

19th 한국노년신경정신약물학회

# Caregiving for a spouse with cognitive impairment

Effects on nutrition and other lifestyle factors



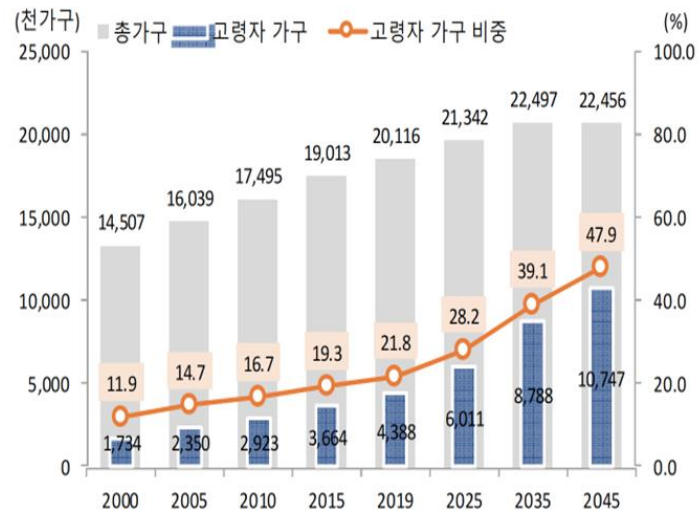
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전소연



# Background

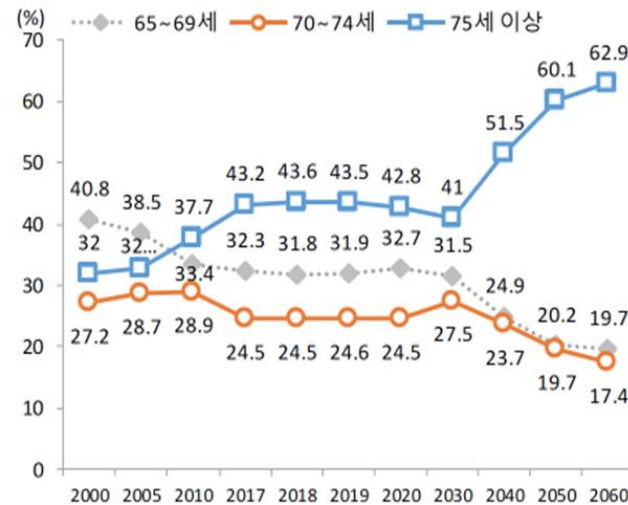
- An increase in elderly couples and the prevalence of dementia

