ABSTRACT. Background: The Item Response Theory (IRT) has advantages for measuring Health Related Quality of Life (HRQOL) as opposed to the Classical Tests Theory (CTT). Objectives: To present the results of the application of a polytomous model based on IRT, specifically, the Rating Scale Model (RSM), to measure HRQOL with the EORTC QLQ-C30. Methods: 103 terminal cancer patients cared for by the home services of the Servicio Andaluz de Salud (Andalusian Health Service) (Andalusia, Spain) participated. These patients responded to the adapted Spanish version of the EORTC QLQ-C30. The application was carried out individually in the patients' homes. Results: The results show that there is an adequate global fit between the data and the IRT model applied. The analysis of the items shows that for 31 of the 33 items there is a good fit. The items which measure the general perception of health and the perception of quality of life present a lack of fit. The study of the response categories of the items (by means of Category Probability Curves) indicates that all the alternatives work extremely well. Conclusions: The EORTC QLQ-C30 presents good metric qualities, under the RSM, ratifying the feasibility to measure HRQOL already shown in other studies carried out with CTT.

KEY WORDS: cancer patients, health related quality of life, item response theory, Rasch polytomous models, rating scale model

INTRODUCTION

Health Related Quality of Life (HRQOL) can be understood as the state of physical, psychological and social health perceived by an individual during the course of an illness or disease (Siegrist and Junge, 1989). It is an indicator which reflects the way in which illness affects the lives of individuals, since this has negative consequences on a physical level (problems with regard to mobility and physical activities), on a psychological level (depression, stress,
anxiety, etc.) and on a social level (interaction with relatives, friends, etc.). As treatments help to improve the individual’s situation, HRQOL is used as an indicator of their efficacy. This variable has been widely used to evaluate the effectiveness of treatments for a variety of illnesses, and has often been applied as a result variable for the evaluation of cancer. In some cases, the harsh treatments which patients are subjected to or the search for the control of these symptoms in other patients has generated an interest in the development of instruments to measure the HRQOL in cancer patients. Amongst these instruments we can find: Support Team Assessment Schedule (STAS) (Higginson and McCarthy, 1989), Therapy Impact Questionnaire (TIQ) (Toscani, 1996), Quality of Life Inventory (QOLI) (Spitzer et al., 1981), European Organization for Research and Treatment of Cancer Core Quality of Life Questionnaire (EORTC QLQ-C30) (Aaronson et al., 1993), etc. which incorporate specific items about alleviating treatments, consequences of this illness and specific symptoms of its patients. Therefore, the development of tests that will measure the HRQOL of these patients adequately is a priority objective for many health workers. The relevance of an accurate measure of this variable is highlighted amongst advanced cancer patients, since in many cases, the improvement of their HRQOL is one of the therapeutic aims.

As a rule, the psychometric theory employed to measure HRQOL has been the Classical Test Theory (CTT). However, the metric characteristics of this theory present a double invariance problem: (1) the measures for each patient depend on the instrument utilised (e.g. a patient will have different scores in HRQOL depending on the test used: EORTC QLQ-C30, STAS, etc.); (2) the estimations of the items and tests properties depend on the sample of individuals used for this purpose (e.g. the reliability of a test will depend on the sample of people used to calculate it). Besides, in the CTT we suppose, (hardly credible though it may be) that once the reliability of a test has been estimated for a certain population, this reliability (accuracy) remains constant for all ability levels (e.g. it will remain identical when estimating the measures in persons with high, medium or low HRQOL values). Whereas most frequently accuracy is lower when measuring the extremes of this continuum (high and low ability values).

The advances in Psychometrics have helped to displace the CTT in favour of the use of Item Response Theory (IRT)-based models. With