



## Original Article

# Validity and Reliability of the Functional Assessment of Chronic Illness Treatment Fatigue Scale in a Persian-Speaking Aging Population

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## ABSTRACT

### Article history

Received 15 Feb 2015

Accepted 17 Apr 2015

**Introduction:** Now a day, resulting from life style modification and alteration, fatigue, as a consequence, is not uncommon symptom. Diverse tools are available to measure fatigue status. One of which is Functional Assessment of Chronic Illness Treatment (FACIT) fatigue scale. The FACIT is one of the most widely used questionnaires for screening fatigue. The questionnaire has been translated and validated? Into 45 different languages, but there is not Persian version. The aim of the study was to test validity and reliability of Persian version of this scale amongst the elderly population of Yazd, a city in Iran.

**Methods:** The scale was translated into Persian by using standard method of backward-forward. Then a prospective cross-sectional study was defined thereby 150 elderly people, who were selected by a classified cluster random sampling, filled in the Persian FACIT (P-FACIT) Content validity index, test- retest of 20 people and calculating Cronbach's alpha by SPSS 20 were used to investigate content validity and reliability, respectively.

**Results:** Content validity index of the Persian version was (0.96) and Cronbach's alpha (0.891) approved its internal consistency. Also, intra-cluster correlation coefficient of questionnaire was upper than 0.7.

**Conclusion:** The P-FACIT fatigue scale achieved acceptable validity and reliability to use as a scale for the elderly in Yazd. In addition, our result made the scale available as a tool for population-based study.

**Keywords:** FACIT, Fatigue scale, Reliability, Translation, Validity

**Citation:** Ghaneh Ezzabadi S, Maghsoudi Z, Beigomi A. Validity and reliability of the functional assessment of chronic illness treatment fatigue scale in a Persian-speaking aging population. *Elderly Health Journal*. 2015; 1(1): 32-35.

### Introduction

Growth and development of technology and economic cycles especially in big cities society, has confronted their people by conditions they haven't experienced yet. Changes in habits and common life styles have changed balances and forced human to affect from these unpleasant circumstances in many cases which causes apparent demonstrations in different aspects of personal health, family life, performing tasks and social relations. One of these

symptoms, which have known as a common symptom, is mental feeling of weakness, shortage of energy and burnout named fatigue (1, 2). In other word, fatigue is feeling of burn out and energy shortage that interfere any physical or cognitive activities. This disability to doing and maintaining optimized performance has been referred to diverse causes such as sleep-wake up cycle disruption, circadian rhythm and workload (3). Amnesia,

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awareness reduction, disability to communicate with others, no attending to doing activity, excitability, feeling of depression and anger and also, increasing reaction time are the most common complains of fatigue (4). In spite of this fact that fatigue is known as a palmate concept and its prevalence among people has been estimated 7-45%, but unfortunately, there is not a definition accepted by all (4). Studies in this context depend on their goal, have defined fatigue and applied a quantitative or qualitative method to measure it.

Fatigue as one of ergonomic factors is a status caused by non-enough rest which muscles, internal issues and central nervous system, can't do their activities naturally using general energy resources because of cellular power and energy reduction (5). Ergonomics as a science which concern developing knowledge about functional capabilities, limitations and other human features related to the interaction with other elements of system, in functional point of view, applies human- system technology to analyze, design and assessing systems to increase safety, health, comfort, efficiency and personnel quality of life (6). Along with its clinical importance as a symptom, fatigue imposes major detriments on human societies. The west has faced a dramatically increment in the incidence and prevalence of the symptom over the past couple of decades. For instance, in the U.S, monetary detriments caused by fatigue have estimated about 18 Billion dollars (3). People, who feel fatigue, had fewer trends to do safety principles in comparison with control group, especially in work environments (6). On the other side, aging is usual, pervasive and affects different aspects of society such as workforce. In world scale, approximately one in five adults are 65 years and older and are in the workforce (7). In developed countries 30% of adults are 60 years old or more and this percent in developing countries is more than 60% (8). It is difficult to define elderly workforce; because of its diversity. For the developing countries, from the view point of world health organization, the elderly are considered people 60 years-old or more. One that we say younger (in range of 60-75 years old) and other we name older (over than 75 yrs.) subdividing the younger elderly (60-75 year-old) and the older (more than 75) (9).

