CROSS-CULTURAL ADAPTATION, RELIABILITY, VALIDITY, AND SENSITIVITY OF THE ARABIC VERSION OF THE FEAR-AVOIDANCE BELIEFS QUESTIONNAIRE IN A SAUDI POPULATION WITH LOW BACK PAIN

A DISSERTATION

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To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Fahad Alanazi entitled "Cross-Cultural Adaptation, Reliability, Validity, and Sensitivity of the Arabic Version of the Fear-Avoidance Beliefs Questionnaire in a Saudi Population with Low Back Pain." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements of the degree of Doctor of Philosophy with a major in Physical Therapy.

Peggy Gleeson, PT, Ph.D., Major Professor

We have read this dissertation and recommend its acceptance:

Department Chair

Accepted:

Dean of the Graduate School

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ABSTRACT

FAHAD ALANAZI

CROSS-CULTURAL ADAPTATION, RELIABILITY, VALIDITY, AND SENSITIVITY OF THE ARABIC VERSION OF THE FEAR-AVOIDANCE BELIEFS QUESTIONNAIRE IN A SAUDI POPULATION WITH LOW BACK PAIN

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Almost 70% of the American population experiences the symptoms of low back pain (LBP) in their lives, and 25% of these adults experience pain for more than a month. Because low back pain is common elsewhere as well, physical therapists around the world face the challenge of finding culturally and linguistically adapted psychometrically sound LBP assessments. The goal of this research was to determine if the new Arabic version of the Fear-Avoidance Beliefs Questionnaire (FABQ) had significant reliability, validity, and sensitivity in a Saudi population with LBP. In the pilot, the Arabic version of the FABQ was tested for clarity and meaning by engaging with Arabic-speaking patients. Testing indicated the FABQ compensation claim question had no relevance in the Arabic culture; otherwise, there was no issue with the questionnaire and no need to adapt it further. The primary study was of the cross-cultural reliability, validity, and sensitivity of the Arabic version of the FABQ in a Saudi population with LBP. Test-retest reliability was good (FABQ–work: intraclass coefficient [$ICC_{1,1}$] = 0.74; FABQ–physical activity: ICC = 0.90; FABQ overall: ICC = 0.76). Correlations between the FABQ and

other instruments for measuring pain and disability were weak. The strongest correlation was found at the follow-up session with the Arabic Oswestry Questionnaire ($r = 0.283$; $p \leq 0.05$). Sensitivity to change was low. Overall, the Arabic FABQ had good test-retest reliability, acceptable construct validity, and low sensitivity to change. Despite the disappointing low sensitivity to change, which may be attributable to the short period between baseline and follow-up measures, these findings are characteristic of a successful translation, one that physical therapists can employ to assess fear-avoidance beliefs in patients with LBP speaking Arabic. Researchers may want to expand this investigation in the future beyond self-reports and devise clinical tests to examine self-reported fear-avoidance beliefs, their effect on relevant activities, and the correlation to findings on the FABQ and other tests.

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CHAPTER I

INTRODUCTION

Low back pain (LBP) and the disabilities that result from it are a significant socioeconomic and health problem in many parts of the world, and this is markedly true in the United States of America (Koes, Tulder, & Thomas, 2006). Estimations reveal that up to 67% of the American population experiences the symptoms of LBP at certain points in their lives (Lamb et al., 2012). In fact, LBP is ranked second only to upper respiratory illnesses in the list of reasons why patients visit physicians (Krismer & van Tulder, 2007). Though as many as 75% of patients with acute LBP usually recover after a month and return to work (Morris & Watson, 2011), patients whose pain extends to about 6–10 weeks may experience symptoms that last up to a year (Koes et al., 2006). In these cases, pain is the major contributor to disability, and a part of that disability is pain-related fear (Grotle, Vollestad, & Brox, 2006).

Background

Pain-related fear has been an increasingly important contributor to disability and adjustment to patients suffering from LBP (Grotle, Vollestad, & Brox, 2006). Various researchers have also indicated that fear-avoidance beliefs may form the most crucial factors in the cognitive development of chronic complications among patients with LBP (Kamper, Maher, & Mackay, 2009). People with pain usually tend to avoid pain-related activities that are obviously associated with increased chances of re-injury (Ferrer et al., 2006). This fear is responsible for a progressive decrease in occupational and physical activity. Fear of pain brings about avoidance attitudes, which in turn lead to a deconditioning syndrome that instills the avoidance beliefs into an individual and escalates the pain-related fears (Grovle et al., 2008). Deyo et al. (1998) report that patients with LBP who have increased fear-avoidance beliefs manifest avoidance behavior, reduce physical activities, and alter movements, and these patterns have a general outcome of persistence of pain and disability.

The contribution of fear-avoidance beliefs to the development of long-term disability has been gaining popularity (Ostelo et al., 2008). This psychological factor is important and should be assessed to ensure that treatment addresses fear beliefs that would contribute to the maintenance of physical disability. Moreover, there is a strong relationship between elevated fear-avoidance beliefs and chronic disability that is secondary to LBP (Crombez, Vlaeyen, Heuts, & Lysens, 1999). This relationship makes it necessary to evaluate the performances of patients receiving interventions for LBP to help suppress development of future disability.

After Waddell, Newton, Henderson, Somerville, and Main (1993) developed the FABQ, it proved instrumental in estimating and quantifying the attitudes of patients with LBP (Carragee, 2010). This questionnaire measures the effects that levels of fear and avoidance beliefs have on work and on physical activity (Hancock, Herbert, & Maher, 2009). It consists of two subscales: the first one is a physical activity subscale, consisting of four items (FABQ-PA), while the second one is a work subscale, consisting of seven items (FABQ-W). Each item is answered by the patient according to a seven-point Likert Scale (completely disagree [0] to completely agree [6]). A high score on the FABQ indicates a high level of fear-avoidance beliefs. A score of 0 to 6 is awarded to each item and later summed to give a preliminary subscale score. Scores range from 0 to 24 for the physical activity subscale and 0 to 42 for the work subscale.

Since 1993 when the FABQ was first reported (Waddell et al., 1993), users have made it one of the most popular of the approximately nine LBP self-report measures in the world. Because cultures vary in their perceptions of disease and what response it should receive, measures specifically designed for the cultures in which they will be used are needed. The United Nations recognized Arabic as an official language of the General Assembly more than forty years ago (Dag Hammarskjöld Library, 2014), and today Arabic is spoken by 221 million people and recognized as the fourth most widely spoken language, ranking immediately after English (“Most Widely Spoken Languages,” 2014) . Therefore, the need is great for the FABQ, originally designed specifically for an English-speaking population, to be adapted for the Arabic-speaking world.

Cross-cultural adaptation of outcome measures is important for four reasons. First, many languages are spoken other than English. Even in some English-speaking countries, such as the United Kingdom, English is not the primary language of a significant minority of the population. Second, without the ready availability of cross-culturally adapted self-report outcome measures, researchers may exclude non-English–speaking participants from studies, which could systematically bias outcomes in studies of health care utilization or quality (Beaton, Bombardier, Guillemin, & Ferraz, 2000). Third, the value to researchers who conduct meta-analyses of data from eligible trials conducted in populations in non-English–speaking countries is difficult to estimate (Wagner et al., 1998). Finally, adapting existing self-reported outcome measures, despite the careful attention required to the culture and language of the adopting population, remains more economical and efficient than developing original outcome measures (Wagner et al., 1998).

Cross-cultural adaptation is a procedure that views both the translation of language and cultural adaptation issues in the process of preparation of a questionnaire for use in a different setting (Beaton et al., 2000). Cross-cultural assessments are acknowledged and used by multiple international educators, researchers, and clinicians (Geisinger, 1994). Due to cross-cultural use, a number of assessment tools developed in one language have been subsequently translated and validated in many other languages (Gandek & Ware, 1998). The cultural needs and contextual needs of the population that is being evaluated should be incorporated in the process of translation and validation. This entails a fine grounding in cross-cultural adaptation (Matias-Carrelo et al., 2003).

