

## Brief Communication

### Turkish version of the functional performance inventory used on patients with chronic obstructive pulmonary disease

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People with chronic obstructive pulmonary disease (COPD) experience a progressive, degenerative process in the lungs characterized by airflow obstruction, air trapping, and impaired gas exchange, accompanied by decreased exercise tolerance, and physical symptoms such as dyspnea, cough, and fatigue. Each of these factors may interfere with functional performance.<sup>1</sup> The importance of focusing on the functional health outcomes has recently been highlighted by several sources. The functional performance inventory (FPI) was designed for use with people who have COPD. The aim of this study is to test the validity, reliability, and applicability of FPI in the outpatient wards in order to present a tool for evaluation of Turkish patients with COPD.

**Sample.** A sample of 120 patients was recruited at the Chest Disease Polyclinic of the University of Istanbul, Faculty of Cerrahpasa Medicine, between May 2003 and May 2004. Of the 125 eligible patients, 5 patients were non-respondents. The sample size (n=120) was sufficient to meet the criteria for validity and reliability analyses (at least 10 subjects per item).

**Ethical considerations.** Prior permission to use the FPI in this study was obtained from the developers. The Faculty of Cerrahpasa Medicine Ethical Committee approved this study.

**Measures.** The FPI was developed by Leidy<sup>2</sup> by evaluating COPD patients' subjective perception of functional performance, based on Leidy's framework for functional status. This comprises 65 items and 6 subscales: body care, household maintenance, physical exercise, recreation, spiritual activities, and social activities.<sup>2</sup> Items are scored on a Likert scale, from 0 - 4 (0 = the activity can be performed easily, with no difficulty; 4 = the activity is no longer performed for health reasons). Patients who choose not to perform a given activity except for health reasons are also able to select a "not applicable" response.<sup>2</sup> High scores on the FPI reflect low functioning. Subscale and total scores are expressed as mean values.<sup>2</sup>

**Dyspnea.** Dyspnea is defined as the "subjective experience of difficult or labored breathing."<sup>3</sup> Dyspnea is the most common symptom of COPD. In the present

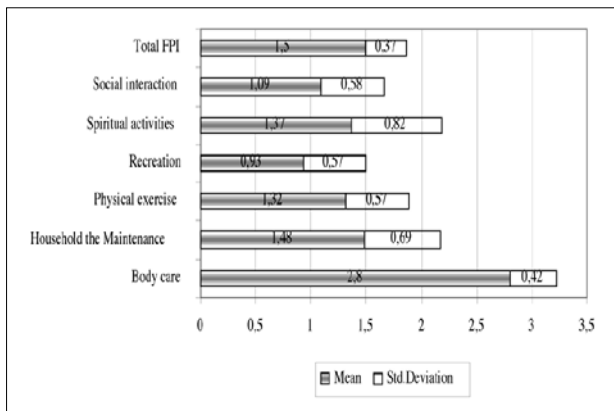
study, a 100 mm horizontal visual analog scale (VAS) was used to measure dyspnea. The VAS has known reliability and validity when used to measure dyspnea.<sup>3</sup>

**Measurements of disease severity.** Lung function data and forced expiratory volume in one second predicted (FEV1% pred.) were collected from the patient's medical records. According to the European Respiratory Society (ERS),<sup>4</sup> the severity of the disease can be stratified into FEV1 (% pred.); >70% mild, 50-69% moderate, and <50% severe.

**Data collection.** Data were collected by a questionnaire form, and the functional performance inventory occurring from 3 components. The first component comprised questions on the socio-demographic characteristics of the patients, the second component comprised the FPI, the third component comprised a record of pulmonary function test outcome of the patients.

**Analysis.** Data were analyzed using the Statistical Package for Social Sciences for Windows version 11.5 (SPSS Inc., Chicago, IL, USA). The internal consistency of the scale was tested by Cronbach's alpha. Nonparametric tests were used as it did not conform with the normal distribution. Socio-demographic data and variables with illness means, standard deviations, frequencies, and percentages were calculated.

**Validity.** The FPI was translated using the back translation technique. Two bilingual linguistic experts translated the original structure of the FPI independently, from English into Turkish. They met and reviewed the Turkish translation together for inconsistencies with the original English form, and minor revisions were suggested in some areas. The Turkish version of the FPI was translated back into English by another linguistic. The re-translated and original forms of the FPI were compared, and found to be highly similar in meaning. After reviewing both translations, the most appropriate terms were selected. Later, content validity was ascertained by an expert panel whose members were asked to review the 65 items of the FPI. The expert group consisted of 10 nursing faculty academics specializing in pediatric nursing, psychiatric nursing, medical, and surgical nursing. They were asked to review and rate the relevance of each item using a 4-point scale, ranging from one (not at all important) to 4 (very important). The content validity index (CVI) of each component was calculated based on the experts ratings. The CVI score was computed by summing the percentage agreement scores of all items that were rated '3' or '4'. The criterion for retaining an item was at least 80% agreement among the experts at the "strongly agree" level regarding the validity of the construct.