<elderly household transition>



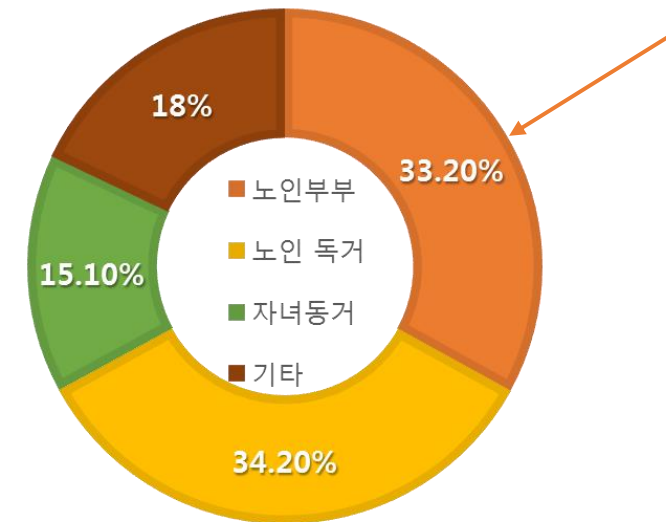
자료 : 통계청, [장래가구특별추계], 2019

<composition of elderly people by age group>



자료 : 통계청, [장래가구특별추계], 2019

<Composition of household type for the elderly>



자료 : 통계청, 2019 고령자 가구 통계

# Background

- Impact of dementia caregiving for spouse caregiver

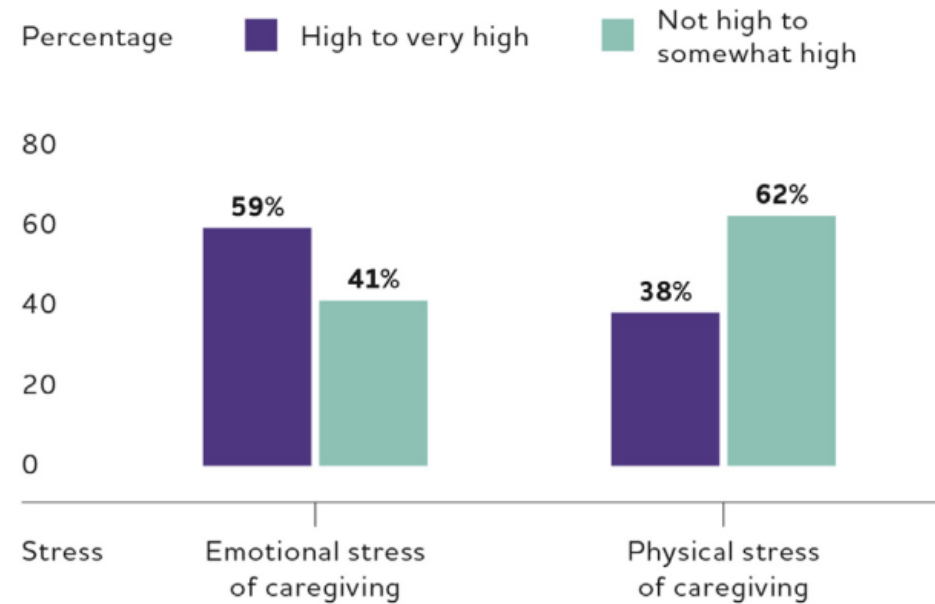


Fig. 9. Proportion of Alzheimer's and dementia caregivers who report high to very high emotional and physical stress due to caregiving. Created from data from the Alzheimer's Association.<sup>A17</sup>

# Background

- Impact of dementia caregiving for spouse caregiver

Table 3. Risk of Incident Dementia in 2,442 Married Older Adults as a Function of Whether Spouse Had Dementia, Adjusted for Covariates: Total Sample and Stratified According to Spouse's Sex

Predictor Variable	Hazard Ratio (95% Confidence Interval)		
	Total Sample	Husband as Index Subject	Wife as Index Subject
Having spouse with dementia	6.01 (2.23–16.17)	11.93 (1.67–85.52)	3.66 (1.15–11.61)
Female	0.80 (0.61–1.03)	—	—
Age at baseline interview	1.06 (1.01–1.12)	1.02 (0.98–1.07)	1.15 (1.06–1.24)

➔ A subject whose spouse experienced incident dementia onset had a 6 times greater risk for dementia as subjects whose spouses were dementia free

Table 1. Reference for Risk Factors Associated with Caregiver Status and Cognitive Decline and Dementia

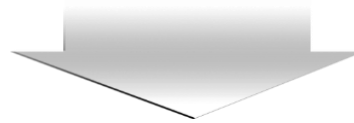
Risk Factors	Reference number	
	For Caregiver Status	For Cognitive Decline or Dementia
Caregiver status	—	13–18,20,21,87,101
Social isolation, loneliness	10,24,25	26–28
cognitive stimulating activities		
Depression and chronic stress	11,18,29	30–35
Sleep	37	36
Health habits		27,39,40,47–49,52
Diet, physical activity	41–46,50,51,65	
Stress hormones and cortisol	12	34,57,58,60
Obesity	43,65–69	16,61–64,90
Hyperinsulinemia	16,66,75	72–74,77–79
Chronic inflammation	86–88	80–83,85
Hypertension	92	89
Cholesterol	93	89–91
Combined metabolic and metabolic syndrome	41,42,104	82,94–96

