

FACTOR STRUCTURE AND VALIDITY OF THE SHOULDER PAIN AND DISABILITY INDEX IN A POPULATION BASED STUDY OF PEOPLE WITH SHOULDER SYMPTOMS

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Aims

This study aimed to investigate the internal consistency, construct validity (through comparison with the SF36 and shoulder range of motion) and factor structure of the Shoulder Pain and Disability Index (SPADI) in a study of 588 participants with self-reported chronic shoulder symptoms.

Introduction

The SPADI, developed by Roach et al in 1991, is a self-administered questionnaire designed to measure pain and disability associated with shoulder pathology in the outpatient setting. It consists of 13 items- 5 pain and 8 disability, all scored 0 to 100. All items are equally weighted then added for a percentage score 0 (best) to 100 (worst). Completion time is documented generally to be 2-5 minutes.

Several systematic reviews have confirmed its high reliability, validity and responsiveness to change in an array of clinical settings. However, its validity in a random population setting against a health related quality of life questionnaire or shoulder range of motion have not been investigated to date, and thus this study aimed to perform this task.

Methods

Ethical approval was granted and each participant gave written informed consent. Between 2000 and 2003, 4060 households in North West Adelaide were randomly contacted in relation to a study aimed at profiling the amount of chronic diseases in the area.

Between 2004 and 2006, this same cohort were contacted in relation to this study. 588 individuals indicated they had current shoulder pain and disability and completed a computer assisted telephone interview. The SPADI and SF-36 were completed. At the clinic assessment that followed, height and weight were measured, as was range of motion of the shoulder. ROM was carried out using a standardised protocol with an inclinometer and measurements were taken by a staff member trained by an anthropometrist.

Internal consistency was evaluated using Cronbach's alpha.

Validity was evaluated by both factor and construct analyses.

Cross-sectional construct validity analyses was performed by Pearson's correlation analysis between SPADI and SF-36 physical and mental components, and shoulder abduction, flexion and external rotation.

Results

INTERNAL CONSISTENCY:

SPADI showed a high degree of item reliability, with high Cronbach's scores for both the pain and disability subscales in isolation, and the SPADI score in total. (All scores were between 0.85 and 0.92 where $0.8 \leq \alpha < 0.9$ is good and $\alpha \geq 0.9$ is excellent)

CONSTRUCT VALIDITY:

There were moderately strong negative correlations between SPADI disability scores and shoulder range of motion, especially abduction and flexion. There were weaker correlations between SPADI pain scores and shoulder range of motion.

There was also a substantial negative correlation between SF-36 physical component and SPADI disability scores (much less correlation for the mental component).

SPADI disability score was correlated with age, whereas the pain score was not.

Discussion

This study represents the largest study examining the validity of the SPADI in a random sample of community dwelling adults with shoulder symptoms.

In general, the SPADI demonstrated a high internal consistency, excellent response rate (97.9%) and good construct validity.

This study also helped establish using factor analysis that the SPADI has a bi-dimensional structure, with clear separate "pain" and "disability" subscales. Both subscales have construct validity, in that they differ in the correlation with other relevant measures such as the SF 36 and shoulder ROM, supporting the concept of separate pain and disability subscales.

Conclusion

SPADI has a bidimensional factor structure representing pain and disability, with adequate internal consistency and construct validity for use in population studies of shoulder symptoms.

This study provides evidence for the use of the SPADI as a measure of shoulder pain and disability in a random population sample.