Additive to modern changes in life style, aging is also accompany with many changes in feeling, perception, cognition and motion control capabilities of elderly workers reflecting additive effect of aging on more prevalence of fatigue in the elderly. Therefore, to ensure safety and effectiveness of elderly employees, it needs essentially to investigate fatigue much more closely in this group of patients.

An available validated tool is Functional Assessment of Chronic Illness Treatment (FACIT) fatigue scale which has been translated into 45 different languages (10), but there is not a Persian version. In a 2007 study, the English FACIT fatigue scale was found to have high internal validity (Cronbach's  $\alpha = 0.96$ ) and high test-retest reliability (ICC = 0.95) in patients with psoriatic arthritis (11). A

study in 2012 on chronic obstructive pulmonary disease patients, FACIT fatigue scale showed high internal consistency (Cronbach's  $\alpha = 0.91$ ) (12). This short questionnaire has 13 items, is easy to use and measures individual's fatigue during daily activities over the past week. Fatigue status is measured in 4-items Likert scale (4 = not at all fatigued to 0 = very much fatigued) (13). Hereby we describe the methodology of our study aimed at following a cohort of 150 older adults with fatigue symptom.

## Methods

There were two steps in preparing translation version of each questionnaire, from original language to another: (a) a translation stage ensuring linguistic validity of the questionnaire in the new language and (b) the evaluation of the psychometric properties of the questionnaire (14). The two stages are complementary and indispensable in demonstrating the equivalence between the original and the translated questionnaires. This paper describes the linguistic validation and psychometric properties of 13 questions of the Persian FACIT (P-FACIT) fatigue scale.

### *Preparing translated version*

As a first step in implementing this study and measuring linguistic validity, original version of questionnaire translated to Persian using standard method of backward-forward (15, 16). The procedure was that, in the first step, 2 native Persian translators translated the original version in to Persian, separately. After discussing between them, two versions combined and the final version of the first step of translation was prepared. In the second step, translated version of the first step, was back-translated to English by 2 expert translators who were originally English and blind to the original English version. Then for accommodating two English questionnaires, back-translated version was compared to the original one and after discussion between all translators, the final translation version was prepared.

With respect to the aim of this inferential and cross-sectional study, the final translated questionnaire was distributed amongst 150 out of 582682 aging people living in Yazd selected via a classified cluster random sampling. From 20 health care centers which were supported by Shahid Sadoughi University of Medical Sciences, 10 were selected randomly with 15 people in each cluster.

The participants are not paid for participation in the study. All patients provide written informed consent before enrolment. Inclusion criteria included having 60 years old and more, physical and mental ability to answer to the interviewers, and tending to participate in the study. All consenting patients, 60 years of age and older, presenting with symptom suggestive of fatigue referring to the clinics undergo a 30 minute interview; this is done by a trained general

practitioner. All patients who have the symptom for the recent week are enrolled.

### Investigating validity

To investigate face validity, the final version distributed between 10 specialists and the university scientific board. Then, content validity determined by using Lawshe's technique and subsequent calculation of content validity index (CVI) (17, 18).

### Evaluating reliability

For evaluating reliability, Cronbach's alpha and test-retest (confidence interval and intra-cluster correlation coefficient) was used. To do this, 20 subjects were selected randomly from the sample group to answer to the questionnaire items after a couple of weeks of the initial assessment. To analyze data, SPSS software version 20 was used.