However, the challenge has been on the global use of the assessments secondary to such barriers as language. There have been efforts made to translate the assessments into other languages with the hope of ensuring that they are widely accepted (Geisinger, 1994). Efforts have been made to develop psychometrically sound assessment tools. However, it is still a challenge to implement and use these tools within other regions globally. Therefore, the focus of international researchers has been on integrating the tool in other regions by translation. With the shortage of assessments in some countries, the need to translate the tool to different languages is inevitable. Geisinger (1994) also

highlighted that the main goal of translation of such tools is to improve overall health care by supporting the dissemination of these tools within other countries.

It became clear that translation of the assessment tools was important, but also important was the adaptation of the instrument to the culture. Translation errors were to be avoided because errors could negatively affect the validity and reliability of the instrument (Chang, Chau, & Holroyd, 1999). In other words, misinterpretation of the instruments during translation should be avoided for the sake of the instrument's effectiveness in assessment. However, Chang et al. (1999) also observed that it is difficult to use a word-for-word translation because of the differences in language, which encompasses linguistic and cultural differences. Additionally, the differences highlighted within the idiomatic expressions and colloquial phrases make adapting a direct translation challenging.

Therefore, the translation process should consider meanings of respective wordings in order to effectively translate the tools. The main concern is ensuring that with the translated version, the meaning of words is similar between the original and the new version. In fact, the different concepts within the tools should be understood from the respective culture's point of view (Hilton & Skrutkowski, 2002).

Statement of the Problem

Health care professionals are challenged by the choice of tools and instruments to use during rehabilitation (Toal-Sullivan & Henderson , 2004). Because treatment interventions are developed from initial assessments, the assessment tool is critical. If the assessment is inaccurate or unreliable, the treatment interventions could be ineffective. There is a need to support effective assessment because it could determine the success of the treatment process (Foto, 1998).

Of particular concern are physical therapists practicing in countries where physical therapy is new to health care. The challenge among the professionals is to develop an efficient assessment that could be effectively applied within health settings where physical therapy is not well recognized and where adapting assessment tools and measures from other countries may be challenging secondary to differences in language and culture. The lack of a fear-avoidance belief outcome measure in Arabic is a major

challenge. Adapting a standardized fear-avoidance belief tool would benefit physical therapy practice in Saudi Arabia because it would be helpful in identifying the immediate needs of the Arabic population and it would help physical therapists develop appropriate interventions.

Purpose of the Study

This research was aimed at translating the FABQ into Arabic with consideration of the cross-cultural aspects of the Saudi Arabian population. The goal was to ensure the translation and adaptation of the tool and to establish psychometric properties of the tool based on the new Arabic version. Two separate studies were conducted. The translation and adaptation of the new FABQ was achieved in the pilot study, "Administration and Evaluation of the Arabic Version of the FABQ." The Arabic version of the FABQ was tested in terms of clarity and meaning by engaging with Arabic-speaking patients. Their opinions were sought in relation to the contents included in the FABQ. The second study, "Cross-cultural Reliability, Validity, and Sensitivity of the Arabic version of the FABQ in a Saudi Population with Low Back Pain," was used to assess the psychometric properties of the Arabic version.

Pilot Study: Translation and Cross-Cultural Adaptation of the Arabic Version of the FABQ

The process of translation and adaptation of the FABQ into multiple languages follows guidelines prescribed by Beaton et al. (2000) or Guillemin, Bombardier, and Beaton (1993). The methodology that is used in the process of translation and adaptation strives to achieve the maximum level of equivalence between the original FABQ and the translated version of the FABQ, while considering the cultural differences. The translation and adaptation methodology of eight studies (Table 1 and Figure 1) have integrated the process of the backward and forward translation of the FABQ into the target language (Chaory et al., 2004; Georgoudis, Papathanasiou, Spiropoulos, & Katsoulakis, 2007; Korkmaz et al., 2009; Kovacs et al., 2006; Pei, Xia, & Yan, 2010; Staerkle et al., 2004; Vendrig, Deutz, & Vink, 1998; and de Souza, Marinho, Siqueira, Maher, & Costa, 2008). In each instance, the researchers in these eight referenced studies appointed a committee of experts to achieve consensus regarding the FABQ pre-final

translation. The primary function of the committee of experts was to integrate the versions that resulted from the forward translation, translation synthesis, and backward translation in order to form a pre-final version. The committee also conducted field-testing of the pre-final translated version of the FABQ with patients having LBP.

Table 1

Languages of the Translated FABQ and the Developers by Year of Publication

Language	Researchers	Year of Publication
Norwegian	Vendrig et al.	1998
German	Staerkle et al.	2004
French	Chaory et al.	2004
Spanish	Kovacs et al.	2006
Greek	Georgoudis et al.	2007
Brazilian Portuguese	de Souza et al.	2008
Turkish	Korkmaz et al.	2009
Chinese	Pei et al.	2010

Based on the guidelines given by Beaton et al. (2000), an Arabic translation and cultural adaptation of the FABQ was completed. The first step was a forward translation (Figure 1). In a forward translation, translators whose native language is the one to which the document is being converted translate the document from a second language in which they are also proficient. In this case, two bilingual translators whose native language was Arabic translated the English version of the FABQ into Arabic. In a second step, they synthesized the two translations into a single translation.

As the third step, to validate and consolidate the translation, two translators whose native language was English and second language was Arabic performed a backward translation, which converted the synthesized version back to English. Translators without a medical background who were unaware of the FABQ concept were chosen to ensure that the translation would more likely be free of medical jargon and accessible to most Arabic readers. For the fourth step, members of an expert committee combined the

version that resulted from the forward translation, translation synthesis, and backward translation and formed a pre-final version of the Arabic FABQ. The expert committee was composed of one health care professional and one linguistic professional. The role of the expert committee was to determine any sort of discrepancies between the two documents that resulted from backward translation, resolve any questions related to the translation process, and reach a conclusion about the suitability of the Arabic version of the FABQ.

