Inter-rater reliability of parents-reported questionnaires after an intensive motor intervention for children with cerebral palsy

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Introduction

Parents-reported questionnaires have for long been demonstrated as a valid estimation of daily life activity routine assessments. However, it is unknown whether parents may be influenced by their (dis)satisfaction after specific therapeutic interventions, e.g., intensive motor-skill learning intervention such as Hand-Arm Biannual Intensive Therapy-Including Lower Extremity (HABIT-ILE).

Methods

Study 1:
- 41 children with CP (5-17 years old, mean (SD): 10.7 (3.0) years)
- Randomized: control group (CG), intervention group (IG)
- 3 assessment times: at baseline (T1), at 3 weeks (T2) and at 4 months (T3)
- CG assessed while receiving their conventional therapy
- IG assessed before and after the HABIT-ILE 2-weeks camp (Fig 1)

Study 2:
- 20 children from study 1 (5-17 years old, mean (SD): 13.7 (3.0) years)
- Assessed 18 months after participating to the HABIT-ILE camp (T4) (Fig 1)

Experimental design (study 1 and 2):
- Primary outcomes: questionnaires of activity: ABILHAND-Kids and ACTIVLIM-CP.
- Secondary outcome: parent’s satisfaction of the child’s individual goals (Canadian Occupational Performance Measure-COPM).

These measures were rated by: a) parents, and b) 2 blind experts (OT/PT) on the basis of home-based videotapes of the child performing items of the questionnaires in the context of a board game developed for these studies.

Analyses (study 1 and 2):
1) Level of agreement between raters using an Intraclass Correlation Coefficient (ICC range) with a 2 way mixed model.
2) Influence of parent’s satisfaction (COPM score) on the amount of parents-examiners measurement differences with the Spearman’s rank correlation coefficient and a simple linear regression analysis.

Results

1) Agreement between raters for ABILHAND-Kids and ACTIVLIM-CP:
- between parents-examiners’ measures (Fig 2):
  - T1 CG & IG groups: moderate to almost perfect agreement (ICC level/range)
  - T2 and T3 for the CG: moderate to almost perfect agreement (ICC level/range)
  - T2 and T3 for the IG (after HABIT-ILE camp): moderate to almost perfect level BUT range varied from poor to almost perfect agreement
  - T4 both groups: moderate to almost perfect agreement (ICC level/range)
  - between examiners’ measures were systematically almost perfect: ICC level/range ≥0.82 whatever the assessment time or the group

2) Parent’s satisfaction of the child’s achievement of goals (COPM score):

Parent’s satisfaction remained stable in the CG (<2 points difference) while it significantly increased after HABIT-ILE in the IG (T2, T3) and at 18 months (T4), compared to baseline (±2 points difference).

Parent’s satisfaction explained the parents-examiners disagreement?

According to the linear regression analysis, in the CG and at T2 in the IG, the COPM satisfaction score did not explained the parents-examiners disagreement for neither questionnaires (all p>0.173).

At T3 in the IG, higher satisfaction scores on the COPM were associated with higher parent-examiner’s disagreement. The COPM satisfaction score explained 46% and 54% of the variability in the differences between parents’ and examiners measures for ABILHAND-Kids and ACTIVLIM-CP, respectively (p<0.001).

Conclusion

Parents’ reported questionnaire seems reliable at baseline, during conventional therapy and 18 months after an intensive intervention (ICC levels>0.70). After a motor-skill learning based intervention, parents’ reported questionnaire seems less reliable (ICC levels<0.70 and very large ranges). These findings support the use of methods other than exclusively parents-reported questionnaires to accurately measure changes in performance after goal-oriented intensive motor-skill learning interventions. Blind examiners’ observations of home-videotaped items of the questionnaires may be a promising avenue for future investigations.

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