Abstract

Background and need for the study

Mobility of individuals in the home and environment has been considered as the important goal in rehabilitation of patient with mobility deficits. Earlier studies have suggested that mobility disability in community dwelling individuals need to be assessed under certain dimensions which are vital and the measures need to be comprehensive. Till date, there has been no scale to measure the mobility disability for community dwelling individuals under these dimensions. Existing scales are either condition or population specific and are not comprehensive to include all the domains which are important for the mobility disability assessment in community dwelling individuals. This suggests that there is a strong need to develop a mobility disability scale for community dwelling individuals under the vital domains.

Objectives of the study

The objectives of the study were to develop a mobility disability for community dwelling individuals and validate the scale for its content, reliability, concurrent validity and responsiveness.

Methods

Development of the scale was done by generating domains and items using literature search and direct patient interviews. Thorough literature search was done to identify the existing scales which measures mobility and the items related to community mobility was extracted from these scales. Twenty patients with mobility disabilities were interviewed to identify the items which they consider
relevant to be included in the scale. The items were grouped under the domains identified by literature search accordingly.

The domain and the items generated were content validated by the ten experts in the field of rehabilitation of patients with mobility disability living in community. The items with more than 70% level of agreement by experts were included and modification of items and domains were done as per the suggestion of experts. The scale draft with the scoring criterion was formed which was pilot tested on 35 patients to evaluate the content, comprehensibility, applicability of items and scoring criteria of the scale. The modifications were done on the items, domains and scoring criteria of the scale based on the results of pilot study.

The final scale formed was subjected to reliability, concurrent validity and responsiveness. Sixty patients with mobility disability were evaluated on two occasions within the period of one week to evaluate test retest reliability. Cronbach’s alpha for internal consistency and Intra class correlation coefficient for test retest reliability was used to determine the degree of consistency of items in the scale. Concurrent validity of the scale was tested by correlating the domain and total scores of scale with the scores of FIM FAM scale. Fifty eight patients with mobility disability were evaluated using new scale and FIM FAM scale at the same time. Spearman’s rank correlation coefficient was used to determine the correlation and hence the concurrent validity. Responsiveness of the scale was determined by applying the scale in stroke patients before and after treatment for a period of eight weeks. Wilcoxon Signed Rank test was used to analyze the statistical significance of change between the pre and post treatment in domain and total scores of new scale. The quantity of change measured by the scale
before and after treatment was compared with the global rating of change score scale measured by the patient perception to calculate the minimally clinical important difference (MCID) for the new scale.

Results

99 items and 14 domains were generated by the literature search and direct interviews from the patients. The items were grouped under the 14 domains depending on the relevance and the purpose of each item. The content validation resulted in elimination of 44 items and 5 domains which had less than 70% agreement by the experts. Modification of items and domains were done to improve the relevance and reduce the ambiguity of items. A scale was drafted, which consisted of 55 items grouped under 9 domains along with the scoring criteria. Each item was graded on a five point scale with the scoring options ranging from 0 to 4, with 0 being no disability and 4 being complete disability. Pilot testing of this scale draft was done in 35 patients, which resulted in modifications, deletion and rearrangement of items in the scale.

The final scale which consisted of 50 items under 9 domains showed excellent internal consistency (Cronbach’s alpha= 0.981) and test retest reliability (ICC= 0.995, CI 0.991 to 0.997). A statistically significant linear but negative correlation was found between the domain and total scores of the scale with FIM FAM scale scores (-0.724 to -0.711) indicating good concurrent validity of the new scale. The pre and post treatment scores of new scale in stroke patients was found to be statistically significant with a median (IQR) change of 46 points [pre-treatment: 124 (86.8, 137.5) and post treatment 78 (58.7, 99)], indicating high responsiveness for the scale. MCID of the scale was also determined in stroke
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patients using global rating of changing scores as the external measure, which was 32 points in total score. The total score indicate that the scale did not have any floor or ceiling effect.

Conclusion

A valid scale has been developed to evaluate mobility disability in community dwelling individuals. The scale possesses acceptable content validity, excellent reliability, moderate concurrent validity and responsiveness. This scale is the first instrument of its kind to assess the mobility disability in community dwelling individuals and we recommend using this scale to screen and quantify the mobility disability of patients living in community.

Keywords: Mobility Disability, Psychometric properties, Domains of Mobility, Dimensions