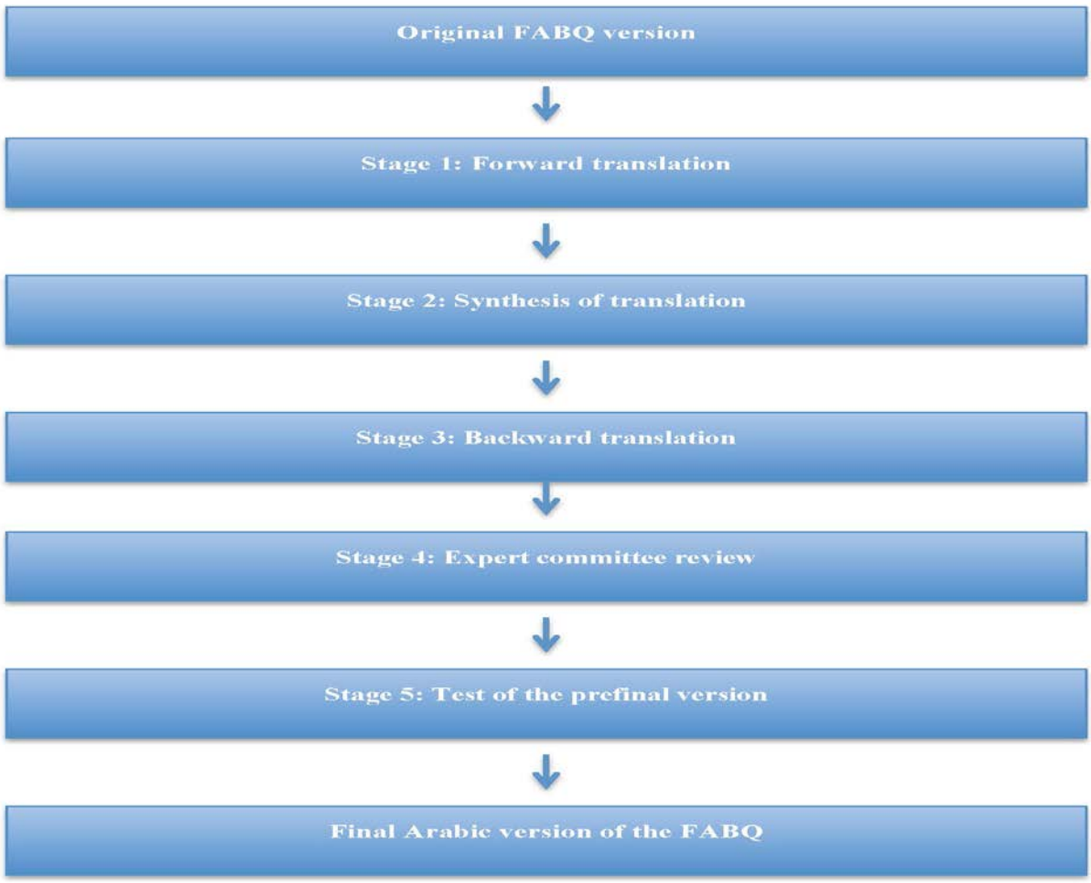

Figure 1. The stages of the cross-cultural adaptation process that transformed the English FABQ to an Arabic FABQ.

The purpose of this study was to complete the fifth and final step in the process of a cross-cultural adaptation from English to Arabic of the FABQ and pretest it with participants. The pretest included having the pilot study participants complete the newly translated FABQ and answer questions in an interview about the questionnaire and their answers. After data collection, the FABQ was modified to avoid any misinterpretation and was ready for use (Appendix A).

The specific aim of this study was to administer an Arabic version of the FABQ to native Arabic speakers with LBP and evaluate it.

Methods

Participants

The study participants included 40 patients seeking treatment at the King Khalid University Hospital in Riyadh, Saudi Arabia. Inclusion criteria were presence of acute or chronic LBP, being able to speak and read Arabic, and being 18 to 65 years of age. The exclusion criteria excluded patients found to have comorbid conditions, including those who had malignancies or psychiatric disorders; who were pregnant; or who were unable to read Arabic. These patients were identified by using the medical chart review, and the results of a demographic self-report questionnaire evaluated by the Principal Investigator (PI). A questionnaire (Appendix B) was designed to evaluate patients' understanding of the pre-final FABQ.

Research Instrument

Waddell and colleagues developed the FABQ (1993), which was instrumental in estimating and quantifying the attitudes of patients with LBP (Carragee, 2010). This questionnaire measures the effects that levels of fear and avoidance beliefs have on work and on physical activity (Hancock et al., 2009). This instrument consists of two subscales: the first one is a physical activity subscale, consisting of four items (FABQ-PA), while the second one is a work subscale, consisting of seven items (FABQ-W). Each item is answered by the patient according to a seven-point Likert Scale (completely disagree [0] – completely agree [6]). A high score in the FABQ indicates a high level of fear-avoidance beliefs. A score of 0 to 6 is awarded to each item and later summed to give a preliminary subscale score. Scores range from 0 to 24 for the physical activity subscale and 0 to 42 for the work subscale.

Data Collection Procedures

Approval for conducting the current study was obtained from the Texas Woman's University Institutional Review Board (Appendix C). The purpose of the study was explained and informed consent was obtained from all participants. After participants completed the Arabic version of the FABQ, they were interviewed face-to-

face regarding the clarity and relevance of each questionnaire item to the Arabic language and culture (Appendix B).

Data Analysis

The principal investigator relied on descriptive statistics in examining the distribution of missing, misunderstood, and/or single scores. The aim was to identify any particular questions a majority of the sample population missed or misunderstood. Field notes also helped identify issues related to the clarity and meaning of questionnaire items.

Results

Characteristics of the Participants

The demographic variables for the 40 Arabic participants completing the Arabic FABQ were age, gender, educational level, occupation, pain duration, and pain intensity (Table 2). Arabic participants were equally divided between men and women, relatively young (mean, 34.5 years; SD, 12.8), and almost half had bachelor's degrees. As many were retired or in school (18, or 45%) as were employed full-time (18, or 45%).

The remainder was unemployed (4, or 10%). Almost two thirds had experienced LBP for less than 3 weeks, and only 15% had experienced LBP for more than 3 months. Mean pain intensity was 6.2 (range, 4.8–7.4).

Descriptive Statistics

The distribution of scores was examined to identify the proportions of missing and/or misunderstood items and to determine if outliers existed. Most distributions were normal; however, no participants responded to item 8 of the Arabic FABQ questionnaire, which asked about a "compensation claim." This is because no compensation is paid in the Saudi population.

Table 2

Demographic Characteristics of the Participants (Pilot Study)

Characteristic	N	%
Sex		
Men	20	50.0
Women	20	50.0
Age, in years		
Mean	34.5	
Range	28–62	
Education completed		
Elementary school	5	12.5
High school	16	40.0
Bachelor's degree	19	47.5
Employment		
Full-time	18	45.0
Students	13	32.5
Retired	5	12.5
Unemployed	4	10.0
Duration of low back pain		
<3 weeks	26	65.0
3 weeks to 3 months	8	20.0
>3 months	6	15.0
Intensity of low back pain*		
Mean	6.2	
Range	4.8–7.4	

*On visual analog scale of 0 to 10.

Discussion

The aim of this research was to conduct a pilot test of the FABQ in Arabic with Arabic patients experiencing LBP. The investigator examined the distribution of scores and evaluated the relevance of the Arabic FABQ to the Arabic language and culture. Ensuring appropriate use and application of the Arabic FABQ with the Arabic population was the purpose.

Interview Survey Questionnaire

A summary of findings of answers to the interview survey questionnaire (N = 40) are summarized as follows:

- Question 1: No difficulties were encountered by any of the participants when they answered the Arabic version of the FABQ.
- Question 2: One item was left unanswered—item 8—because no compensation is paid in the Saudi population, and this question was subsequently omitted.
- Question 3: No item was identified that participants could not answer because of inappropriateness or invasion of privacy.
- Question 4: No item inquired about behaviors that were absent from participants' normal daily lives.

Clinicians recognize the virtues of the FABQ in physical therapy clinics. It has been used for tracking outcomes of clients across the continuum of care, provision of confirmation of the therapeutic outcome of the services, and enhancement and support of the reliability and credibility of the health care professions. It has resulted in the improvement of the quality of care and services provided to patients (Johnson, 1998). The popularity and usefulness of the FABQ led to translations into Norwegian, German, French, Spanish, Greek, Brazilian Portuguese, Turkish, and Chinese (Table 1).

In the current study, the translated document posed no problem to patients who read Arabic, except in one aspect: a question concerning a disability system, which has no corollary in Arabic culture, was irrelevant. That the only irregularity in findings related to a question regarding a system that is unfamiliar in Saudi Arabia was encouraging and provided confidence the document was properly translated. Otherwise, the findings, including a complete response on relevant items, an unremarkable distribution of scores, and no single scores, support the instrument's validity and its ability to separate respondents reliably into categories by level of disability. These findings underscore the appropriateness and necessity of systematically approaching the adaptation using well-considered methods of translation and cross-cultural adaptation.

During the adaptation process, the data extracted regarding the cultural values, norms, and gender-defined roles in the target culture environment are a vital source for the success of cross-cultural adaptation. Hence, while implementing and adapting the measures of the outcome into the target culture, the outcome measures should be client centric and reflect the cultural values, norms, beliefs, and lifestyle of the target population. If these issues are not addressed, the measurement of the clients' perceptions may be invalid and may not accurately reflect the underlying beliefs, consequently leading to inaccurate conclusions and inappropriate treatment.

