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Disability assessment in the Google Maps era: a feasibility study to explore a new clinical opportunity

This is a pre print version of the following article:

Original Citation:

Availability:

This version is available <http://hdl.handle.net/2318/1757521> since 2020-10-02T10:44:11Z

Publisher:

LIPPINCOTT WILLIAMS & WILKINS

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(Article begins on next page)

Abstract

Objective: The aim of this study was to investigate the feasibility of a large-scale trial to test the effectiveness of Google Maps application in order to improve the evaluation of Ambulation Score (AS) and the related EDSS in clinical practice.

Background: AS is the most used scale to assesses gait impairment in people with Multiple Sclerosis (pwMS). AS relies mostly on the maximum distance a patient can walk without rest (maximum walking distance, MWD). In clinical practice doctors traditionally rely on patients' estimates concerning the walked distance. Several studies showed the inaccuracy of such distance estimates and therefore the unreliability of disability assessment in clinical practice.

Design/Methods: 243 pwMS were recruited in five Italian MS Centers.

We collected 1. demographical and clinical data ; 2. the AS based on pwMS referred MWD (perceived AS, pAS) and, consequently, the perceived EDSS (pEDSS); 3) the AS based on MWD identified on Google Maps (gmAS) and, consequently, the google maps EDSS (gmEDSS). We evaluated the agreement between the two latter measurements and whether demographic and clinical data might have influenced the agreement. Finally, in a subgroup of 75 pwMS we evaluated an actual AS (actAS), objectively measured, and we tested the agreement among the pAS, the gmAS and the actAS.

Results: pEDSS and gmEDSS were coincident in 169/243 (69.55%) pwMS. In 74/243 (30,45%) were different (higher/lower). These two groups were significantly different for FSS ($p=0.01$) and PHQ-9 ($p=0.002$) and frequency of progressive phenotype (OR = 2.8, 95% CI 1.1 – 7.11, $p=0.03$). The pEDSS and the actEDSS were coincident in 45.3% of pwMS. gmEDSS and the actEDSS were coincident in 57.3%

Conclusions: In conclusion, we suggest that Google Maps application could be easily applied in a real-life clinical setting to calculate the AS and that is suitable to be evaluated in future clinical studies.

Disclosure: Dr. Abbadessa has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with Novartis and Sanofi. Dr. Lavorgna has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with Merck, Novartis, Biogen and Teva.. Dr. Iaffaldano has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with Biogen Idec, Bayer, Teva, Roche, Merck Serono, Novartis, Genzyme, and

Sanofi Aventis. Dr. Lanzillo has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with personal fees for public speaking or consultancy from Merck, Novartis, Biogen, Genzyme, Teva, Roche and Almirall.. Dr. Esposito has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with Merck Serono, Novartis, Genzyme, and Biogen. Dr. Ippolito has nothing to disclose. Dr. Sparaco has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with received research fee and speaker honoraria from Teva, Merck, Novartis; travel grants from Merck, Novartis, Sanofi Genzyme, Teva.. Dr. Cepparulo has nothing to disclose. Dr. Lus has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with Speaker honoraria and scientific advisory boards (Bayer, Biogen Idec, Merck-Serono, Novartis, Sanofi, Teva, Almirall, Allergan, Merz, Ipsen, and Roche).. Dr. Lus has received research support from Research grants (Bayer, Biogen Idec, Merck-Serono, Novartis, Sanofi, Teva, Almirall, Allergan, Merz, Ipsen, and Roche).. Dr. Viterbo has nothing to disclose. Dr. Clerico has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with Merck, Roche, Biogen, Novartis, Sanofi Genzyme, and Pomona. Dr. Ragonese has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with consulting fees and speaker honoraria from Biogen, Merck, Novartis, Genzyme, and Roche, and Teva; travel grants from Biogen, Merck, Genzyme, Novartis and Teva; research grants from Almirall.. Dr. Borriello has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with honoraria for advisory board, trip support and consulting from Almirall, Biogen, Genzyme, Merck, Novartis, Teva, Roche.. Dr. Signoriello has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with personal compensation for activities with Biogen Idec, Roche, Merck Serono, Novartis as a consultant; has received support for travelling from Biogen Idec, Merck Serono, Novartis, Teva, Roche, Genzyme.. Dr. Trojano has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with scientific Advisory Boards for Biogen, Novartis, Merck Serono, Roche and Genzyme; has received speaker honoraria from Biogen Idec, Sanofi-Aventis, Merck Serono, Roche, Teva, Genzyme and Novartis; and has received research grants for her Institution from B. Dr. Trojano has received research support from Dr Trojano received research grants for her Institution from Biogen Idec, Merck Serono and Novartis.. Dr. Tedeschi has nothing to disclose. Dr. Bonavita has received personal compensation for consulting, serving on a scientific advisory board, speaking, or other activities with roche, novartis.

