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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 RiskometerTM 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 (a = 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

(p = 0.036, B = 1.896, OR = 6.659, 95%CI = 1.137-39.013). Individuals without emotional stress/depression were more likely to be non-smokers. The model for adopting all four behaviors (correct classification = 82.7%) identified age as a significant predictor (p = 0.023, B = -0.072, OR = 0.931, 95%CI = 0.875-0.990), with older individuals less likely to adopt all healthy behaviors.
Conclusion: Emotional stress/depression and age were predictors of adopting healthy lifestyle behaviors post-stroke in a middle-income country, highlighting their importance in targeting secondary prevention interventions.
Implications: Smoking cessation interventions should consider additional support for individuals experiencing emotional stress/depression. Secondary prevention strategies should also target older individuals to enhance their adherence to multiple healthy behaviors. While age cannot be modified, older individuals may require intensive behavioral strategies to reduce stroke recurrence risk. The low physical activity rate (22%) aligns with findings from another study conducted in a middle-income country, emphasizing the need for targeted interventions. Despite the high smoking cessation rate, relapse remains a concern, reinforcing the need for sustained prevention efforts. Additionally, studies should incorporate feasible clinical measurements to refine these findings further.
Keywords: stroke, healthy behaviors, risk factors

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EVALUATING BALANCE, GAIT VELOCITY, AND FUNCTIONAL STRENGTH IN INDIVIDUALS WITH SPINOCEREBELLAR ATAXIA VERSUS HEALTHY ONES: EXAMINING DISEASE SEVERITY

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Background: Spinocerebellar ataxia (SCA) is a family of dominant hereditary cerebellar ataxias that progressively degenerate the cerebellum and its pathways, causing postural instability and incoordination. Despite the importance of assessing functionality in individuals with SCA, data on performance in these tests is scarce.
Objectives: To assess the impact of SCA over functionality based on disease progression and symptom severity by comparing the performance of individuals with SCA to health ones.
Methods: Thirty-nine individuals with SCA were invited to participate. Four decline the invitation. Thirty healthy participants, matched in gender and age, were also recruited. Individuals with SCA was assessed through the Scale of the Assessment and Rating of Ataxia (SARA) and the Inventory of Non-Ataxia Signs (INAS) to characterize disease gravity and presence of non-ataxic symptoms, respectively. All participants were evaluated with the Five times sit to stand (5TSTS), 10m walk test (10MWT) and Functional reach test (FRT) with accelerometry. During FRT, a linear artifact was acquired using signals from 3D accelerometers integrated into an Apple smartphone (Iphone 13, designed by Apple in California USA, assembled in Brazil) positioned in the lumbar region. The individuals with SCA were subdivided into three groups, according to the scores obtained on the SARA scale associated to the level of dependence when performing ADL (minimum-moderate, maximum, and severe-total dependence). To compare the control group and individuals with SCA subgroups, a one-way ANOVA was performed, followed by posttests in case of a significant main effect. Analysis of accelerometer recording during FRT was performed by comparing the groups using a t test for independent samples.
Results: For the analyzes of the 5TSTS, FRT and 10MWT, data from the 35 individuals with SCA as well as 30 height controls were used. For the analysis of the movement pattern during FRT with accelerometry, data from only 28 individuals with SCA and 22 controls were included due to the enough quality of signals found needed to analysis. There was a main effect when comparing groups for all variables: 5TSTS ($P < 0.001$); TAF ($P < 0.001$); Time in the 10MWT ($P < 0.001$); and number of steps in the 10MWT ($P < 0.001$). The distances achieved in the FRT by the control group were significantly higher than those of the maximum and severe-total dependence groups, while for the minimal-moderate dependence group, there were no significant differences compared to the control group. Regarding the TAF movement phases, there were no significant differences for any variable ($P < 0.132$).
Conclusion: The results indicate that SCA impacts gait and postural control. In general, individuals with SCA with greater dependence for ADL and worse disease severity had the worst performance in the tests. Although the distances reached in the FRT were smaller for patients with SCA, the movement phases did not show significant differences between them, indicating that the movement pattern is not significantly altered.
Implications: These results help to improve the treatment of individuals with SCA, highlighting the changes that can cause disease progression, identifying the areas in which patients have more difficulties, and helping in designing their plans of assistance.
Keywords: Spinocerebellar ataxia, Mobility, Functional strength, Postural control

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COMPARISON AND CORRELATION BETWEEN THE NUMERICAL PAIN SCALE AND THE VISUAL ANALOG SCALE IN PAIN PERCEPTION AMONG INDIVIDUALS WITH MIGRAINE

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Background: Chronic migraine (CM) is a highly prevalent neurological condition and a leading cause of disability, particularly among women. Pain assessment is crucial for managing this condition, and scales such as the Numerical Pain Scale (NPS), which evaluates pain on a scale from 0 to 10, and the Visual Analog Scale (VAS), consisting of a 100-mm line ranging from "no pain" to "worst possible pain," are widely used for this purpose.
Objectives: To compare the VAS and NPS and correlate them with a functional disability scale in patients with chronic migraine.