Limitations

Limiting the generalizability of the results is the fact that data collection was limited to one geographical area, a small sample, and a short study period. It should not be broadly assumed that all Arabic speakers would respond to the FABQ uniformly. Another limitation was that all participating patients had non-specific LBP; therefore, the results of this study might not be generalizable to patients who suffer from specific LBP or had surgical intervention.

CHAPTER II

LITERATURE REVIEW

Psychosocial and behavioral factors have a significant impact on the experience, maintenance, and exacerbation of chronic pain (Flores, Zelman, & Flores, 2012). There is strong evidence taken from questionnaires about pain that these psychosocial and behavioral factors differ between cultures and may influence treatment seeking and efficacy of therapy (Bates, Edwards, & Anderson, 1993; Ferreira-Valente, Ribeiro, Jensen, & Almeida, 2011; Sloots, Dekker, Bartlets, & Geertzen, 2011). Therefore, understanding cultural differences in behaviors related to chronic pain is likely to be essential in designing effective interventions for different cultural groups.

Pain

Reaction to Pain

There are a number of different factors that are recognized as having an impact on the experience of chronic pain, including associated behaviors. One of the main predictors of pain-related behavior may relate to different cross-cultural meanings. Many cultures may not perceive chronic pain to be exclusively associated with physiological pathology, and their people may instead associate it with faith-based explanations. For example, Taoists believe pain is related to blockage of energy flows, while Buddhists believe pain is a form of power (Chen, Miaskowski, Dodd, & Pantilat, 2008).

In addition, locus of control and cognitive factors, such as self-efficacy, “catastrophizing” (irrational imagining that events are worse than they are), and acceptance all have an impact on the intensity of pain as well as the level of disability that chronic pain is likely to cause (Bates & Rankin-Hill, 1994; Keefe, Rumble, Scipio, & Giordano, 2004). A significant body of evidence suggests that levels of these factors differ between different populations and are highly influenced by sociocultural factors (Bates et al., 1993; Bates & Rankin-Hill, 1994; Nayak, Shiflett, Eshun, & Levine, 2000).

For example, objective measurement in large samples has shown Brazilians to have higher levels of self-efficacy and lower levels of catastrophizing than other

populations (Sarda, Nicholas, Asghari, & Pimenta, 2009). There is also evidence that East Asian populations, such as Chinese and Koreans, may be less likely to perceive themselves to be disabled by chronic pain in spite of their encouraging adoption of the "sick" role in acute pain episodes (Cho, Heiby, McCracken, Lee, & Moon, 2010; Wong, Jensen, Mak, & Fielding, 2011). This situation is moderated by being mindful of pain, reducing its sensations, and reducing emotions' effects on behavior (Cho et al., 2010). Other populations, such as African Americans, may have severe emotional reactions to pain, associating it with greater unpleasantness (Edwards, Doleys, Fillingim, & Lowery, 2001; Riley et al., 2002), a response also associated with different locus of control characteristics and poorer perceived control of pain (Bates et al., 1993; Tan, Jensen, Thornby, & Anderson, 2005).

These differences in sociocultural and psychological factors may also be reflected in behaviors associated with expressing pain and with seeking help. In Latino culture there is the perception that women are spiritually superior to men and are therefore more able to withstand pain. This perception therefore creates an expectation that women will suffer pain in silence. Women may perceive their silence to be important in protecting their family from the effects of the pain (Flores et al., 2012). This spirituality may in itself lead to higher levels of pain tolerance (Nayak et al., 2000). Similar expectations are imposed on all members of other societies, such as Asian populations, with empirical evidence of a high incidence of suppression or denial of anxiety and depression associated with pain in the presence of biological symptoms (Cho et al., 2010). This behavior may also be influenced by cultural differences in the interpretation of the meaning of pain and fear regarding stigmatization, which may be more prevalent in some populations (Kleinman & Kleinman, 1985; Lee, Rodin, Devins, & Weiss, 2001).

Not all populations share the perception that pain is something that should be suffered in silence. In Mexican culture, for men, there is an expectation that crying and moaning may be used as coping responses to pain, but that these expressions do not necessarily signal a desire for intervention (Flores et al., 2012). Other cultures have also shown that they may have a greater propensity for asking for help, such as the Portuguese (Ferreira-Valente et al., 2011). Black patients have also been shown to seek help more

frequently, most likely due to greater perceived pain and increased levels of physical symptoms associated with chronic pain (McCracken, Matthews, Tang, & Cuba, 2001).

Managing Pain

In addition to differences in behaviors associated with expression of pain and help-seeking behaviors, there are also apparent cross-cultural differences in how individuals manage their chronic pain. Qualitative narratives collected by Flores et al. (2012) indicated that Mexican immigrant women use a number of different strategies to manage their chronic pain, including learning to accept their pain, limiting their daily activities, and pacing themselves. This largely reflects their higher reliance on internal control mechanisms (Tan et al., 2005).

Individuals from other countries, including Portugal, or other U.S. groups, such as non-Hispanic Black patients, may be less likely simply to ignore or cope with their pain, instead adopting external coping strategies (Tan et al., 2005; Ferreira-Valente et al., 2011). For example, Mexican women reported engaging in an increased level of activity as a means of distracting themselves from the pain (Flores et al., 2012). Individuals from different cultures may use specific types of physical activities in the relief of their pain, for example, use of stretching and relaxation. For example, those from the Portuguese culture may use these techniques to a greater extent than those from the United States (Ferreira-Valente et al., 2011).

This type of reaction to pain then impacts behavior, and it may have a strong impact on ability to work (Sarda et al., 2009). For example, Flores et al. (2012) report that Mexican immigrant women reveal a strong work ethic and the desire to continue working in spite of pain. Continuation of daily roles, in fact, may function as a strategy for coping with pain for the Portuguese (Ferreira-Valente et al., 2011). It was also a common theme in studies of Mexican female immigrants that these women used their faith as a strategy for pain management, seeking relief and courage through prayer and mass as well as healing groups (Flores et al., 2012). However, surveys of Portuguese individuals suggest that they may be less likely to rely on praying and hoping than their U.S. counterparts (Ferreira-Valente et al., 2011). Surveys of different ethnicities in the United States indicated that Black and Hispanic populations had higher reliance on faith

than White Americans (Edwards et al., 2005). This situation most likely reflects the higher importance of faith within these individuals' background cultures.

Use of Pain Relief

In addition to physical strategies for managing chronic pain, use of medications or other interventions also varies across cultures. This is likely to be largely moderated by beliefs regarding ability to control pain psychologically (Wong et al., 2011) as well as underlying explanations and meanings applied to the pain. For example, in cultures that associate pain predominantly with faith-based or spiritual explanations (Chen et al., 2008), it is unlikely that steps would be taken to address possible pathological causes.

Where there is use of medication for pain, some evidence suggests that cultures may prefer their own approaches. Quantitative surveys of the Chinese have shown preference for Chinese medicine in treating chronic pain (Wong et al., 2011). This could relate to cultural misconceptions regarding the safety of modern medicines and lack of patient knowledge (Monsivais & McNeill, 2007). It could also relate to spiritual beliefs, as with other pain-related behaviors (Bussing et al., 2009).

Some cultures appear to have adopted a shared preference for complementary and conventional medicine. Mexican immigrant women have been shown to be receptive to the use of folk and complementary therapies as well as conventional medical treatment. This involves use of pain medications as well as adjunct therapies such as anxiolytics, antidepressants, and medications to aid sleep. Complementary therapies also appear to be relatively popular among Mexican immigrant women, including ointments and liniments and tree, leaf, and flower therapies (Flores et al., 2012).

Conclusions

It is clear that there is a significant body of evidence to support the argument that cross-cultural differences exist in behavior associated with chronic pain. Cultural beliefs related to the meaning of pain and cultural differences in locus of control and psychological factors appear to be interrelated and have a significant impact on pain tolerance, help-seeking behaviors, and coping strategies.