**Figure 1** - The level of patient performance based on functional performance inventory, and Cronbach's alpha values.

The CVI of the Turkish version of the FPI was 95%.<sup>1</sup> Finally, the FPI was revised by using the results of the content validity. The final version of the FPI was presented to 30 patients with COPD. The results indicated that the content of the translated FPI was valid.

**Reliability.** The reliability and validity of the FPI measurement tool was assessed by the research group, and the Cronbach's alpha values of the tool and its subscales were calculated. The results indicated that the tool was reliable, and valid for use with the research group. Correlations of items with subscales scores were 0.50-0.87 in the "body care" subscale, 0.12-0.64 in the "household maintenance" subscales, 0.17-0.63 in the "physical exercise" subscales, 0.11-0.62 in the "recreation" subscales, 0.49-0.70 in the "spiritual activities" subscales, and 0.37-0.64 in the "social interaction" subscales. Correlation of items with total score was 0.13-0.86. Although correlations of some items with a total score less than 0.30, the correlation of these items with subscale scores and subscale alpha values were high.

In the reliability and validity studies conducted on the FPI by Leidy,<sup>2</sup> the CAV of the subscales were found to be high, with the "body care" subscale at 0.82, the "household maintenance" subscale at 0.93, the "physical exercise" subscale at 0.75, the "recreation" subscales at 0.85, the "spiritual activities" subscales at 0.87, and the "social interaction" subscales at 0.88. The CAV in the present study were similarly high. These results indicate that the Turkish version of the FPI is a valid and reliable assessment tool in our research group (Figure 1).

**Sample characteristics.** The mean age of participants was 55 ± 24 (40-81) years. More than half of the participants (60.8%) were men. The perceived income

level of most participants (82.5%) was rated as a moderate level. Ninety-one participants (75.8%) did not work. Most participants (80%) were married. Fifty-four participants (45%) were of normal weight. Over half of the participants (55%) had fewer COPD exacerbations.

**Functional performance.** The mean performance score was 1.50 ± 0.37 (median value 1.53 points [range [R]: 0-4 points]). Figure 1 shows the FPI profile of the participants. The participants reported the poorest performance in the "recreation" subscale. Tasks within the "household maintenance" subscale were performed with the least difficulty. The greatest variance was found in "body care" scores. The range of scores for each of the 6 subscales was as follows: 2.51-2.88 (body care); 0.33-2.15 (household maintenance); 0.30-2.05 (physical exercise); 0.26-2.63 (recreation); 0.70-1.76 (spiritual activities); 0.13-2.50 (social interaction).

The mean dyspnea score was 55.2 ± 24.1 (median value 51.2 points [R: 0-100 points]).

**Measurements of disease severity.** The mean FEV1 was 66.6% (SD [±24.49]). The mean FEV1/FVC (%) was 67% (SD [±19.8]).

The present research aimed to introduce a new tool to Turkish healthcare for measuring the functional performance of patients with COPD. When the FPI was developed in 1994,<sup>4</sup> the initial evaluation supported the tool's validity and reliability. However, no subsequent studies had reported on the application of this tool within different cultures. The aim of the present study was to test the reliability and validity of the FPI, and to examine its applicability for Turkish nurses and health professionals.

The CVI of the Turkish version of the FPI is 95%, indicating an acceptable level of content validity. The reliability of a scale refers to the extent to which a scale is internally consistent. Reliability was assessed by using item-total scale, and item-subscale correlations, and Cronbach's alpha coefficients. Correlations between single items ranged from 0.13-0.86, and the internal consistency of the FPI assessed by Cronbach's alpha was 0.87. The means of the FPI total score for the Turkish sample were consistent with previously reported American studies, in which item correlations ranged from -0.13-0.88, and Cronbach's alpha was 0.89, and 0.96. Consistent with previous research findings,<sup>1,2,5</sup> there was a greater loss of functional performance in the "home management" group among patients with COPD.<sup>2</sup> Therefore, there was a need for an assessment tool for evaluating daily activities that was diagnosis specific, and could be used to identify the most appropriate treatment interventions.

The ability to undertake a broad range of activities is an essential part of life. Daily activities include caring for oneself and one's environment, moving around at home and community, and fulfilling various social roles. Personal fulfillment activities, such as interaction with others, hobbies, and attending social or entertainment events, play an important role in life satisfaction and well-being.<sup>1,2,5</sup> Functional performance can be influenced by a variety of factors. The factors affecting performance might be grouped as individual factors, which include experiences, body mass index, socio-economic, and demographic. In this study, in addition to construct validity and reliability of the FPI, we examined the relationship of demographic and socio-economic variables to functional performance.

The findings of the present study are similar to those of previous studies relating to the highest and lowest performance status.<sup>1,2,5</sup>

In summary, the results of this study suggest the FPI is a useful measure for evaluating subjective performance in patients with COPD. The ultimate goal of each of these activities is to offer patients treatment options that will help them maintain their independence, and enhance their quality of life.

Received 10th March 2009. Accepted 19th May 2009.

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## Related topics

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