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EFFECTS OF CONVENTIONAL ASSISTIVE DEVICES ON SPATIOTEMPORAL GAIT PARAMETERS OF ADULTS WITH NEUROLOGICAL DISORDERS: PRELIMINARY RESULTS OF A SYSTEMATIC REVIEW

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Background: Assistive devices are commonly prescribed to compensate for gait impairments in individuals with neurological disorders. However, there are limited recommendations for prescribing these devices, and the effects of their use are poorly understood.

Objectives: To investigate the immediate, short, and long-term effects of using conventional assistive devices on gait parameters in adults with neurological disorders.

Methods: This is an ongoing systematic review including experimental studies that investigated the effects of using conventional assistive devices (e.g., canes, crutches, and walkers) on the gait parameters (speed, cadence, step length and distance) of individuals with neurological disorders. Electronic searches were conducted in MEDLINE, Embase Ovid, PEDro, Scielo, CINAHL Database, LILACS, and gray literature. Two trained independent reviewers selected the studies, extracted the data, and assessed the methodological quality of the included studies using the Cochrane Risk of Bias (RoB2) tools. A third independent reviewer resolved disagreements. Meta-analyses were conducted when at least two homogeneous studies were available. The quality of the evidence was assessed (GRADE).

Results: Twenty-three studies involving 450 participants were included. The neurological conditions included Alzheimer's Disease (AD), Huntington's Disease, Neuromuscular Disorders, Multiple Sclerosis (MS), Parkinson's Disease (PD), Spinal Cord Injury, and Stroke. About half of the studies had a high risk of bias. Most studies ($n = 21$; 92%) evaluated immediate effects, one study evaluated short-term effects (4%), and one study evaluated long-term effects (4%) of assistive device use. Most studies compared the gait with and without assistive devices ($n = 19$; 83%). The mean difference (MD) between test conditions was calculated for all studies and meta-analyses were conducted including individuals with AD, PD and stroke. According to the meta-analysis, the immediate use of assistive devices worsened or made no difference in the gait parameters of individuals with AD, PD and stroke ($0.001 = p = 0.410$) compared with gait without assistive devices. In individuals with stroke the immediate use of a single-point cane improved both gait speed (MD: 0.017 m/s, 95% CI: 0.025 to 0.090; $p = 0.001$) and distance (MD: 20.33 meters, 95% CI: 4.49 to 38.19, $p = 0.012$) compared to the four-point cane. Data from a single study about the long-term effects showed that the gait speed with a cane was 0.14 m/s (95% CI 0.05–0.23) higher in individuals with stroke who used the device daily for 30 days, compared to control individuals who performed stretching sessions.

Conclusion: Current evidence on the effects of assistive devices is mainly based on studies investigating immediate effects, showing no benefit or a worsening of gait parameters compared to gait without the device. In the long-term, daily use of a single-point cane increased gait speed with the cane in individuals with stroke after four weeks of intervention. Additionally, the use of the single-point cane was superior to the use of the four-point cane.

Implications: The time of training and the type of device should be considered when prescribing assistive devices. Future research should investigate the effects of training and device use in both the

short and long-term. Results should be interpreted with caution until the study is completed.

Keywords: Neurological disorders, conventional assistive device, gait

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EMOTIONAL STRESS/DEPRESSION AND AGE ARE PREDICTORS OF ADOPTING HEALTHY LIFESTYLE BEHAVIORS POST-STROKE IN A MIDDLE-INCOME COUNTRY

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Background: Stroke has a high global burden, which is highest in low and middle-income countries (LMICs). Recurrent strokes contribute heavily to this burden, making secondary prevention crucial. Adopting healthy lifestyles is essential for stroke secondary prevention but remains low among individuals post-stroke. While studies in high-income countries provide valuable insights, their findings may not be directly applicable to LMICs due to cultural and contextual differences. Identifying key predictors of the adoption of healthy lifestyle behaviors in a middle-income country can target individuals who may benefit most from non-pharmacological, non-surgical stroke secondary prevention interventions and guide the development of interventions focused on these mediators.

Objectives: To investigate whether sociodemographic and routinely assessed clinical risk factors for recurrent stroke variables predict the adoption of healthy lifestyle behaviors post-stroke in a middle-income country.

Methods: A cross-sectional study was conducted with approval from the Institutional Ethical Review Board. All individuals admitted to a public hospital Stroke Unit between September-2019 and February-2021 were invited to participate in a previous cohort study. Two years later, they were contacted via telephone call for this study. Those who consented were screened for cognitive and language impairments that could hinder telephone interviews by a trained researcher. Using the Stroke Riskometer™ App, four healthy lifestyle behaviors were considered dependent variables: physical activity participation, healthy eating, smoking abstinence, and safe alcohol consumption. A fifth dependent variable assessed adherence to all four behaviors. Independent predictors included sociodemographic factors (age and sex) and clinical risk factors (cardiac condition, hypertension, diabetes, body mass index, and emotional stress/depression). Binary logistic regression ($\alpha = 5\%$) was employed. **Results:** Among 81 participants (63 ± 14 years, 51% male), 22% engaged in physical activity = 2.5 hours/week, 68% consumed = 2 servings of fruits/vegetables daily, 88% were non-smokers, and 95% reported safe alcohol consumption. Only 16% adopted all four behaviors. Regression models for physical activity, healthy eating, and safe alcohol consumption did not identify significant predictors. The model for smoking abstinence (correct classification = 87.7%) revealed that emotional stress/depression predicted smoking