Psychosocial Variables in Patients with Low Back Pain

The Importance of Fear-Avoidance Beliefs

Pain-related fear has been an increasingly important contributor to disability and adjustment for patients suffering from LBP (Grotle et al., 2006). Various researchers have also indicated that fear-avoidance beliefs may form the most crucial factors in the cognitive development of chronic complications among patients with LBP (Kamper et al., 2009). People with pain usually form a tendency to avoid pain-related activities that are obviously associated with increased chances of reinjury (Ferrer et al., 2006). This fear is responsible for a progressive decrease in occupational and physical activity. It can be correctly noted that fear of pain brings about avoidance attitudes, which in turn lead to a deconditioning syndrome that instills the avoidance beliefs into an individual and escalates the pain-related fears (Grovle et al., 2008). Evidence supports support the notion that LBP patients who have increased fear-avoidance beliefs manifest avoidance behavior, reduce physical activities, and alter movements, and these patterns have a general outcome of persistence of pain and disability (Deyo et al., 1998).

The idea that fear-avoidance beliefs contribute to the development of long-term disability has been gaining popularity recently (Ostelo et al., 2008). This psychological factor is important and should be assessed so as to ensure that treatment addresses fear beliefs that would contribute to the maintenance of physical disability. Moreover, there is a strong relationship that exists between elevated fear-avoidance beliefs and chronic disability that is secondary to LBP (Crombez et al., 1999). This relationship makes it necessary to evaluate the performances of patients receiving interventions for LBP so as to be able to help suppress development of future disability.

Development of the Fear-Avoidance Beliefs Questionnaire

Since Waddell and colleagues developed the Fear-Avoidance Beliefs questionnaire (FABQ) and described it in the literature in 1993, it has undergone several translations. This questionnaire measures the effect that levels of fear, as well as avoidance beliefs, have on work and how that fear affects physical activity (Hancock et al., 2009). The score of the FABQ, with its physical activity subscale (score range, 0–24) and work subscale (score range, 0–42), may be calculated by adding the subscale scores.

The score of the FABQ has proved to have a close clinical relevance to actual disability following LBP. The measure has been adopted widely and has been translated from English to German, Chinese, Turkish, Spanish, French, Norwegian, Greek as well as Brazilian Portuguese (Kamper et al., 2009; Carragee, 2010). A longitudinal study has found that initial measures of the FABQ were the best predictors of prolonged disability in a longitudinal study, up to 6 months later (Stanton, Latimer, Maher, & Hancock, 2009). However, most administrations of the measure are done within one month of injury, since this is when most change is observed during the initial six months of an LBP case (Deyo et al., 1998).

Presently, valid values that define what constitutes an elevated FABQ score are still missing in the literature, but some studies suggest that a FABQ-PA subscale score greater than 15 should be considered as an elevated score, based on the median score of the studied population (Deyo et al., 1998). On the other hand, a FABQ-W subscale score of 34 was found to identify patients who are at risk of not returning to work four weeks after the injury period, especially in those that have acute work-related LBP (Inrig, 2012). The test-retest reliability of the FABQ-PA subscale has been found to be acceptable (intraclass correlation coefficient [ICC] = 0.72 to 0.90), while that of FABQ-W is quite high (ICC = 0.8 to 0.91) (Deyo et al., 1998). The total FABQ has excellent test-retest reliability (ICC = 0.97) when readministered over a period of 30 minutes. The FABQ scores relate to measures of stability, with their correlation coefficients being 0.52 to 0.63 (FABQ, $r = 0.52$; FABQ-W, $r = 0.63$; FABQ-PA, $r = 0.51$) (Metz, 2007). Finally, the FABQ also correlates with another measure of fear avoidance, the Tampa Scale of Kinesiophobia (TSK) (FABQ-W, $r = 0.53$; FABQ-PA, $r = 0.76$) (Stanton et al., 2009). Investigators have found the TSK to have high measures for internal consistency and reproducibility (Cronbach's alpha, 0.82; ICC, 0.93) (de Souza et al., 2008).

Management of Fear-Avoidance Beliefs

Currently, different types of interventions are employed to manage fear-avoidance beliefs among patients with LBP. These strategies include exercise, medication, behavioral treatment, and standard care (Koes et al., 2006). In the behavioral school of thought, LBP is not just a physical problem, but also stems from the patient's beliefs,

attitudes, illness behavior, and psychological stress (Karppinen et al., 2011). The main goal of behavioral treatments is to reduce the pain itself by changing attitudes, behaviors, and feelings that may escalate the experience of pain. Patients suffering from LBP usually experience maladaptive beliefs, thoughts, and feelings that highly influence their pain experiences (Stanton et al., 2009).

Behavioral treatments are usually used together in an integrated approach of treatment called cognitive behavior therapy. This incorporates changing thought patterns along with behavior patterns. This cognitive behavioral approach includes treatments known as graded exposure and graded exercise. Graded exposure and exercise are used to alleviate fear associated with certain activities and have been found to be most effective in reducing the fear of pain in a patient suffering from LBP (Karppinen et al., 2011).

Pain-related fear has contributed increasingly to disability in patients with LBP and proved a crucial factor in the development of chronic complications, making fear-avoidance beliefs assessment of these patients critical. FABQ scores have been found to be reliable indicators of prolonged disability and prompted interventions, including exercise, medication, and behavioral treatment as well as standard care. Therefore, expanding its use by cross-cultural adaptation gives health care providers a culturally relevant tool to help identify disability risk and help prevent chronic complications.

Cross-Cultural Adaptation of the FABQ

Cross-cultural adaptation is a procedure that views both the translation of language and cultural adaptation issues in the process of preparation of a questionnaire for use in a different setting (Beaton et al., 2000). Cross-cultural assessments are acknowledged and used by multiple international educators, researchers, and clinicians (Geisinger, 1994). Due to cross-cultural use, a number of assessment tools developed in one language have been subsequently translated and validated in many other languages (Gandek & Ware, 1998). The cultural needs and contextual needs of the population that is being evaluated should be incorporated in the process of translation and validation. This entails a fine grounding in cross-cultural adaptation (Matias-Carrelo et al., 2003).

It is important that the questionnaire version in the source language be equivalent with the questionnaire in the target translation languages, in four dimensions, achieving

semantic, idiomatic, experiential, and conceptual equivalence. Semantic equivalence identifies the similarity among the meanings of words of the source language and the target language. Idiomatic equivalence identifies the ways by which the idioms and colloquialisms of the source language can be translated to the target language. Experiential equivalence describes the similarity between the daily activities of the source culture and the targeted culture. Finally, conceptual equivalence determines the resemblance and identity between the concepts of the source and target cultures.

Translation and Adaptation Methodology

The process of adaptation and translation of the FABQ into multiple languages follows either guidelines prescribed by Beaton et al. (2000) or guidelines prescribed by Guillemin et al. (1993). The methodology that is used in the process of translation and adaptation has the goal of achieving the maximum level of equivalence between the original FABQ and the translated version of FABQ, while considering the cultural differences. The translation and adaptation methodology of eight studies have integrated the backward and forward translation of the FABQ into the target language (see Chaory et al., 2004; Georgoudis et al., 2007; Korkmaz et al., 2009; Kovacs et al., 2006; Pei et al., 2010; Staerkle et al., 2004; Vendrig, et al., 1998; and de Souza et al., 2008). The researchers in the above eight studies appointed a committee of experts to achieve consensus regarding the FABQ prefinal translation version. The primary function of the committee of experts is to integrate the versions that resulted from the forward translation, translation synthesis, and backward translation in order to form a prefinal version. The committee also conducted field-testing of the prefinal translated version of FABQ with patients having LBP. One of the versions developed through cross-cultural adaptation methodologies is the Spanish version of the questionnaire, and it is used below for illustrating the process of adaptation and translation of the FABQ.

