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Is this change, a real change?
RESPONSIVENESS OF THE PAIN DISABILITY INDEX IN PATIENTS UNDERGOING INTERDISCIPLINARY MUSCULOSKELETAL PAIN REHABILITATION

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Background

The assessment and transparency of quality of care is becoming increasingly important in healthcare. For several widely-used patient-reported outcome measures (PROMs) in chronic musculoskeletal pain (CMSP) rehabilitation, it is still not known whether they are responsive to change, and what the smallest detectable change (SDC) and minimal clinically important change (MCIC) are. Knowledge of these values can be used to accurately interpret change scores in research and clinical practice.

Methods

In this retrospective cohort study, the responsiveness, the SDC and MCIC of the Pain Disability Index (PDI) were investigated in CMSP patients who received interdisciplinary biopsychosocial pain rehabilitation.

T1 (week 0): PDI

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T2 (week 12): PDI

GPEs: 1. Physical Activity (0-5)   2. Coping with Problems (0-5)

GPEs were divided in three categories:
Deteriorated – Unchanged – Improved

Data analysis

Distribution-based and anchor-based methods according to the COSMIN criteria were used.

Responsiveness: Spearman's rho correlation coefficient between change scores PDI and GPE

SDC: $1.64 \times \sqrt{2} \times SEM$ (SEM=SEMagreement=($\sqrt{\sigma^2_{error}+\sigma^2_{moments\ of\ measurement}}$)) in unchanged patients

MCIC: Mean change score of improved patients – mean change score of unchanged patients

Conclusions

For this population, the PDI was shown not to be responsive and not to be able to distinguish clinically important change from measurement error in individual patients.

The finding of a large measurement error of a PROM is in line with previous research in pain rehabilitation. Using generic outcome measures to examine changes in disability due to a pain rehabilitation program is therefore questionable.

Results

In total 374 complete cases were analysed. The mean age was 45 years (SD 11), 66% were females, 45% had a paid job, the mean average pain past week was 6.6 (SD 1.8) on a NRS, and 48% of the patients experienced pain for more than 5 years.
There was a progression from smallest to largest mean change scores between participants who did perceive deterioration, no change and improvement after treatment (figure 1).
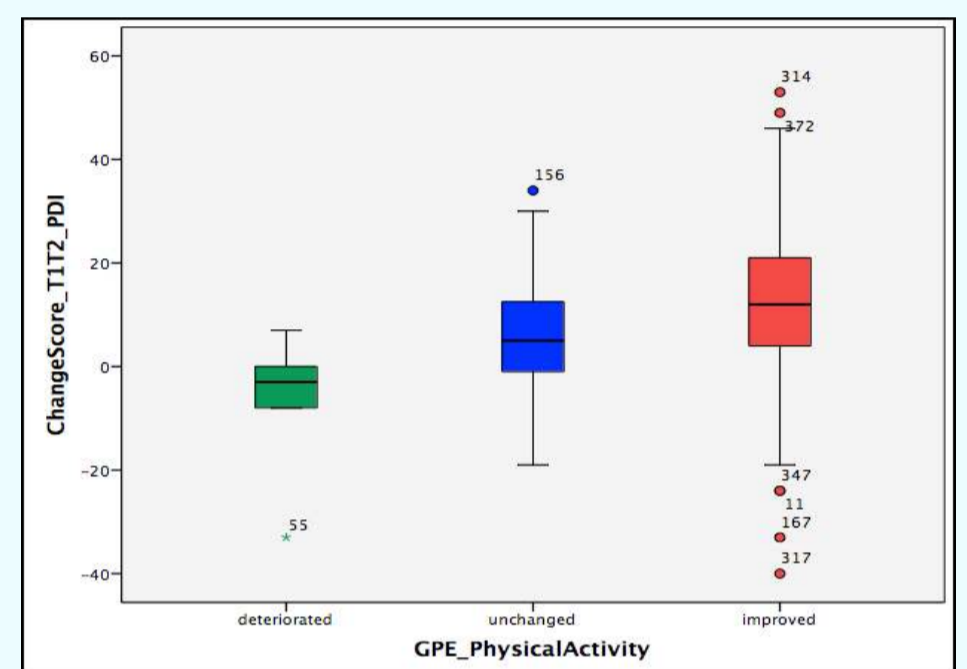

Figure 1.

Responsiveness/SDC/MCIC:

Correlations of the GPE with the change scores on the PDI were low. The SDC was larger than the MCIC, independent of the GPE used (table 1 and figure 2).

Table 1. Outcomes for the PDI: SEM, SDC and MCIC according to each anchor (GPE)

Anchor (GPE)	Spearman's rho	SDC	MCIC
Physical Activity	0.227	20.67	5.36
Coping with Problems	0.174	24.12	6.19

Change NOT statistically significant and NOT important

Change important but can NOT be distinguished from measurement error

Change statistically significant AND important

No change

PDI   PDI
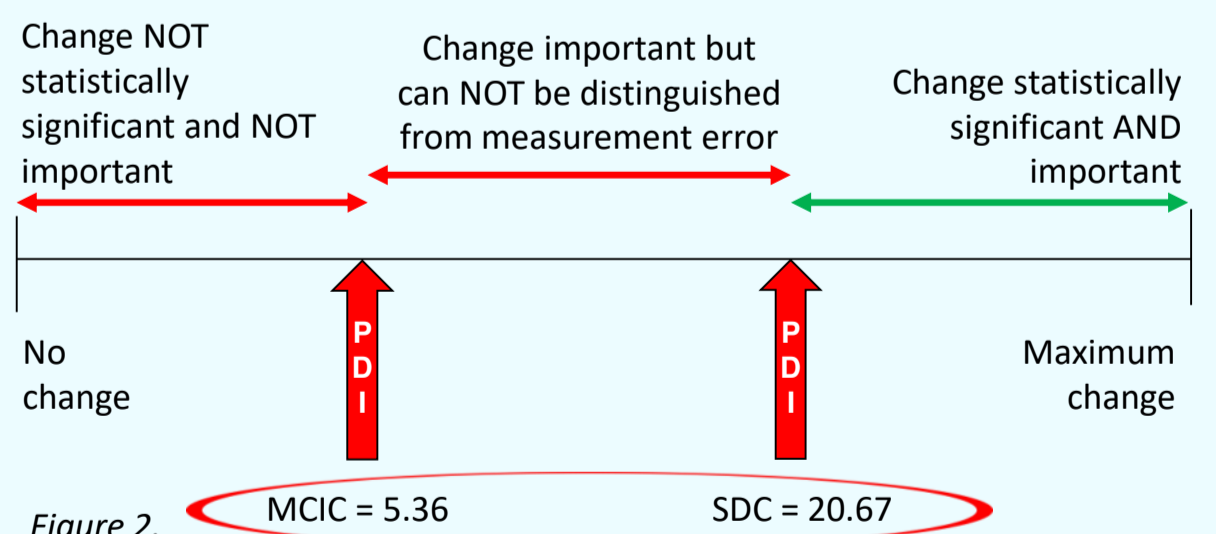
Maximum change

Figure 2.   MCIC = 5.36   SDC = 20.67

RESPONSIVE

DISTINGUISH CLINICALLY IMPORTANT CHANGE FROM MEASUREMENT ERROR IN INDIVIDUAL PATIENTS

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