# Objects



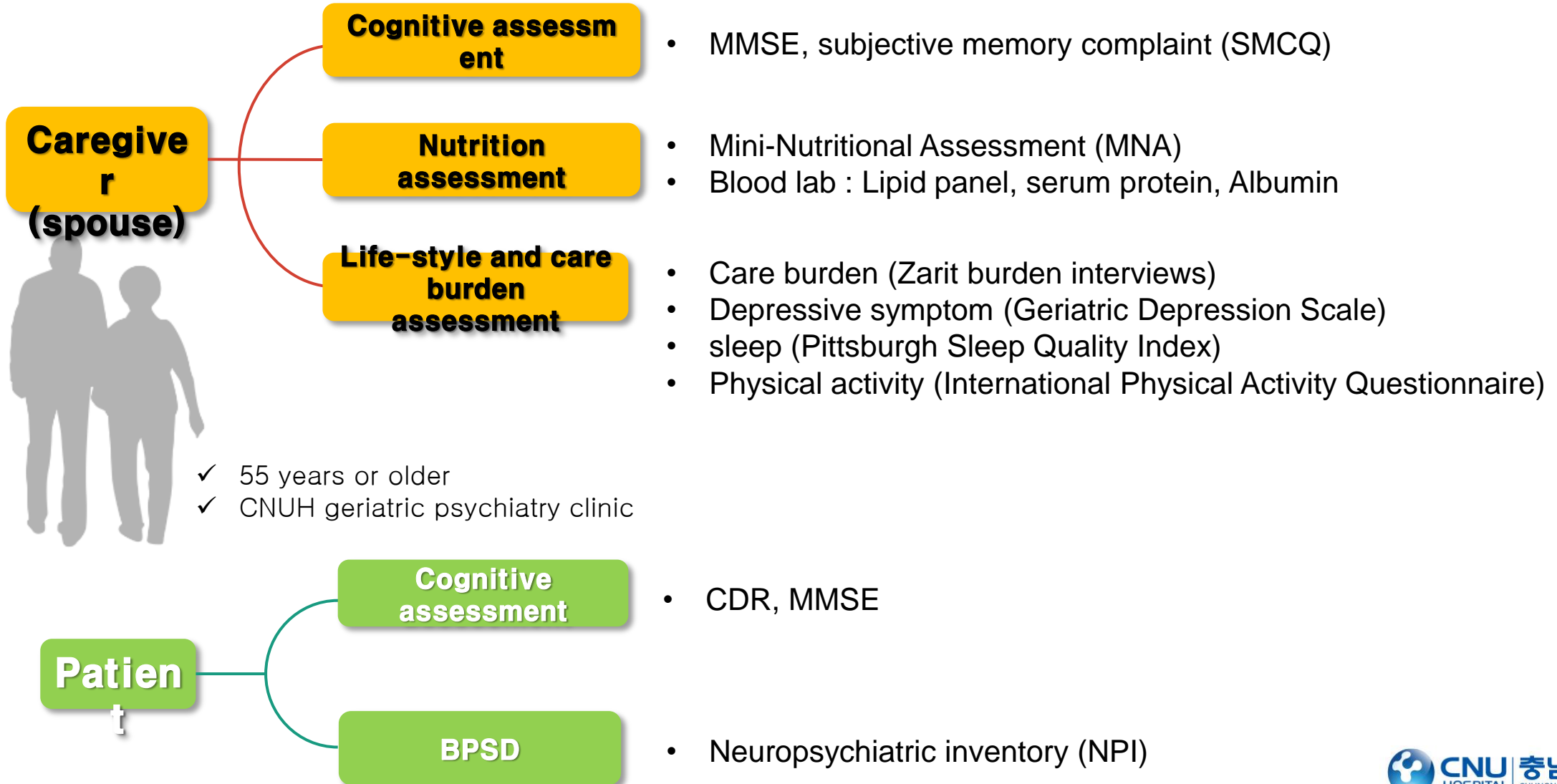
**Does Caring for a Spouse with Dementia Promote Cognitive Decline?**

**The effects of caring for a spouse with dementia on the modifiable risk factors for cognitive decline ?**



**Depression, physical activity, sleep, diet**

# Method



# Results

## Subjects` characteristics

	Spouse of Non-dement ed patients (n=20)	Spouse of patient with dementia (n =31)	Total (N=51)	<i>p</i> -value
Age	72.1 ± 6.4	74.4 ± 7.4	73.5 ± 7.0	0.248
Sex, F (%)	13 (65.0%)	20 (64.5%)	33 (64.7%)	0.998
Educational year	9.3 ± 4.9	8.7 ± 4.6	8.9 ± 4.7	0.691
Household(only couple)	20 (100.0%)	30 (96.8%)	50 (98.0%)	1.000
Types of care (caring alone)	20 (100.0%)	25 (80.7%)	45 (88.2%)	0.112
CDR (patients) 0/0.5/1/2	7(35.0%)/13(65.0%)/0(0 %)/0 (0%)	0 (0%)/7(22.6%)/16(51. 6%)/8(25.8%)	7(13.7%)/20(39.2%)/16( 31.4%)/8(15.7%)	< 0.001*
MMSE (patients)	24.5 ± 2.9	16.4 ± 4.8	19.5 ± 5.8	< 0.001
NPI - total	17.8 ± 25.0	26.2 ± 15.5	23.1 ± 19.7	0.223
NPI - pain	7.2 ± 6.9	13.4 ± 7.8	11.1 ± 8.0	0.009*

