis test and Mann Whitney U test. KR-20 coefficient values above 0.70 indicated a good internal consistency (21). Spearman's correlation was used to assess the correlations. For all statistical analyses, $p \leq 0.05$ was determined as the level of statistical significance. SPSS (Statistical Package for Social Sciences) version 25.0 (IBM Corp., Armonk, NY) was used for performing statistical analyses.

3. RESULTS

3.1. Demographics

Seventy-three inpatients were evaluated in this study and forty-eight patients were included. Twenty-five patients were excluded due to the being on routine dialysis treatment before hospitalization (22) and using no antihypertensive agent (3). The mean age of the 48 patients (29 women) was 62.13 ± 15.19 and the majority of the participants were married (56.3%). Most of them had not completed 8 years (at least required education years in Turkey) of school (66.7%). Approximately 70% of them had CKD stage 4 or stage 5. Table 1 shows the demographics of the participants.

Table 1. Characteristics of participants

Age (Mean±Standard Deviation)	61.13±15.19
Age n (%)	
28-44 years	7 (14.6%)
45-64 years	21 (43.8%)
≥ 65 years	20 (41.7%)
Gender – Female (%)	29 (60.4%)
Education n (%)	
< 8 years	32 (66.7%)
≥ 8 years	15 (31.3%)
Marital status – Married n (%)	27 (56.3%)
Duration of CKD (years) (patient-reported) (%)	
≤1	10 (20.8%)
2-5	16 (33.3%)
6-10	7 (14.6%)
>10	12 (25.0%)
Unknown	3 (6.3%)
CKD stage (%)	
Stage 3a: GFR 45-59 ml/min/1.73 m ² , n (%)	5 (10.4%)
Stage 3b: GFR 30-44 ml/min/1.73 m ² , n (%)	9 (18.8%)
Stage 4: GFR 15-29 ml/min/1.73 m ² , n (%)	17 (35.4%)
Stage 5 (non-dialysis): GFR <15 ml/min/1.73 m ² , n (%)	17 (35.4%)
Length of hospitalization (Median-IQR)	10.5 (8-21)
Number of concomitant chronic diseases (Median-IQR)	3 (2-4)

CKD: chronic kidney disease; GFR: glomerular filtration rate; IQR: interquartile range. The education and marital status data of 1 and 3 participants were not available, respectively.

3.2. Chronic Kidney Disease Self-Management Knowledge Tool (CKD-SMKT)

The rates of correct answers by item for CKD-SMKT are shown in Table 2. More than half of the individuals (62.5%) answered correctly to all self-management knowledge items. However only 10.4% of them indicated that they behaved in the past 3-6 months in accordance with the correct answers of all self-management knowledge items. 35.5% of the participants stated that they knew 'very little' or 'nothing' about their kidney health.

There was a positive weak correlation between self-management behavioral score and both age ($r=0.400$, $p<0.01$) and CKD years ($r=0.457$, $p<0.01$). There was no correlation with self-management knowledge score age and CKD years (Table 3). A statistically significant difference was observed in knowledge scores of participants with different education level, where significantly higher knowledge mean scores were obtained for participants educated ≥ 8 years ($p<0.05$). The self-management knowledge and behavioral scores were not statistically different by gender and CKD stage ($p>0.05$).

KR-20 coefficient was used to evaluate the internal consistency reliability of the tool and it was detected as 0.71 for CKD-SMKT (0.71 for overall tool, 0.70 for knowledge and 0.49 for behavioral items).

Table 2. The rates of correct answers and behaviors by item for CKD-SMKT

Knowledge instrument items	Correct answer	Correct answer (%)	Who have done this in the last 3-6 months (%)
Section A			
To help my kidneys I need to;			
Know what my blood pressure goal is.	T	85.4	29.2
Take my blood pressure medicine(s) like my doctor tells me to	T	87.5	89.6
Have my urine ('pee') tested at least once a year.	T	95.8	83.3
Get my blood checked every few months	T	93.8	83.3
Eat more salt	F	97.9	16.7
Keep a healthy body weight	T	83.3	58.3
Not take some types of over-the-counter medicines (Diclofenac, Ibuprofen, Naproxen etc.)	T	83.3	71.2
Section B			
<i>Do you have diabetes? If YES, then answer the following: (n=25)</i>			
To help my kidneys I need to;			
Keep track of my blood sugar each day	T	80.0	56.0
Eat less sugar	T	92.0	84.0
Take my diabetes medicine (s) like my doctor tells me to.	T	88.0	96.0
Section C			
Overall knowledge: How much do you know about your kidney health?			(%)
I know everything I need to know			25.0
I know a lot			10.4
I know some			29.2
I know a little			16.7
I know nothing			18.8

