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Links between omega-3 polyunsaturated fatty acids intake and objective and subjective cognitive performances in people aged 65-75 years

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Introduction

From age 55, one in two people reports cognitive complaints (HAS, 2014). When these complaints are not objectivised in a neuropsychological assessment, they are referred to subjective cognitive decline (SCD). The factors triggering these are not fully understood, but their presence increases the risk of developing a mild cognitive impairment (MCI; Liew et al., 2020).

- 6,6% change from SCD to MCI over 1 year
- 26,6% change from SCD to MCI over 4 years

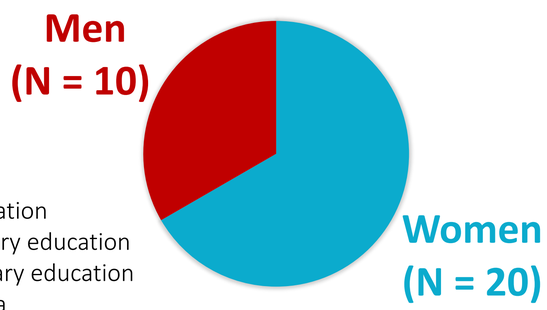
However, omega-3 polyunsaturated fatty acids (ω3) intake can have a protective effect on cognitive functions and seem to combat cognitive decline (Charbit et al., 2024).

Is there also a link between SCD and ω3 dietary intake?

Methodology

POPULATION

30 Belgian people aged between 65 and 75 years old
(μ = 69. 77 ± 3.8 SD)
with a socio-cultural level between 2 and 4*



*1 = primary education
2 = lower secondary education
3 = upper secondary education
4 = higher diploma

Inclusion criteria	Exclusion criteria
Age between 65 and 75	Neurological history
Stable state of health	Psychiatric history

MATERIAL

Proposed in 1 session of 2 hours

Neuropsychological evaluation		
Global cognitive function (Mini Mental State)	**Episodic memory** (RL/RI 16)	**Planification** (Tower of London)
Conceptualisation and praxis (Clock test)	**Lexical retrieving** (Verbal fluency)	**Verbal inhibition** (Stroop Victoria)
Working memory (Numbers memory)	**Visuo-constructive skills** (Rey's Figure)	**Reactive flexibility** (Trail Making Test)
Naming (Lexis 64)		**Attention** (3 matrices)

Dietary intake of ω3 [alpha-linolenic acid (ALA), eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA)], was determine with a specific food frequency questionnaire (Herter-Aeberli et al., 2019). Information on SCD was collected with anamnestic questions assessing memory, language and attention/executive complaints.

Results

Descriptive statistics

	ALA	EPA	DHA	Total ω3
N	30	30	30	30
Median	.226 g/day	.016 g/day	.027 g/day	.341 g/day
Std. Deviation	.468 g/day	.019 g/day	.048 g/day	.493 g/day
Minimum	$8.6X10^{-4}$ g/day	.003 g/day	.006 g/day	.011 g/day
Maximum	2.215 g/day	.078 g/day	.232 g/day	2.426 g/day

Correlations

Note : Correlations and graphs made with an in house developed Python script, all tests one-tailed, for negative/ positive correlation, Spearman's rho.
Only parameters with a significant correlation are shown in the graphs. *p <.05, **p <.01

Discussion

As already demonstrated in the literature, the results show a link between ω3 intake and objective cognitive performances (Erhardt et al., 2021) but also, and in an unprecedented way, this was highlighted with the complaints - particularly language complaints. In addition, links appear to exist between the type of complaint and associated cognitive performance. This pilot study therefore demonstrates that dietary intake of ω3 can play a role in SCD, which may be an initial phase of cognitive decline, underlining the interest for health education to prevent neurocognitive disorders at an early stage. However, in our study, SCD were measured using anamnestic questions. It would be interesting to create a tool for measuring them in a standardised way and to increase the number of subjects in this pilot study to further investigate the link between ω3 and subjective cognition.

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