Spanish Version of the FABQ

Based on the guidelines given by Beaton et al. (2000), a Spanish translation and cultural adaptation of the FABQ was completed (Kovacs et al., 2006). There were five steps to the translation and cultural adaption. The first step was a forward translation. In a forward translation, translators whose native language is the one to which the document

is being converted translate the document from a second language in which they are also proficient. In this case, two bilingual translators whose native language was Spanish translated the English version of the FABQ into Spanish. In the second step, the two translations were synthesized into a single translation. In the synthesis stage, the two translators reviewed and discussed the translated versions. In this way they identified, discussed, and resolved discrepancies between the two versions and reached a consensus. Using this approach, they produced a new—synthesized—version of the FABQ.

In the third step, to validate and consolidate the translation, two translators whose native language was English and second language was Spanish performed a backward translation, which converted the synthesized version back to English. Translators without a medical background who were unaware of the FABQ concept were chosen to ensure that the translation would more likely be free of medical jargon and accessible to most Spanish readers. In the fourth step, members of the committee combined the version that resulted from the forward translation, translation synthesis, and backward translation and formed a pre-final version of the Spanish FABQ. The expert committee comprised health care professionals and linguistic professionals. The role of the expert committee was to determine any sort of discrepancies between the two documents that resulted from backward translation, resolve any questions related to the translation process, and reach a conclusion about the suitability of the Spanish version of the FABQ.

The fifth step was pretesting with participants. Fifty-three patients with LBP were recruited to complete the newly translated FABQ and answer questions about the questionnaire. The interviewer, who examined the questionnaire for missing data or anomalies resulting from cross-cultural differences, asked questions regarding the participants' interpretation of each of the items and how they answered them. After data collection from participants, the FABQ was modified to avoid any misinterpretation and was ready for use.

Rationale and Expansion of Translation of the FABQ to Other Languages

The FABQ has played a vital role in support of evidence-based practice. It was used for tracking outcomes of clients across the continuum of care, provision of confirmation of the therapeutic outcome of the services, and enhancement and support of

the reliability and credibility of the health care professions. It has resulted in the improvement of the quality of care and services provided to patients (Johnson, 1998). The popularity and uniqueness of the FABQ led to translations into Chinese (Pei et al., 2010), Norwegian (Vendrig et al., 1998), German (Staerkle et al., 2004), French (Chaory et al., 2004), Brazilian Portuguese (de Souza et al., 2008), Spanish (Kovacs et al., 2006), Greek (Georgoudis et al., 2007), and Greek (Korkmaz et al., 2009) (see Table 1). Cross-cultural adaptation of measures for outcomes integrates language translation and cultural adaptation of the original so that the original theoretical concepts are reflected in the translated and adapted version. Before proceeding to the cross-cultural adaptation process, there should be sound psychometric properties in the original outcome measures (Waddell et al., 1993). The ideal and successful cross-cultural adaptation ensures that the proper methodology is used and makes certain of the equivalence between the translated outcome measures and the original outcome measures. The essential elements of the methodology are (1) forward translation, (2) translation synthesis, (3) backward translation, (4) review of the expert committee, and (5) prefinal testing of the outcome measure translated. However, adopting the methodology does not replace the testing of psychometric properties of newly translated outcome measures. Following the exact methodology is most likely why sound psychometric properties have been found for all the FABQ translated versions identified in Table 3. The process of translation addresses the linguistic issues patients encounter when taking the FABQ, while the adaptation process addresses the cultural problems a patient encounters. The adaptation and translation process ensures the maintenance of the actual intent of the questionnaire items. The forward and the backward translation process during the translation stage ensures the consistency of the true meaning of the items in the questionnaire. During the adaptation process, the data extracted regarding the cultural values, norms, and gender-defined roles in the target culture environment are a vital source for the success of cross-cultural adaptation. Hence, while implementing and adapting the measures of the outcome into the target culture, the outcome measures should be client centric and reflect the cultural values, norms, beliefs, and lifestyle of the target population. If these issues are not addressed, the measurement of the clients' perceptions may be invalid and may

not accurately reflect the underlying beliefs, consequently leading to inaccurate conclusions and inappropriate treatment.

The translation and adaptation process described above will lead to consistency in measurements across studies from different countries of different cultures. This uniformity of the translation and adaptation process will enhance and encourage cross-cultural communication among international physical therapists and physical therapy researchers because of their involvement in cross-cultural adaptation of outcome measures. Exchange of results related to research will be enhanced. The desired outcome

Table 3

Translations of FABQ: Internal Consistency, Test-Retest Values, and Construct Validity

Translation (Source)	Internal Consistency (Crohnbach's alpha)			Test-Retest/Intraclass Correlation Coefficient (ICC)			Construct Validity	
	PA	W	OA	PA	W	OA	Value	Test
Chinese (Pei et al., 2010)	0.75	0.85	0.82	0.87	0.84	0.86	0.30	Correlation between translated FABQ and modified Oswestry Disability Index
							0.27	Correlation between translated FABQ and SF-36 Bodily Pain
Norwegian (Vendrig et al., 1998)	0.79	0.90		0.66	0.82			
Swiss German (Staerkle et al., 2004)				0.83	0.91		47.3%	Variance attributed to FABQ-W
							10.38%	Variance attributed to FABQ-PA
French (Chaory et al., 2004)				0.72	0.88		0.36	Spearman correlation between the translated FABQ-W and Quebec Back Pain Disability Scale
							0.29	Spearman correlation between the translated FABQ-W and French version of the Hospital Anxiety and Depression Scale
							0.34	Spearman correlation (r) between FABQ-PA and visual analog scale
							66.5%	Variance explained by FABQ-W
							68.5%	Variance explained by FABQ-PA
Brazilian Portuguese (de Souza et al., 2008)			0.93			0.97		
Spanish (Kovacs et al., 2006)			0.93			0.97	0.52	Spearman correlation (r) between the translated FABQ and disability scale
Greek (Georgoudis et al., 2007)	0.72	0.90 0.86		ICC range, 0.69–0.97			65.0%	Variance explained by three factors, according to factor analysis
Turkish (Korkmaz, et al. 2009)			0.91	ICC range, 0.63–0.93			61.7%	Variance explained by two factors, according to factor analysis

Note. FABQ = Fear-Avoidance Beliefs Questionnaire; PA = physical activity; W = work; OA = overall.

is to create a link between physical therapists around the world and to minimize information gaps between them, promoting information sharing and facilitating accurate assessment and improved treatment of patients around the world. As information sharing occurs, dissemination of knowledge and validation of outcomes will be enhanced internationally.

Conclusion

The use of a common cross-cultural approach to translating the FABQ and using it to assess fear-avoidance beliefs in patients with chronic pain, such as that in LBP, is meant to enhance the ability of physical therapists around the world to improve patients' outcomes. The establishment and application of standardized measures of fear-avoidance beliefs in clinical environments globally will not only facilitate comparison of patient assessments, treatments, and outcomes but also carries the potential to improve all three.

CHAPTER III

METHODOLOGY

For all physical therapists, identifying and implementing psychometrically sound assessments that are culturally appropriate is a challenge. For those who are pioneers in physical therapy in countries where few assessments have been locally developed or linguistically and culturally adapted, it often requires translating evidence-based tools in other languages into the language of the patients in the new setting and retesting the instrument. This study, undertaken in Saudi Arabia, undertook that challenge in two parts. First, in a pilot study, the FABQ was translated from English into Arabic and then administered and evaluated in a cohort of adult Arabic speakers with low back pain seeking treatment at King Khalid University Hospital in Riyadh. Second, the central analysis of this study—measurement of the cross-cultural reliability, validity, and sensitivity of the Arabic version of the FABQ—was undertaken in a somewhat larger cohort of patients in the same setting.

As the pilot was described in the first chapter, the following text describes the evaluation of the adapted FABQ and the methods used to determine its cross-cultural test-retest reliability, validity, and sensitivity. Below are described the purpose, design, participants, procedure, instruments, and the data analysis methods of the study.

