Supplementary Material

Association Between Cognition, Health Related Quality of Life, and Costs in a Population at Risk for Cognitive Decline

Supplementary Table 1. Unit prices (€; [1]) for each medical care type

	Visit/day	Unit prices (€)*
Physician, public health care	Visit	117
Doctor, hospital care (outpatient)	Visit	280
Doctor, occupational health care	Visit	55
Doctor, private clinic	Visit	50
Doctor, visit at home	Visit	179
Nurse, occupational health care	Visit	30
Nurse, public health care	Visit	50
Nurse, visit at home	Visit	117
Hospital care (inpatient)	Day	785

*2015 Prices (converted from 2011 to 2015)

[1] Kapiainen S, Väisänen A, Haula T, Terveyden-ja sosiaalihuollon yksikkökustannukset Suomessa vuonna 2011, http://www.julkari.fi/bitstream/handle/10024/114683/THL_RAPO3_2014_web.pdf?sequence=1, Accessed November 8.

Supplementary Table 2. Mean scores over time (using all imputed datasets)

	Baseline mean (SD)	12 months mean (SD)	24 months mean (SD)
Outcomes			
HRQoL utilities	0.77 (0.12)	0.77 (0.12)	0.77 (0.12)
Total costs*	974 (2134)	910 (2860)	1081 (2317)
Total costs, transformed	5.87 (1.46)	5.82 (1.42)	5.87 (1.56)
Independent variables			
Cognition	0.02 (0.57)	0.16 (0.64)	0.24 (0.67)
ADL score	18.0 (2.5)	18.4 (3.1)	18.6 (3.4)
ZUNG score	33.8 (7.4)	33.4 (7.6)	33.3 (7.8)

*Costs from the last 12 months, including 'zero- costs'

Supplementary Table 3. Mean change scores between the timepoints (using all imputed datasets)

|	Change 0 – 12 (n=1,048)	Change 12-24 (n=942)	Change 0-24 (n=72)
	Mean change (SD), range	**Mean change (SD), range**	**Mean change (SD), range**
Outcomes			
HRQoL utilities	-0.002 (0.09), -0.352 to 0.307	-0.01 (0.10), -0.354 to 0.415	0.007 (0.11), -0.338 to 0.257
Total costs	-63 (3477), -31485 to 75781	205 (3474), -73194 to 29420	161 (2363), -9838 to 8167
Total costs, transformed	-0.04 (1.55), -6.04 to 7.97	0.06 (1.52), -5.46 to 5.23	0.001 (1.72), -5.46 to 5.23
Independent variables			
Cognition	0.12 (0.31), -1.24 to 1.49	0.07 (0.27), -1.28 to 0.94	0.12 (0.34), -1.03 to 1.04
ADL score	0.4 (2.0), -9 to 30	0.1 (2.2), -28 to 18	0.7 (2.2), -6 to 13
ZUNG score	-0.4 (5.5), -30 to 23	0.04 (5.5), -27 to 28	-0.7 (6.9), 26 to 35

Supplementary Table 4. Results of the mediation analysis examining ADL and cognition, and depressive symptoms and cognition (obs. = 2,062)

| Mediation testing of ADL				Mediation testing of depressive symptoms			
	Coefficient	**SE**	**p**		**Coefficient**	**SE**	**p**
*Step 1 Dependent (HRQoL utility change) = independent (cognition change)**							
Cognition	0.015	0.007	0.033	Cognition	0.015	0.007	0.033
Constant	-0.007	0.002	0.002	Constant	-0.007	0.002	0.002
Step 2 Dependent (ADL change/ ZUNG change) = independent (cognition change) [†]							
Cognition	-0.325	0.159	0.041	Cognition	-1.125	0.433	0.009
Constant	0.322	0.049	<0.001	Constant	-0.057	0.133	0.668
Step 3 Dependent (HRQoL utility change) = independent (cognition change + ADL change/ ZUNG change) [‡]							
Cognition	0.013	0.007	0.062	Cognition	0.010	0.007	0.138
ADL	-0.006	0.001	<0.001	ZUNG	-0.004	0.0004	<0.001
Constant	-0.005	0.002	0.029	Constant	-0.007	0.002	0.001
Total effects, indirect effects, and direct effects							
Total effect (c' + ab)	0.015	0.007	0.033	Total effect	0.015	0.007	0.033
Indirect effect (ab or c-c')	0.002	0.001	0.052	Indirect effect	0.005	0.002	0.011
Direct effect (c')	0.013	0.007	0.062	Direct effect	0.010	0.007	0.138

*Displayed in Supplementary Figure 1A as path c; [†]Displayed in Supplementary Figure 1B as path a; [‡]Displayed in Supplementary Figure 1B as path c'

Supplementary Figure 1. A, B) Mediation model graphical representation (ADL given as example).

A
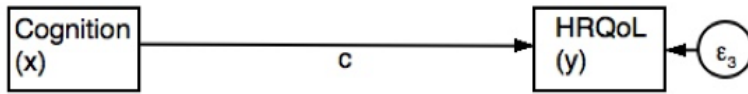
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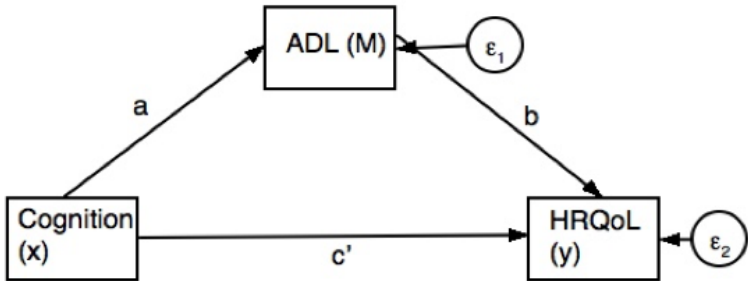
Search string used to retrieve relevant articles in PubMed

(association [tiab] OR correlation [tiab] OR relation* [tiab] OR interaction [tiab]) AND ("Cognition"[Mesh] OR Cognition [Title] OR cognitive decline [Title] OR cognitive impairment[Title]) AND ("Quality of Life"[Mesh] OR quality of life [Title] OR QoL [Title]OR HRQoL [Title] OR costs [Title] OR utilities [Title]) AND ("Aged"[Mesh] OR elderly [tiab] OR older adults[tiab])

Syntax for univariable and multivariable analysis using change scores

Univariable analysis using utilities as outcome and cognition as independent variable (example)

mi estimate: mixed Utilities_change Cognition_change || subject_id:

Multivariable analysis using utilities as outcome (example)

mi estimate: mixed Utilities_change Sex Age Education Cognition_change ADL_change ZUNG_change Intervention_allocation || subject_id: