



Original article

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ABSTRACT

Aim: To develop and psychometrically test the Post Hip Replacement Comfort Scale (PHRCS).**Background:** Evaluation of the patient comfort after hip replacement surgery is highly important in order to increase the quality of patient care. The review of the relevant literature shows that a scale that specifically measures the patient comfort after hip replacement surgery is absent.**Design:** Methodological design was used. This study included the development of the scale and tested the psychometric properties of the scale.**Method:** 180 patients who had been hip replacement surgery recruited from three education and research hospitals' orthopedic and trauma departments from January 2014 to December 2015. The study was conducted in three phases. In phase 1, scale items were developed based on the literature review and other comfort scales. In phase 2, the trial was applied with data collection forms. Phase 3 was conducted to evaluate the reliability and validity of the finalized inventory using item analysis.**Results:** The Cronbach's alpha coefficient value is 0.758. Test-retest results found positive and meaningful correlation between the scores of the scales, indicating the reliability of the scale. Scope, surface, criterion and construct validity analysis confirmed the validity of the scale. There were 26 items in the final scale. In our study, the average patient comfort score was 3.64 ± 0.43 (from 1 to 5).**Conclusion:** The PHRCS is recommended for evaluating patients' comfort after hip replacement surgery and examining the effects of nursing interventions on patients' comfort.

1. Introduction

Maintaining patient comfort, which is an indicator of the results of patient care, is one of the main aims of nursing. Katharine Kolcaba (1991), who developed the comfort theory, stated that comfort of the individuals should be evaluated together with physical, sociocultural, psychospiritual and environmental dimensions (Kolcaba, 1991). Pain felt by the patient is the main determinant of physical comfort about bodily perceptions (Kolcaba, 2003). The impact of external factors such as temperature, light, bed, sound over the patients constitutes the environmental comfort (Kolcaba, 2003). Consultation, religious practices, interpersonal communication, and discharge planning and education are the factors that constitute the sociocultural comfort (Kolcaba, 2003). Psychospiritual comfort, which includes esteem, sexuality and self-identity, is negatively influenced by anxiety (Kolcaba, 2003). Given that the patients are influenced by various factors in a hospital, nurses should take patient comfort into consideration while evaluating the

patients and preparing the plans for patient care.

Planning, implementation and evaluation of the post-operative care of the patients who undergo hip replacement surgery within the context of the comfort theory will increase patient care quality. Evaluation of the patient comfort will help the healthcare providers to determine the necessities of the patients so that the impact of medical interventions over patient comfort may be assessed. Therefore, as Kolcaba states, proper tools should be developed in order to evaluate the needs of patients and measure patient comfort (Kolcaba, 1991).

2. Background

In 2001, Kolcaba developed the General Comfort Questionnaire (GCQ) in order to evaluate comfort of all types of patients (Kolcaba, 2001). In order to evaluate comfort of patients with different health problems, the GCQ has been modified in line with the demands unique to these problems. Perianesthesia Comfort Scale of Wilson

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(Wilson & Kolcaba, 2004), Urinary Incontinence and Frequency Comfort Questionnaire of Dowd (Dowd, Kolcaba, & Steiner, 2000) and End of Life Comfort Questionnaire of Novak (Novak, Kolcaba, Steiner, & Dowd, 2001) are among the main questionnaires that have adapted the GCQ to specific health problems. GCQ (2008), Postpartum Comfort Questionnaire (2010), and Urinary Incontinence Comfort Scale (2012) are among the examples of the GCQ that have been adapted into Turkish (Karakaplan & Yildiz, 2010; Kuguoğlu, 2008; Zengin & Pinar, 2012).

Hip replacement surgery is the most frequently performed orthopedic surgery, thanks to the developments in technology and the increase in the number of elderly patients (Heybeli & Mumcu, 1999; Sayek, 2004). The number of annual hip replacement is 193,000 in the United States of America (Mauk, 2014) and about one million around the world (Knutsson & Engberg, 1999). When the revision surgeries are taken into consideration, Birrell et al. expects an important increase in the number of hip replacement surgery in the next 15 years (Birrell, Johnell, & Silman, 1999). Health care requirements in hip replacement surgery, which mainly stem from limited movement ability, start in the pre-operative period and continue during the post-operative period (Simsek Yaban, 2006). In addition to physiological problems, such as constipation, inappetency, orthostatic hypotension and pressure sore, which are mainly caused by limited movement ability, the patients that undergo hip replacement surgery may suffer from psychological problems, including anxiety, delirium and sleep disorders (Nazli, 2007). The patients are influenced in physical, physiological, social and spiritual terms following the hip replacement surgery. A study on the expectation of the patients after hip replacement surgery found that the patients primarily demanded to regain movement ability and relief of pain (Elibol, 2011). Maintaining and increasing comfort of the patients that suffer from limited movement ability are highly important in terms of nursing.