Purpose of the Study

The purpose of the study is delineated in three specific aims as outlined below:

- Specific Aim I: Establish the psychometric property of reliability of the Arabic adaptation of the FABQ.

  Hypothesis I: Test-retest of the Arabic adaptation of the FABQ will show acceptable to high reliability ($r \geq 0.70$) using intraclass correlation coefficients (ICCs).

- Specific Aim II: Support the validity of the Arabic adaptation of the FABQ.

  Hypothesis II: Construct validity of the Arabic adaptation of the FABQ will be supported by acceptable to high validity ($r \geq 0.60$) using the Spearman rank correlation coefficient. Construct validity of the FABQ will be assessed by correlating it with the Arabic Oswestry Questionnaire, the Arabic Quebec questionnaire, and visual analog scale questionnaire (VASQ).

- Specific Aim III: Establish sensitivity of the Arabic version of the FABQ.

  Hypothesis III: The Arabic version of the FABQ will have sensitivity levels similar to those of the English version of the FABQ as measured by effect size (ES).

Study Design

The study used an exploratory methodological research design to assess an Arabic adaptation of the English FABQ instrument.

Participants

According to Terwee et al. (2007), at least 50 participants are required for adequately measuring the reliability and validity of a questionnaire. A total of 70 patients with LBP were recruited for this validation study. Previous studies testing reliability and validity of the FABQ had sample sizes ranging from 50 to 255 (Waddell et al., 1993; Crombez, et al., 1999; Pei et al., 2010; Korkmaz et al., 2009).

Procedure

Participants in the current study were 70 patients at the King Khalid University Hospital in Riyadh, Saudi Arabia, who were 18–65 years old, fluent in Arabic, and presenting at the outpatient clinic with acute or chronic LBP. The PI distributed recruitment letters to potential participants in the Rehabilitation Medicine Department, and patients were provided any requested additional information.

Patients were excluded who were currently pregnant or had a history of certain existing conditions, malignancies, neurological deficits, or psychiatric disorders. These patients were identified by using the medical chart review, and the results of a demographic self-report questionnaire evaluated by PI. Patients who did not read Arabic were also excluded.

Required approval for this research was secured from the Institutional Review Board at Texas Woman's University. This study was performed in the following sequence of three sessions.

Session 1 (70 minutes): The study's first of three sessions had five steps:

1. Participants completed the demographic survey.
2. After the participants completed the demographic survey, the PI examined the responses for inclusion or exclusion by age, language, LBP, and any medical history that would result in exclusion from the study. All participants were asked to wait until the survey examination was complete, and then those with characteristics that prevented them from participating were excused.
3. Participants meeting inclusion criteria completed a consent form to take part in the study. The PI was available to answer any questions.
4. Participants who agreed to participate in this study completed the Arabic FABQ, the Visual Analog Scale Questionnaire (VASQ) (Waddell, 1987), the Arabic Oswestry (disability) Questionnaire (Guermazi et al., 2005), and the Arabic Quebec Back Pain Scale (Alnahhal & May, 2012).
5. After the participants completed the consent form and the FABQ, VASQ, Arabic Oswestry Questionnaire, and Arabic Quebec Back Pain Scale, the PI collected them.

Session 2—48 hours later (10 minutes): Session 2 had three steps:

1. Participants answered a question on the top of the FABQ test form asking if LBP characteristics or symptoms had changed since the first session. Those who answered yes were excused.
2. Remaining participants completed the FABQ for the second time.
3. The PI was present in the testing room to ensure that procedures were followed.

Session 3—14 days later (40 minutes): The third session had three steps:

1. Remaining participants completed the FABQ for the third time and the VASQ, Arabic Oswestry Questionnaire, and Arabic Quebec back pain scale.
2. The PI was present in the testing room to ensure that procedures were followed.
3. After participants completed the FABQ, VASQ, Arabic Oswestry Questionnaire, and Arabic Quebec Back Pain Scale, they were thanked for their participation and excused.

Instruments

The FABQ is a self-report questionnaire that was developed in English with 16 items in two domains: (1) fear-avoidance beliefs about work and (2) fear-avoidance beliefs about physical activity. The Arabic Oswestry Questionnaire (Guermazi et al., 2005) measures disability due to low-back-related disability.

The Arabic Quebec Back Pain Scale (Alnahhal & May, 2012) is a 20-item self-administered instrument designed to assess the level of functional disability in individuals with back pain. The VASQ (Waddell, 1987) is used to assess overall pain.

Data Analysis

Test-Retest Reliability of the Arabic FABQ

Reliability of the Arabic version of the FABQ was assessed by calculating the ICC from a one-way random effects model used to solve for a single trial. An ICC of more than 0.75 is considered high, between 0.75 and 0.40 is considered moderate, and less than 0.40 is considered low (Andresen, 2000).

Construct Validity of the Arabic FABQ

The analysis of the construct validity in this study was measured by correlating the Arabic version of the FABQ, VASQ, Arabic Oswestry Questionnaire, Arabic Quebec back pain scale at baseline using the Spearman rank correlation coefficient, a score of 0.70 being recommended for instruments that measure the same construct (Terwee et al., 2007).

Sensitivity of the Arabic FABQ

Most administrations of the FABQ are performed within one month of injury because that time frame is when most change is observed (Deyo et al., 1998). Therefore, to add to the knowledge about sensitivity within that early period, this analysis assessed sensitivity within 2 weeks of enrollment. Furthermore, initial measures of the FABQ have been found to be the best predictors of prolonged disability (Stanton et al., 2009). Sensitivity was assessed by Cohen's ES and was calculated by dividing the mean change by the standard deviation of the mean change score. The change score was calculated by subtracting the follow-up scores gathered at 2 weeks after enrollment from baseline scores. An ES of 0.8 is considered a good ES, while 0.4–0.8 is considered moderate, but below 0.4 is considered small (George, Wittmer, Fillingim, & Robinson, 2006).

CHAPTER IV

RESULTS

Participants

A total of 70 patients were eligible for this study and completed the FABQ, VASQ, Arabic Oswestry Questionnaire, and Arabic Quebec Back Pain Scale for the first time. The 62 patients who answered that their LBP characteristics or symptoms had not changed since the first session were asked to complete the FABQ for the second time 48 hours later. A total of 54 patients came to the follow-up session (14 days later), and they completed the FABQ for the third time as well as the VASQ, Arabic Oswestry Questionnaire, and Arabic Quebec Back Pain Scale (Table 4).

Test-Retest Reliability, Construct Validity, and Responsiveness of the FABQ

The score means and standard deviations for each questionnaire can be found in Table 5. Test-retest reliability was good, with a one-way random effects model ICC value of 0.74 for the FABQ-W and 0.90 for the FABQ-PA. The ICC for the FABQ overall was 0.76.

The Spearman rank correlation coefficient of the Arabic Oswestry Questionnaire (baseline, $r = 0.234$; 14-day follow-up, $r = 0.283$), the Arabic Quebec Back Pain Scale (baseline, $r = -0.115$; 14-day follow-up, $r = 0.12$), and VASQ (baseline, $r = 0.092$; 14-day follow-up, $r = 0.208$) with FABQ overall. In general, the correlations were weak. The

strongest was found at the follow-up session for FABQ with Arabic Oswestry Questionnaire (0.283; $p \leq 0.05$).

