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**Association between widespread pain and Dementia, Alzheimer's disease and Stroke: A cohort study from the Framingham heart study**

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**Objective:** Chronic pain may be an early indicator of cognitive decline, but previous studies have not systematically examined the population-level associations between widespread pain and adverse cognitive outcomes and stroke. This study was designed to determine the association between widespread pain, a common subtype of chronic pain, and subsequent dementia, Alzheimer's disease dementia and stroke.

**Methods:** This retrospective cohort study used data from the US community-based Framingham Heart Study. Pain status was assessed at a single time point between 1990 and 1994. Widespread pain was determined based on the Framingham Heart Study pain homunculus. Dementia follow-up occurred across a median of 10 years (interquartile range, 6-13 years) for persons who were dementia-free at baseline. Proportional hazards models examined associations between widespread pain and incident dementia, Alzheimer's disease dementia and stroke.

**Results:** A total of 347 (14.1%) subjects fulfilled the criteria for widespread pain, whereas 2117 (85.9%) subjects did not. Of 188 cases of incident all-cause dementia, 128 were Alzheimer's disease dementia. In addition, 139 patients suffered a stroke during the follow-up period. After multivariate adjustment including age and sex, widespread pain was associated with 43% increase in all-cause dementia risk (HR: 1.43; 95% CI: 1.06, 1.92), 47% increase in Alzheimer's disease dementia risk (HR: 1.47; 95% CI: 1.13, 2.20) and 29% increase in stroke risk (HR: 1.29; 95% CI: 1.08, 2.54). Comparable results were shown in the subgroup of individuals over 65 years old.

**Conclusion:** widespread pain was associated with an increased incidence of all-cause dementia, Alzheimer's disease dementia and stroke.

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