# Results

	Spouse of Non-demented patients (n=18)	Spouse of patient with dementia (n=30)	Total (N=48)	p-value
Care burden (ZBI)	20.0 ± 16.5	44.5 ± 20.1	35.2 ± 22.1	< 0.001*
PSQI	7.4 ± 3.9	9.3 ± 3.4	8.5 ± 3.7	0.069
MMSE	25.4 ± 3.0	25.0 ± 3.2	25.2 ± 3.1	0.620
GDS	9.2 ± 5.8	15.7 ± 7.3	13.2 ± 7.4	0.001*
MNA	22.0 ± 2.3	19.5 ± 3.3	20.4 ± 3.1	0.006*
IPAQ	3034.2 ± 3054.0	2763.2 ± 2599.3	2871.6 ± 2762.8	0.738
Serum albumin	4.8 ± 0.3	4.6 ± 0.2	4.6 ± 0.2	0.975
Triglyceride	146.5 ± 62.3	174.9 ± 129.4	163.7 ± 108.3	0.301
HDL-chol	56.2 ± 10.2	48.5 ± 10.2	51.5 ± 10.8	0.011
LDL-chol	104.8 ± 32.7	98.7 ± 33.5	101.1 ± 33.0	0.523

- PD (n=76, age = 61.3) : 26.5 ± 18.7 (*Pablo et al., 2007*)
- Chronic liver disease (n=50, age = 56.9) : 22.4±12.6 (*Douglas et al., 2015*)
- Cancer (n =212, age = 44.6) : 36.5±12.6 (*Rha et al., 2015*)

## 영양불량지표 점수 (Malnutrition Indicator Score)

- 24~30 점 ☐ 정상
- 17~23.5 점 ☐ 영양불량 위험 있음
- < 17 점 ☐ 영양불량



# Results

## Regression for the MMSE of care-recipient vs. lifestyle factors and nutritional blood biomarker

Variable of SCGs	MMSE of care-recipient			
	$\beta$	$T$	$p^a$	$p^b$
<i>Lifestyle factors</i>				
GDS	-0.593	-4.471	<0.001* <sup>†c</sup>	
MNA	0.315	2.225	0.031*, <sup>c</sup>	
PSQI	-0.287	-1.890	0.065 <sup>c</sup>	
IPAQ	0.214	1.366	0.179	
<i>Nutritional blood biomarker</i>				
Serum albumin	-0.169	-1.106	0.275	0.292
Triglyceride	-0.310	-2.155	0.036* <sup>c</sup>	0.079
HDL cholesterol	0.383	2.613	0.012* <sup>†c</sup>	0.044*
LDL cholesterol	0.064	0.399	0.692	0.525

<sup>a</sup>Adjusted for age and sex of SCG and for education years of care-recipient.

<sup>b</sup>Adjusted for age, sex, physical activity, VRS, BMI, and *APOE4* genotyping of SCG and for education years of care-recipient.

<sup>c</sup>Variables with a  $p$  value<0.1 according to linear regression analyses were selected for interaction analyses

\* $p < 0.05$  (before Bonferroni correction)

<sup>†</sup> $p < 0.013$  (Bonferroni-corrected  $p < 0.05/4 = 0.013$  was used as a statistical threshold)