## Results

In this study, a sample group of 150 elderly resident of Yazd city was investigated. Table 1 shows the demographic variables of the study participants.

**Table 1. Some demographic variables of studied elderly people (n=150)**

Variable		%
<b>Age (year)</b>	Mean	71.93±6.85%
<b>Gender</b>	Men	46.4%
	Women	53.6%
<b>Marital Status</b>	Married	62.6%
	Spouse dead	35.3%
	divorced	1.1%
<b>Living with</b>	Their spouse	58.1%
	Their children	15.9%
	Alone	26%
<b>Having children</b>	Yes	98.1%
	No	1.9%

### Tool Validity

Having analyzed by 10 experts, CVI was calculated 0.96. With respect to the minimum acceptable level of 0.62 for 10 experts in Lawshe's technique, this score is at the very desirable level of achievement.

### Tool Reliability

The internal consistency of the questionnaire items showed the cronbach's alpha of 0.891. Furthermore, the test-retest results illustrate a "very good"

repeatability of all items and their intra-cluster correlation coefficients of over 0.7 (Table 2).

## Discussion

Standard method of Backward-Forward was used to evaluate validity and reliability of P-FACIT fatigue scale. Its validity with Lawshe's technique (CVI=0.62) and its reliability with Cronbach's alpha (0.891) and test-retest (ICC over than 0.7) were evaluated.

In a 2007 study, the English FACIT fatigue scale was found to have high internal validity (Cronbach's  $\alpha = 0.96$ ) and high test-retest reliability (ICC = 0.95) in patients with psoriatic arthritis (11). Cella et al. in their research on validation of the Functional Assessment of Chronic Illness Therapy Fatigue Scale relative to other instrumentation in patients with rheumatoid arthritis in 2005, indicated that The FACIT Fatigue showed good internal consistency (alpha = 0.86 to 0.87), strong association with Medical Outcomes Study Short-Form 36 (SF-36) Vitality ( $r = 0.73$  to  $0.84$ ) and Multidimensional Assessment of Fatigue (MAF) ( $r = -0.84$  to  $-0.88$ ) (19). A study in 2012 on chronic obstructive pulmonary disease patients, FACIT-F showed high internal consistency (Cronbach's  $\alpha = 0.91$ ) (12).

## Conclusion

Aging of workforce in recent decades is increasingly exposing people to fatigue and needs to be much more closely observed cognitively by ergonomists to maintain and promote productivity. The study aimed at evaluating validity and reliability of P-FACIT fatigue scale to be applied in clinical purposes in Yazd, Iran and also as an appropriate tool for ergonomics research.

### Study limitations

Lack of FACIT in other languages was the main limitation of the study. In conclusion, the results showed that P-FACIT fatigue scale is usable to investigate the elderly fatigue in Iran.

### Conflict of interest

None declared

### Acknowledgements

We should appreciate all dear elderly groups who cooperate with us sincerely in this study.

**Table 2. Intra-cluster correlation coefficients for evaluating repeatability of questionnaire items**

Item	Intra-cluster Correlation Coefficients	Confidence Interval 95%
1 I feel fatigued	0.929	-0.507-0.007
2 I feel weak all over	0.788	-0.218-0.618
3 I feel listless ("washed out")	0.909	-0.548-0.048
4 I feel tired	0.948	-0.321-0.021
5 I have trouble starting things because I am tired	0.810	-0.530-0/230
6 I have trouble finishing things because I am tired	0.892	-0.424-0.124
7 I have energy	0.913	-0.109-0.309
8 I am able to do my usual activities	0.892	-0.424-0.124
9 I need to sleep during the day	0.978	-0.054-0.154
10 I am too tired to eat	0.743	-0.163-0.463
11 I need help doing my usual activities	0.822	-0.118-0.618
12 I am frustrated by being too tired to do the things I want to do	0.743	-0.463-0.163
13 I have to limit my social activity because I am tired	0.923	-0.263-0.263

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