GCQ may not be sufficient for comprehensive evaluation of the comfort of the patients after hip replacement surgery. The review of the literature on comfort scales shows the lack of a valid and reliable questionnaire that specifically evaluates comfort of the patients, who undergo hip replacement surgery. This study develops the PHRCS in order to fill the gap in the literature. The scale that we develop evaluates the medical interventions before and after hip replacement surgery on comfort of the patients. By revealing the comfort levels of the patients, who undergo hip replacement surgery, we intend to provide contributions to the plans and practices for increasing patient comfort levels.

3. Methods

3.1. Aim

The purpose of the study was to develop and psychometrically test the PHRCS for measuring comfort after hip replacement surgery.

3.2. Methodology

An instrument development study was designed to assess the patient comfort after hip replacement surgery.

3.3. Sample/participants and setting

There are diverging suggestions on the calculation of sampling size of the reliability-validity studies. Some of the researchers suggest that the sample size should be at least 100 so that factor analysis may be conducted (Gorsuch, 1983; Kline, 1979; MacCallum, Widaman, Preacher, & Hong, 2001). On the other hand, Hatcher argues that at least 100 samples with five samples per each item are required (O'Rourke & Hatcher, 2013). Based on these suggestions we calculated the sample size as 180, five times the 36 items of our study.

This study was conducted between January and November 2015 with the participation of 180 voluntary patients that underwent hip replacement surgery at the orthopedics and traumatology clinics of three training and research hospitals. Voluntary patients at and above the age of 18, who could communicate in Turkish, had no mental problems and underwent total or partial hip replacement surgery, were included in the study.

3.4. Data collection

The questionnaire consisted of four parts. The first part included questions on the patients' sociodemographic characteristics; the second part included information on hip replacement surgery; the third part included PHRCS developed within the context of this research; and the final part included the GCQ that was used to evaluate criterion validity. GCQ was developed by Kolcaba in 1992 (Kolcaba, 1992). The GCQ was adapted into Turkish by Kuguoğlu and Karabacakin Turkish in 2008 (Kuguoğlu, 2008). The scale consists of 48 questions based on a 4-type Likert scale and the scores to be obtained ranged between 48 and 192. The overall score (ranged between 1 and 4) is calculated by the dividing the total score into the total number of items. The higher the overall score, the higher the patient comfort. The Cronbach's Alpha coefficient of the Turkish version of the scale was 0.85 (Kuguoğlu, 2008). The Cronbach's Alpha coefficient of the GCQ of this research was 0.83.

3.5. Ethical considerations

The study was approved by the university's institutional review board and an informed, written consent was obtained from all participants. All participants were aware that they had the right to stop answering any questions or participating in this study and would not incur any penalty. Written and verbal consent of the participants was obtained. Data collection form did not include any questions that may reveal the identities of the participants. We placed special attention to avoid directing the participants about the answers to the question on the scale. Data was collected by using face-to-face interviews.

3.6. Instrument development

The development process was conducted in three phases: **Phase 1: item development**; **Phase 2: pilot study**; **Phase 3: psychometric analysis**.

3.6.1. Phase 1: item development

We used the relevant literature on the questionnaires developed within the context of comfort theory in order to determine the items in the draft questionnaire (Karakaplan & Yildiz, 2010; Klemetti et al., 2015; Knutsson & Engberg, 1999; Kuguoğlu, 2008). The draft scale was submitted to expert opinions and the results were evaluated.

3.6.2. Phase 2: pilot study

Pilot study was the stage that the draft questionnaire was employed on the participants. Given that the discharge days of the patients differed in different hospitals, we selected the second day after the surgery for data collection.

3.6.3. Phase 3: psychometric analysis

Psychometric Analysis comprised of 3 stages: item analysis, reliability analysis, and validity analysis.

During the first stage of item analysis, we used the methods of the different of lower-upper group means based item analysis method and the correlation based item analysis (Tezbasaran, 1997). The participants at the upper hand of the total scale scores were considered as the 'upper group' and those at the lower hand of the total scale scores were considered as the 'lower group'. For the lower and the upper groups, we conducted independent sample *t*-test for each items, starting with the first item. Items that were statistically insignificant and that had

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