Research Article

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Correlation of gross motor function with ABILOCO-Kids questionnaire for assessing locomotion ability in children with cerebral palsy

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ABSTRACT

Background: The neurological impairments in children with CP frequently limit walking ability, which is an activity essential for daily life activities & social participation. GMFM is one of the scales available to assess locomotion ability in the activity domain of ICF which has a limitation that it measures global physical ability more than locomotion ability. ABILOCO-Kids questionnaire is a parent's interview based questionnaire which has good psychometric qualities for measuring a wide range of locomotion abilities in children with CP. So, purpose of the study is to correlate ABILOCO-Kids questionnaire with GMFM for assessing locomotion ability in children with CP. **Methods:** A correlational study was carried out at SBB College of physiotherapy, VS general hospital, Ahmedabad with 18 CP children between 6-15 year (8.5 ± 3.5) & GMFCS I, II, III. Children were evaluated for GMFM & GMFCS. A 41 item questionnaire was asked separately to each parent of CP children. Questionnaire score were correlated with GMFM score.

Results: Significant correlation between ABILOCO-Kids questionnaire & GMFM was found (r = 0.878 & P < 0.01) using spearman's test.

Conclusion: Parent's perception of locomotion ability correlates with gross motor locomotion ability examined by therapist in children with CP having locomotion affection.

Keywords: ABILOCO-Kids questionnaire, GMFM, Locomotion, Cerebral palsy

INTRODUCTION

Cerebral palsy is the commonest cause of severe motor impairment in childhood; with a rate of about 2.5 per 1000 live births. Affected children have various types and severities of impairments and so might be regarded as typical of a wide range of disabled children. Cerebral palsy is the leading cause of physical disability among children. The neurological impairments in children with CP frequently limit walking ability, which is an activity essential for daily life and social participation. Disabled children experience difficulty in participating across a

wide range of domains that are essential to daily life, such as running, walking, jumping, playing etc.

According to 2006 data from the ADDM (Autism and developmental disabilities monitoring) CP Network, Black children with cerebral palsy were 1.7 times more likely to have limited or no walking ability compared with white children.

In 2008, 58.2% of children with CP could walk independently, 11.3% walked using a hand-held mobility device, and 30.6% had limited or no walking ability.

Another study found that 41% of children with CP were limited in their ability to crawl, walk, run, or play, and 31% needed to use special equipment such as walkers or wheelchairs.²

The Gross Motor Function Measure (GMFM) is the first evaluative measure of motor function designed for quantifying change in the gross motor abilities of children with cerebral palsy. The measure is widely used internationally, and is now the standard outcome assessment tool for clinical intervention in cerebral palsy.³

Locomotion ability, as measured by ABILOCO-Kids (parent's interview based questionnaire), is defined as the individual's ability to move about effectively in his/her environment. ABILOCO-Kids are a measure of locomotion ability for children with lower limb impairments which assess the wide range of walking ability of children with CP focusing on the activity domain of the ICF.⁴ 41 questions were asked to parents to record their perception regarding their child's usual locomotion ability.

ABILOCO-Kids have been calibrated in children with cerebral palsy according the difficulty of children in performing locomotion activities as perceived by their parents. Test-retest reliability: ICC = 0.96 after a delay of 25 \pm 13 days. Construct validity: ABILOCO-Kids vs. GMFCS (ρ = -0.88).

ABILOCO-Kids Questionnaire & GMFM both provide the information regarding locomotion ability of children with cerebral palsy: one perceived by parents & the other examined by their therapist. So the purpose of present study was to assess the strength of association between the parental report for ABILOCO -Kids questionnaire & therapist's assessment for GMFM in children with cerebral palsy.

METHODS

18 children with cerebral palsy coming from various OPDs of V.S. general hospital to pediatric rehabilitation department of SBB college of physiotherapy between 6-15 year with GMFCS I, II, III were selected. Children were excluded if they had diagnosis of other neuro-developmental disorder, children with CP under age 6 year, children with CP unable to follow 3 step verbal commands. Primary therapist had examined children for GMFM-88 & GMFCS levels & parental perception was reported by ABILOCO-Kids questionnaire via structured interview. Locomotor ability was estimated by parent using 3 level rating scale (0 - impossible, 1 - difficult, 2 - easy) for 41 items.

The data was analysed using graph pad prism. Spearmen's correlation coefficients were used to examine associations between ABILOCO-Kids questionnaire and GMFM with level of significance kept at 5%.

RESULTS

18 children with CP mean age 8.5 ± 3.5 year of GMFCS I to III were analyzed, whose mean GMFM total score was 59.11 ± 31.38 & mean ABILOCO-Kids score was 49.38 ± 27.11 .

Correlation coefficient between total scores of GMFM & questionnaire were determined by using Spearmen's test with r = 0.878 & p (for two tailed) <0.01. The spearmen's test shows strong positive correlation between GMFM & ABILOCO-Kids questionnaire which is shown in graph.

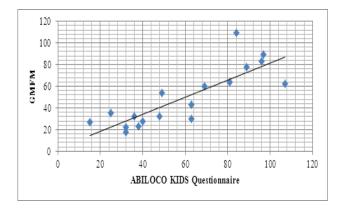


Figure 1: Shows correlation of GMFM with ABILOCO-Kids questionnaire.

DISCUSSION

The current study shows positive correlation between ABILOCO-Kids questionnaire and gross motor function in all type of CP patients.

A previous study performed by Chong J et al. (2011)⁶ found that distance covered on the 1 MWT has a significant relationship with the gross motor function measure-66 than self-selected speed over 6 minutes, may be because of inability of children with CP to voluntarily modify their gait speed or lack of understanding of the instructions and they concluded that parents report a much wider range of walking abilities in children who function at a high level (GMFCS I).

GMFM & ABILOCO-Kids both measures locomotor abilities but they have some important differences. First, the GMFM measures basic gross motor abilities such as sitting, standing, walking, and jumping. These abilities were measured in a standardized environment (a therapy room) by an independent pediatric physical therapist who had no previous knowledge about the child.

The questionnaire measures gross and fine motor abilities which include "walking with holding a fragile object" and "running correctly even if you have to turn" and etc. These abilities are measured by an interview with one of the parents and reflect the capability and performance of the child in the daily environment.

Participants who have GMFCS level I & II had a GMFM score that matched with normative data for their age so can perform his/her daily activity as near normal children. Which justify how our result correlate both the outcome measures with each other.

Harvey et al.⁹ showed that parents can, to some extent, predict their child's performance on a clinic-based walk test simply from their observation of the child's walking ability in the community.

CONCLUSION

Parent's perception of locomotion ability correlates with gross motor locomotion ability examined by therapist in children with CP having locomotion affection. Although there is scarcity of studies which compares parental reports to therapist's examination in walking ability, our study may add into the current body of knowledge. Small sample size and lack of homogeneity in study participants were limitations of present study.

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