Validity of mobility measures in multiple sclerosis, according disability level: a European RIMS multi-center study

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Background: Mobility difficulties (including walking and balance) are common and important for persons with multiple sclerosis (pwMS). In order to properly evaluate disability, disease progression or treatment efficacy, it is necessary to consider psychometric properties of measures.

Aim: To investigate convergent validity of mobility measures in pwMS, according disability level.

Methods: A convenience sample of 231 pwMS from 17 centers across Europe and US were measured on 10 clinical scales (CLINROs) and 4 self-reported questionnaires (PROs). Disability subgroups were made according EDSS-level: mild (EDSS 2-4), moderate (EDSS 4.5-5.5), severe (EDSS 6) and very severe (EDSS ≥6.5). Spearman"s rank and Pearson correlation coefficients were calculated, as appropriate.

Results: Participants are representative of the MS population (65% female, mean age±SD of 40.1±10.3 years , mean time±SD since diagnosis of 12.1±8.2 years, median EDSS score of 4.5 (IQR 3.5-6) and type of MS of 54% relapsing remitting, 26% secondary progressive, 17% primary progressive, 3% unknown). Overall, good to excellent correlations were found between timed measures (Timed 25 foot walk, Timed Up and Go, Timed Up and Go cognitive, 2 minutes walk test, Four Square Step Test). Correlations were mostly moderate between Berg Balance Scale, Dynamic Gait Index, 5 times Sit-to-Stand, modified 5STS and other CLINROs. Between CLINROs and PROs correlations were fair to moderate and between mutual PROs fair to good. According disability, highest correlations were found in the mild disability group, especially between mutual CLINROs, and between mutual PROs. Correlations between CLINROs and PROs were generally lower than between mutual CLINROs, especially in the severe disability group. Validity between mutual PROs varied strongly between disability groups. All disability groups showed high correlations between timed measures, and between MS walking scale-12 and MS impact scale-29 physical.

Discussion: CLINROs measuring performance do not fully reflect PROs measuring patients perception and behavioral consequences of mobility deficits on the impact of daily life. This is surely true in the more disabled pwMS. Although different CLINROs imply diverse components of mobility (walking, stepping, turning, transfers, …) mutual correlations were moderate to good in the whole group and in the mild disability group. Patients" disability level has an influence on the choice of mobility measures.

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