CKD-SMKT: Chronic Kidney Disease Self-Management Knowledge Tool

Table 3. Correlation between CKD-SMKT scores and patient characteristics

	Coefficient of correlation (Spearman's rho)	
	Self-management knowledge scores	Self-management behavioral scores
Age	0.126 ($p>0.05$)	0.400 ($p<0.01$)
CKD years	0.174 ($p>0.05$)	0.457 ($p<0.01$)

CKD-SMKT: Chronic Kidney Disease Self-Management Knowledge Tool

4. DISCUSSION

The self-management of patients with CKD regarding their diseases is one of the substantial factors in treatment. It should be assessed whether they have a sufficient level of knowledge or not in order to conduct the self-management

process. The literature incorporates a few tools developed for this purpose as mentioned above. Among these tools, CKD-SMKT was preferred to adapt to Turkish with the advantage of applicability and lack of numerous and complicated items to evaluate the participants' self-management knowledge.

Content validation of the original scale was provided by the developers, but no reliability test was performed. Therefore, internal consistency of scale was evaluated with KR-20 reliability coefficient. It was observed that the result of internal consistency analysis was similar to the other two scales developed for similar populations and patients with other chronic diseases related with knowledge, self-efficacy or self-management. The reliability coefficients of them were indicating good internal consistency. Different from our study, in these two scales the Cronbach's alpha coefficient was used to determine internal consistency due to type of response options (likert) (22, 23). In another survey developed to assess kidney disease knowledge, KR-20 formula was performed and the consistency level detected as similar to our result with a coefficient of 0.72 (12).

In the present study, the majority of the patients (62.5%) had high levels of CKD self-management knowledge. When the questions of the scale were evaluated individually, it was found that at least approximately 80% of the participants answered correctly for each question. In two studies using the same scale, it was shown that the majority of CKD patients (69.6%) had a high level of self-management knowledge and at least 90% of the participants answered correctly for each question similar to our results (24, 25).

In that encouraging outcome, the least known issues were relevance of blood pressure, blood sugar and body weight with CKD and the risk of NSAID use in CKD. Although they had high level of self-management knowledge, their behaviors were not in the same direction with this result and very few of them indicated that they behaved as it should be about their self-management. The greatest difference was observed between knowledge and behavior in blood pressure goal.

In one of the studies mentioned above, only 14.5% of individuals stated that they knew 'very little or 'nothing' about their kidney health (24). This rate was higher in our study (35.5%), although most of them had high level of self-management knowledge. While our study was conducted with inpatients, the other study was conducted with outpatients. The difference between the two patient groups is understandable with considering the negative psychological effects of hospitalization (26).

The Turkish version of CKD-SMKT is an applicable tool in terms of internal consistency, comprehensibility and duration of implementation. The condition of especially hospitalized patients with CKD may be difficult to communication. Therefore, duration and comprehensibility of a tool can be a crucial point for its practicability. CKD-SMKT can provide these advantages in clinical practice with a short implementation duration and yes/no questions.

Content validation was established in the original language of the scale, but as a limitation construct validation was not provided. As a limitation, the scale has a good internal consistency for knowledge section and overall tool, nevertheless the same situation was not observed when the behavioral section evaluated alone. Although only adaptation of the instrument was performed in this study, a new Turkish scale can be developed as the same direction in further studies by improving content of CKD-SMKT.

5.CONCLUSION

As a conclusion, the Turkish version of CKD-SMKT was determined as an appropriate tool to evaluate the self-management knowledge of chronic kidney patients. The patients with CKD had high level of knowledge, nevertheless it was observed that this encouraging outcome did not reflect to their behavior.

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This study was conducted within the scope of a Clinical Pharmacy PhD thesis at Institute of Health Sciences of Marmara University.

Conflicts of interest

None

Author contribution

OA – study design, data collection, performing of statistical analysis and writing of manuscript, FVI (thesis advisor) – contribution of study design, contribution the writing of manuscript, BO – study design, IHA – contribution of implementation of the research, MS – study design, performing and interpretation of statistical analysis and contribution of writing of manuscript.

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