Physical activity as a predictor of clinical course in mild AD: The Danish Alzheimer Intervention StudY (DAISY)

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Background: Alzheimer´s disease (AD) is a neurodegenerative disease leading to cognitive decline and loss of independent living functions. Moreover, neuropsychiatric symptoms such as apathy and anxiety are common. Previous findings in patients with AD have indicated that physical activity is associated with better cognitive function and a less rapid disease course. However, few studies have investigated whether physical activity may prevent the emergence of neuropsychiatric symptoms.The objective was to examine whether baseline physical activity was associated with global cognition, neuropsychiatric symptoms, quality of life (QoL), and activities of daily living (ADL) function at 12-month follow-up. **Methods:** Baseline and 12-month follow-up data from the Danish Alzheimer´s Intervention StudY (DAISY) were used. All patients had recently diagnosed mild (MMSE>20) AD. Physical activity level at baseline was assessed by a questionnaire. Proxies rated patients´ level of physical activity as either "no physical activity", "less than 4 hours" or "more than 4 hours" per week. At 12-month follow-up, global cognitive function was assessed using the MMSE, QoL using the QoL-AD and Euro-QoL-5 domain Visual Analog Scale (EQ-5D VAS), neuropsychiatric symptoms with the NeuroPsychiatric Inventory Questionnaire (NPIQ) and ADL with the Alzheimer´s Disease Cooperative Study-ADL scale (ADCS-ADL). Linear multiple variable regression analyses with the above scales as outcomes and physical activity levels as predictors and age, sex and MMSE at baseline as covariates, were carried out. **Results:** In total 327 patients (Age (mean, SD): 76.2, ± 7.2; gender f/m: 177/151; MMSE (mean, SD): 24.0, ± 2.6) had data on proxy- and patient-rated physical activity levels available, and were included. Significant associations were found for EQ-5D VAS (patient rated) in the direction of a higher score indicating a higher QoL for physically active (β: 16.07; SE: ± 3.49; p<0.0001), in the same direction for QoL-AD (β: 4.33; SE: ± 1.09; p<0.0001). For NPI-Q a lower score (β:-1.88; SE: ± 0.80; p=0.021) indicating fewer neuropsychiatric symptoms in physcially active patients, was found. Finally, being physically active was also associated with a higher score on the ADCS-ADL (β: 9.55; SE: ± 2.78; p=0.001). **Conclusions:** Physical activity may delay progression of functional decline in the early phase of AD.