

Available online at www.sciencedirect.com**ScienceDirect**journal homepage: <http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132>**Original Article****Reliability and validity of the Chinese version of CAHS among renal transplant recipients****Shuping Zhang ^a, Yabin Shang ^a, Xiao Peng ^a, Hui Xie ^b, Hongxia Liu ^{a,*}**^a School of Nursing, Beijing University of Chinese Medicine, Beijing, China^b School of Nursing, BengBu Medical College, BengBu, China**ARTICLE INFO****Article history:**

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ABSTRACT

Purpose: The purpose of this study was to assess the applicability of the Chinese version of Cognitive Appraisal of Health Scale (CAHS) for renal transplant recipients, and to make a preliminary evaluation of its reliability and validity.

Methods: A total of 147 renal transplant recipients who attended a transplant follow-up clinic in a Level 3, Grade A hospital in Beijing were asked to complete the Chinese version of CAHS. Following completion the reliability and validity of the scale were tested.

Results: The Cronbach alpha coefficient of Chinese version of CAHS among subscales of threat, harm, challenge and benign-irrelevant were 0.857, 0.806, 0.680, 0.100 respectively; and the test-retest reliability coefficient were 0.791, 0.601, 0.624, 0.470 ($p < 0.01$). Spearman correlation was used to test the four subscales' correlation between the item score and the total score, in which threat was 0.598–0.748, challenge was 0.517–0.651, harm was 0.528–0.735 and benign-irrelevant was 0.507–0.651. These correlations were all statistically significant. The four common factors were extracted using factor analysis. The four factors accounted for 50.356% of the total variance. The SF-36 Physical Component Summary (PCS) and Mental Component Summary (MCS) scores were correlated with each subscale score in CAHS. Threat was weakly correlated to PCS, and was moderately correlated to MCS; harm was moderately correlated to both PCS and MCS; challenge was weakly correlated to both PCS and MCS and benign-irrelevant did not correlate with neither PCS nor MCS. The Chinese version of CAHS has been shown to have good discriminant and convergent validity.

Conclusion: The Chinese version of the CAHS was supported to be applicable and to provide measurable performance in renal transplant recipients, thus it can be utilized with renal transplant recipients in China.

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End-stage renal disease (ESRD) refers to the clinical syndrome occurring in the late stage of a variety of chronic kidney diseases. Renal transplantation is the most effective and well-accepted method for the treatment of end-stage renal disease currently. With the improvement of transplant technology and the emergence of new immunosuppressive medications, there has been a significant increase in the long-term survival of renal transplant recipients [1]. Thus, renal transplantation has become the best option for patients with end-stage renal diseases. Even so, there are many complications from renal transplantation and side-effects from the medications, which patients will likely endure, such as weight gains, hirsutism, gingival hyperplasia or aches. These lead to frustrating physiological and psychological problems. Many studies show that kidney transplant patients often encounter psychological problems after transplantation; anxiety and depression are the most common. The rate of anxiety was between 17% and 28% [2,3]; the rate of depression was between 22% and 41.4% [4–6]. Some patients contemplated or even attempted suicide. Fear or psychotic symptoms were also seen among the recipients. Alavi [7] and colleagues' study showed that 65.3% and 51.6% of the renal transplant recipients had depression and anxiety respectively. Therefore, renal transplantation is a stressful event for patients. Studies have found that when health conditions change it is very important to determine how the individual views the events in relationship to their well-being [8,9].

Cognitive appraisal is defined as the process by which an individual evaluates or judges a potentially stressful event for meaning and significance to one's own well-being [10]. Cognitive appraisal consists of both primary and secondary dimensions [10]. Primary appraisal is the judgment of an event for meaning and significance to well-being. An event may be evaluated as irrelevant, benign/positive, or stressful (a harm/loss, threat, and/or challenge to well-being) [10]. Secondary appraisal is the evaluation of coping options and available resources [10].

The measurement of appraisal is a relatively new area of study. Most of the appraisal scales were developed within the past two decades. King (1995) measured primary appraisal by single dimensions representing the significance of an illness [11]. However, the evaluation of appraisal on single dimensions is inappropriate because primary appraisal is a multidimensional concept. Oberst and colleagues (1989) developed the Appraisal of Caregiving Scale (ACS) to measure the extent to which cancer patient caregivers perceived the intensity of the illness/caregiving situation as a challenge, threat, harm/loss, or benign [12]. The ACS accurately reflected the construct of primary appraisal; however, its use is limited to studies of caregivers' stress. Other researchers developed the Appraisal of Illness Scale (AIS) to measure the stress appraisal of cancer patients, but the validity and reliability of the AIS were not reported [13,14].

Kessler (1998) developed the Cognitive Appraisal of Health Scale (CAHS) to measure the multiple dimensions of primary and secondary appraisals associated with potentially stressful health-related events [8]. Items of the primary appraisal dimensions were derived from a review of theoretical literature and other existing instruments that measured elements of primary appraisal. Items were constructed until threat,

challenge, harm/loss, and benign/irrelevant dimensions were all represented. Four coping and resource items in the secondary appraisal dimensions were developed by Folkman et al. (1986) [15]; one additional secondary appraisal item was added by Kessler (1998) to represent the coping option associated with a benign/irrelevant appraisal. The CAHS was evaluated in a sample of 201 women with breast cancer. Findings indicated the CAHS had good reliability and validity as a measure of cognitive appraisal for health-related events [8].

The Cognitive Appraisal of Health Scale (CAHS) as developed by Kessler includes all dimensions of appraisals and is arguably more comprehensive. The CAHS has been evaluated in Jordanian patients [9,16]. There are no Chinese instruments measuring patients' cognitive appraisal of health. The aim of the study was to translate the CAHS into Chinese and formulate a Chinese version of CAHS, and to assess its reliability and validity in renal transplant recipients. As renal transplantation is a stressful event for renal recipients, it is important to know the cognitive appraisals of these recipients. By knowing the appraisals of the recipients, interventions can be developed to maintain the positive/benign appraisals and alter the negative appraisals, thus improving renal transplant recipients' psychological well-being.

1. Participants and methods

1.1. Participants

The convenience sample for the study was composed of 147 patients, recruited from a Level 3 and Grade A hospital in Beijing between January and June 2014. They were all outpatients being followed in renal transplantation unit. The eligibility criteria were: (a) aged above 18 years of age, (b) first renal transplantation, (c) a functional renal graft, (d) certain ability to read and write with good language communication ability, and (e) willingness to participate. The exclusion criteria were: (a) more than one renal transplant, or (b) two or more organ transplantations. The number of participants in this study was 147, conforming to the demand that the sample size be 5 to 10 times of the 23 items.

1.2. Instruments

1.2.1. General data questionnaire

The questionnaire was designed by the researchers, and contains data related to the illness, gender, age, education level, economic income, work status, source of the graft and postoperative period, etc.

1.2.2. Cognitive appraisal of Health Scale (CAHS)

The scale was developed by Kessler and was tested among breast cancer patients in 1998 [8]. The CAHS has 28 items in total, including primary appraisal and secondary appraisal. The primary appraisal scale consist 23 items forming 4 subscales: threat, harm, challenge and benign-irrelevant subscales. The secondary appraisal has 5 items. The Cronbach alpha index of the primary appraisal subscales was 0.85, 0.88, 0.72 and 0.78 respectively. The scale was rated numerically on

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