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Clinimetrics: Upper Extremity Functional Index

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Appraisal

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Summary

Description: The Upper Extremity Functional Index (UEFI) is a 20-item, region-specific, patient-reported outcome measure developed by Paul Stratford and colleagues in 2001.[1] The UEFI is used to measure upper extremity function in individuals with hand and upper extremity disorders. Patients rate their function on a 0 to 4 Likert scale, where 0 indicates extreme difficulty and 4 indicates no difficulty performing the task. This translates into a maximum possible score of 80, which indicates excellent function.[2] The UEFI takes about 5 minutes to complete, and is easy to administer and score with minimal training. The total score is computed by adding up individual item scores.

Validity and reliability: The UEFI has been validated in a variety of populations like post-surgical patients with shoulder, elbow, wrist and hand conditions.[1–3] The UEFI has demonstrated construct validity through moderate correlations with the Patient-Specific Functional Scale (0.59, 95% CI 0.48 to 0.67),[2] and stronger correlations with UEFS (0.82) in a sample that consisted of upper extremity musculoskeletal conditions.[1] The UEFI is able to distinguish improved patients from stable patients (AUC 0.88, 95% CI 0.81 to 0.94) with a sensitivity of 0.73 and a specificity of 0.92, and had a minimally important difference of 8.50 in a sample of shoulder, elbow, wrist and forearm musculoskeletal conditions.[2] In the shoulder disorder population, UEFI has demonstrated moderate correlations with the Western Ontario Rotator Cuff Index (Spearman's Rho = 0.78) and Rotator cuff Quality of life questionnaire (Spearman's Rho = 0.67).[3] The known group validity of the UEFI has been established through its ability to differentiate subgroups based on work status ($p < 0.05$).[4] The UEFI has demonstrated acceptable sensitivity to change in a shoulder disorder population (SRM = 1.54).[3] A Rasch analysis revealed misfit and multidimensionality in the original version of the UEFI, and a 15-item Rasch validated version has been proposed to provide a better fit to the Rasch model.[5] The UEFI has been cross-culturally adapted into multiple languages (Turkish,[6] French Canadian,[7] Spanish[8]) and has shown consistent measurement properties to the original English version.

Studies have determined test re-test reliability and found it to be excellent (ICC 0.94, 95% CI 0.92 to 0.95) in a sample with shoulder, elbow, wrist and hand musculoskeletal conditions;[4] ICC 0.95 in a sample of upper extremity musculoskeletal conditions,[1] and ICC 0.85 (95% CI: 0.73, 0.92) in a sample with shoulder, elbow, wrist and forearm musculoskeletal conditions.[2] It has also exhibited excellent internal consistency (Cronbach's alpha 0.94).[1] The minimum clinically important difference value for the UEFI was 8/80 (shoulder, elbow, wrist and hand musculoskeletal conditions).[4]

Commentary

The UEFI measures function related to upper extremity injuries and disorders.[9] Although used and studied less than the DASH, it has demonstrated strong clinical measurement properties in multiple clinical populations. Clinicians should be aware that 20-item and 15-item versions exist. Further studies are required to clarify the optimal items and performance in additional clinical or cultural contexts.

Provenance: Invited. Not peer reviewed.

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