Education, vascular risk factors, and dementia in the very old

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BACKGROUND & AIMS

High education is often reported to be associated with a reduced risk of dementia, whereas vascular risk factors may increase the risk of the dementing disorder. We sought to examine whether early life educational attainment could modify the association of vascular risk factors to the risk of dementia and Alzheimer's disease in very old people.

METHODS

Study design & participants. This was a community-based cohort study. A total number of 425 participants of the Kungsholmen Project in Stockholm, Sweden, aged 81+ years were included in this analysis.

Data collection. Data on demographics (e.g., age, sex, and education) and vascular risk factors and co-morbidities (e.g., diabetes, stroke, and heart disease) were collected through interviews or inpatient registry system.

Diagnosis of dementia and Alzheimer's disease. Dementia and Alzheimer's disease were diagnosed according to DSM-III-R criteria following the validated three-step diagnostic procedure.

Data analysis. Cox regression analysis was performed to estimate the hazards ratio (HR) and 95% confidence interval (CI) of dementia in association with the presence of vascular risk factors stratifying by educational level after controlling for major potential confounding factors.

RESULTS

During the 3-year follow-up period, 89 subjects were diagnosed with dementia, including 72 Alzheimer cases.

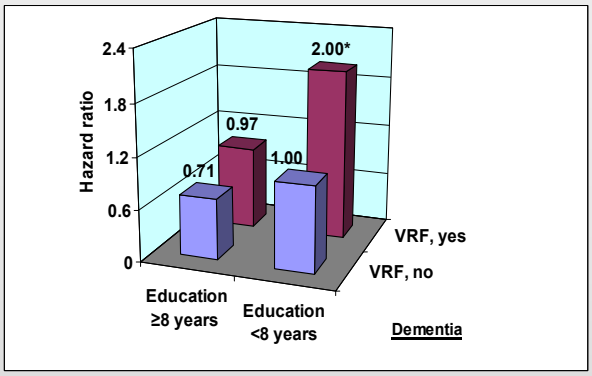
– The characteristics of the participants are presented in the **TABLE**.

– The **FIGURE** shows the joint effect of education and presence of vascular risk factors on the risk of dementia and Alzheimer's disease.

TABLE. Characteristics of participants by follow-up dementia status

Characteristics	Non-demented	Demented	P-value
N	336	89	
Age (in years), mean (SD)	86.1 (3.8)	86.2 (4.0)	0.892
Female sex, %	75.6	83.1	0.121
Education <8 years, %	47.9	56.2	0.165
Diabetes, %	6.0	4.5	0.578
Heart disease, %	12.2	20.2	0.061
Stroke, %	7.4	11.2	0.263
Vascular risk factors* (VRF), %	24.1	31.5	0.165
Antihypertensive drug use, %	50.3	46.1	0.478
APOE ε4 allele, %	21.7	24.7	0.550

* Presence of any of diabetes, heart disease, and stroke.



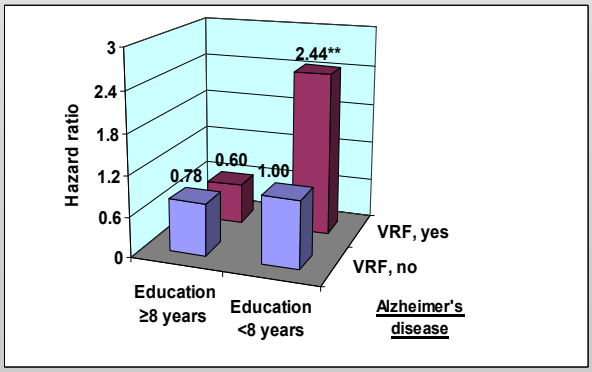


FIGURE. Combined effect of education and the presence of vascular risk factors (VRF) on the risk of dementia and Alzheimer's disease.

* P<0.05; ** P<0.01

CONCLUSIONS & INTERPRETATIONS

In very old people, the presence of vascular risk factors and comorbidities is associated with an increased risk of dementia and Alzheimer's disease, whereas high educational attainment in early life may counteract the risk effect of these vascular risk factors and disorders probably by enhencing late-life cognitive capacity.

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