Table 4

Demographic Characteristics of the Participants (Assessment Study)

Characteristic	N	%
Sex		
Men	35	64.8
Women	19	35.2
Age, in years		
Mean	47.3	
Range	38.2 – 54.6	
Education completed		
Elementary school	2	3.7
High school	4	7.4
Bachelor's degree	48	88.9
Employment		
Full-time	25	46.3
Retired	7	13
Student	15	27.7
Unemployed	7	13
Duration of low back pain		
<3 weeks	13	24.1
3 weeks to 3 months	3	5.6
>3 months	38	70.3

Table 5

Baseline and Follow-up Means and Standard Deviations for Four Tests

Test	N	Mean	SD
Fear-Avoidance Beliefs Questionnaire			
Baseline	70	42.05	4.01
Follow-up	54	41.40	3.84
Arabic Oswestry			
Baseline	70	27.11	10.22
Follow-up	54	23.51	9.25
Arabic Quebec Back Pain Scale			
Baseline	70	31.18	28.50
Follow-up	54	28.57	27.55
Visual Analog Scale Questionnaire			
Baseline	70	3.03	2.07
Follow-up	54	2.18	2.10

The responsiveness, or sensitivity to change, of the FABQ and scales related to other clinical variables were evaluated in 54 patients. Effect size (ES) values (FABQ, 0.25; Arabic Oswestry Questionnaire, 0.353; Arabic Quebec Back Pain Scale, 0.091; and VASQ, 0.408) were found to be low overall.

CHAPTER V

DISCUSSION

Psychometric Properties

Reliability and construct validity were psychometric properties examined in the Arabic version of the FABQ. In the reliability study of the FABQ, all the items were repeated 48 hours after initial testing, and the correlation coefficient of the total score and subsection scores were found to be high. Construct validity is usually assessed by convergent and divergent validity and by factor analysis. In this study, we did not perform convergent validity because there was no instrument validated in Arabic assessing dimensions close to fear, avoidance, and belief. The FABQ was, however, compared with several pain and disability variables. Overall, the results suggested that the construct assessed by the FABQ differed from these variables. This finding indicates that the concept measured in the FABQ in patients with LBP has a different dimension from measures of disability and the severity of pain.

Other researchers have found the correlation between the FABQ and other variables is weak. In an analysis of the Chinese version, Pei et al. (2010) found the correlations between the FABQ and other assessments, including ODI (disability), the SF-36, and VASQ, were weak. Likewise, Korkmaz et al. (2009) in a study of the Turkish version found that the correlation between the subscales of the FABQ and clinical variables (severity of pain, disability, low back mobility, anxiety, and depression) was weak ($r \leq 0.276$). Chaory et al. (2004) found with the French version that the correlation

between scores for the FABQ subscales and the clinical variables was relatively weak ($r \leq 0.36$). Overall, these results suggest that the construct assessed by the FABQ differs from these variables, a conclusion in line with that of most other reports regarding the construct validity of the FABQ.

Limitations

An ES of 0.25 was found regarding the phenomenon of LBP. The FABQ and the Arabic Oswestry scores did not significantly improve; however, no intervention was targeted at fear-avoidance beliefs. Treatment, unrelated to this study, including electrotherapy, deep friction massage, and other traditional therapy, was given based on physical therapists' discretion, and there was no control over those or other interventions being given to the patients.

The sensitivity to change and responsiveness of the FABQ were found to have a small ES, indicating little change in pain or fear-avoidance beliefs. A possible explanation for the small ES is that the follow-up measures were taken too quickly (14 days) after the baseline measures. Scores in previous studies, in which the interval between baseline and follow-up ranged from 4 weeks to 3 months (Georgoudis, et al., 2007; Kovacs et al., 2006; Staerkle et al., 2004; Vendrig et al., 1998; and de Souza et al., 2008), have all been higher. Another explanation may be that the participants' intervention was not focused on changing fear-avoidance beliefs. One limitation was the reliance in this study on self-report only and the absence of objective clinical test results. Future research should include both—measures by questionnaire and by physical tests—for relevant activities. In adults with chronic LBP, it may be that beliefs and fears about

physical activities are not only firmly established but also dramatically difficult to change.

Conclusion

In conclusion, this study showed that the translation and adaptation of the Arabic version of the FABQ was successful. Though construct validity as measured by correlational analysis was not supported, the Arabic version of the FABQ did have good test-retest reliability. Analysis indicated that the Arabic FABQ contained unique constructs not addressed in the other questionnaires. Therefore, we recommend future studies support validity by such methods as known group comparisons, Cronbach's alpha statistic, and factor analysis. The low sensitivity to change within a two-week time frame suggests that more research is needed, perhaps using different interventions or later follow-up times. The Arabic version of the FABQ shows promise in the assessment of fear-avoidance beliefs among patients with LBP in Arabic settings.

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APPENDIX A

Arabic Fear-Avoidance Beliefs Questionnaire

الرقم	0	1	2	3	4	5	6
1 الحركه البدنيه تجعل الالم يزداد							
2 الحركه البدنيه تؤلم ظهري							
3 يجب ان لا اعمل حركة بدنية كي لايزداد الالم							
4 لا استطيع عمل حركه بدنيه لانها تسبب الالم و تزيده							
5 سبب الالم من عملي او حادث حصل لي في العمل							
6 عملي يزيد من الالم							
7 عملي شاق بالنسبة لي							
8 قد يكون عملي السبب في زيادة الالم							
9 قد يكون عملي هو من يؤلم ظهري							
10 يجب ان لا اعمل عملي المعتاد في العمل والسبب الالم الذي لدي							
11 اعتقد انني لا استطيع ان ارجع الي عملي الطبيعي الا بعد 3 شهور							

ملاحظة:

0 تعني غير موافق تماما

3 تعني غير متاكد

6 تعني موافق تماما

APPENDIX B

Interview Survey Questionnaire

Interview Survey Questionnaire

1. Were there any items you did not understand, or were ambiguous in what they were asking? Why?
2. If you did not initially answer an item or needed additional prompting to complete the questionnaire, please describe why you were unable to answer that item.
3. Were there any items that you felt uncomfortable giving an answer because the item asked about personal behavior that was inappropriate or was an intrusion on your privacy?
4. Were there any items that asked about behaviors that just don't occur in your normal daily life?

APPENDIX C

Institutional Review Board Approvals

TWU
TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON

Office of Research
6700 Fannin Street
Houston, TX 77030-2343
713-794-2480 Fax 713-794-2488

August 15, 2013

Mr. Fahad Alanazi
School of Physical Therapy
6700 Fannin Street
Houston, TX 77030

Dear Mr. Alanazi:

Re: Administration and Evaluation of the Arabic version of the Fear Avoidance Behavior Questionnaire (Protocol #: 17370)

Your application to the IRB has been reviewed and approved.

This approval lasts for one (1) year. The study may not continue after the approval period without additional IRB review and approval for continuation. It is your responsibility to assure that this study is not conducted beyond the expiration date.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any unanticipated incidents. If you have any questions, please contact the TWU IRB.

The signed consent forms, as applicable, must be filed with the request to close a study file at the completion of the study.

Sincerely,

Carolyn Kelley, PT, DSc, NCS
Institutional Review Board - Houston

cc. Dr. Sharon Olson, School of Physical Therapy - Houston
Dr. Peggy B. Gleeson, School of Physical Therapy - Houston
Graduate School

TEXAS WOMAN'S UNIVERSITY
DENTON DALLAS HOUSTON

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6700 Fannin Street
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713-794-2480 Fax 713-794-2488

March 4, 2014

Mr. Fahad Alanazi
School of Physical Therapy
6700 Fannin Street
Houston, TX 77030

Dear Mr. Alanazi:

Re: Cross-Cultural Adaptation, Reliability, Validity, and Sensitivity of the Arabic version of the Fear Avoidance Beliefs Questionnaire in a Saudi Population with low back pain (Protocol #: 17552)

Your application to the IRB has been reviewed and approved.

This approval lasts for one (1) year. The study may not continue after the approval period without additional IRB review and approval for continuation. It is your responsibility to assure that this study is not conducted beyond the expiration date.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any unanticipated incidents. If you have any questions, please contact the TWU IRB.

The signed consent forms, as applicable, must be filed with the request to close a study file at the completion of the study.

Sincerely,

Jan Foster, PhD, APRN, CNS
Institutional Review Board - Houston

cc. Dr. Sharon Olson, School of Physical Therapy - Houston
Peggy B. Gleeson, PT, PhD, School of Physical Therapy - Houston
Graduate School