

Determining the Michigan Hand Questionnaire overall score's minimal clinically important difference via three methods

OBJECTIVES

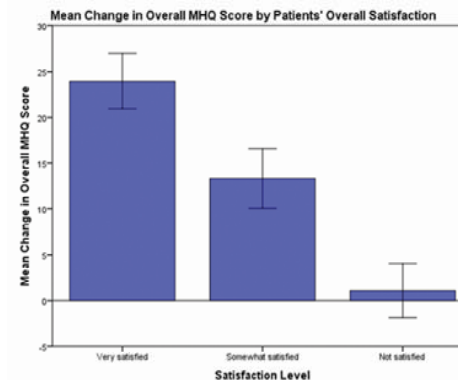
- To interpret patient-rated outcome measures, clinicians rely on the minimal clinically important difference (MCID) to define the level of change that is clinically important
- MCID values for the Michigan Hand Questionnaire (MHQ) overall score are unknown
- We determined the range of MCID scores for the MHQ produced by 3 common analytic methods in a population with multiple hand and forearm diagnoses

METHODS

- 186 subjects completed the MHQ prior to treatment
- Participants were required to re-complete the MHQ twice: 1-month \pm 1 week and 3-months \pm 2 weeks after treatment
- Two anchor question methods (mean change and receiver operating characteristic (ROC)) and a statistical distribution method were used to calculate the MCID
- Mean change analysis used an internal anchor question where patients classified their satisfaction as very satisfied, somewhat satisfied, or not satisfied
- The mean change in overall MHQ score for the somewhat satisfied patients represented the MCID
- ROC analysis requires dichotomization of outcomes and we dichotomized based on two methods: change in patient satisfaction scores using a 0.8 effect size and by patients' answers to their satisfaction of their overall hand function
- The distribution method determined the MCID via calculation of the standard error measurement (SEM) and a 0.8 effect size

RESULTS

- Patient's baseline median overall MHQ score was 60.7



- Using anchor questions, the mean change in overall MHQ scores differed significantly between the 3 groups ($p < 0.001$) and resulted in a MCID of 13.3 (Figure to left)
- ROC analysis of the anchor question (0.8 effect size), 140/186 subjects were classified as satisfied and resulted in an area under the curve (AUC) of 0.92 (95% CI: 0.88-0.96) and MCID of 8.7
- ROC analysis based on dichotomization of patients' answers to their satisfaction of their overall hand function classified 135/186 subjects as satisfied, with an AUC of 0.85 (95% CI: 0.80-0.91) and MCID of 11.5
- Calculating the MCID by SEM and 0.8 effect size gave values of 8.4 and 12.2

CONCLUSION

- The MCID for the overall MHQ score in atraumatic hand/forearm conditions falls between 8-13 points and the average value is 10.8
- Multiple analytic methods produce non-identical but similar MCID estimates
- We recommend using an MCID estimate in this range when planning a clinical trial that is investigating hand/forearm function across a range of diagnoses/treatments with the MHQ being the outcome measure of interest