# Results

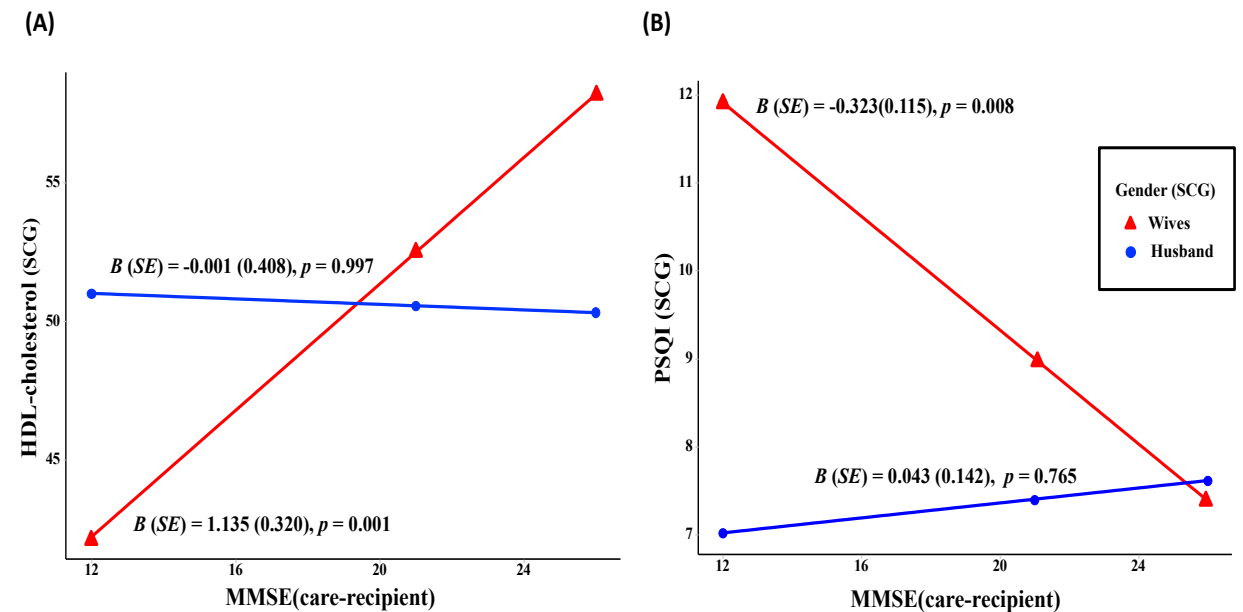
## Interaction analyses of the moderating effect of the gender on associations of MMSE of care-recipient with lifestyle factors and nutritional biomarkers

Variables	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i> <sup><i>a</i></sup>
Lifestyle factors				
MMSE <sup>b</sup> x gender → GDS	0.201	0.347	0.578	0.566
MMSE <sup>b</sup> x gender → MNA	-0.111	0.183	-0.605	0.548
MMSE <sup>b</sup> x gender → PSQI	0.400	0.189	2.113	0.041*
MMSE <sup>b</sup> x gender → IPAQ	- 164.131	142.304	-1.153	0.255
Nutritional blood biomarker				
MMSE <sup>b</sup> x gender → Triglyceride	3.831	5.504	0.696	0.490
MMSE <sup>b</sup> x gender → HDL cholesterol	- 1.137	0.500	-2.275	0.028*

<sup>a</sup> Adjusted for age of SCG and education years of care-recipient

<sup>b</sup> MMSE score of care-recipient

\*  $p < 0.05$  (before Bonferroni correction)



# Discussion



Elderly couple

❑ As the care-recipient's cognitive function declined, the spouse caregiver~

➤ Level of depression ↑, malnutrition risk ↑

- due to the increased caregiving burden, unhealthy dietary behaviors among SCGs
- shared their spouse's lifestyle, especially dietary pattern, for three decades or longer
- malnutrition : a modifiable risk factor for cognitive decline in late life

➤ HDL-cholesterol ↓

- Caregiving-related chronic stress
- Associated with cognitive decline or cardiovascular disease

❑ As the patient's cognitive function declined, unfavorable the lipid profile with spousal giver

# Discussion



Elderly couple

❑ The interaction between care recipient's cognition and gender had a significant effect on HDL-cholesterol and PSQI.

➤ Only in wives group,

- Wives reported more caregiving distress compared to husbands
- poor sleep quality (long and short sleep duration) had a significant association with low HDL-cholesterol among women, but not among men
- greater attention should be paid to the potential for cognitive deterioration and cardiovascular risk in wives who are SCGs

# Discussion

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- Selection bias

- : Elderly couple who visit National University Hospital Clinics

- Spousal caregiver who already had cognitive decline or poor ADL were excluded

**Thank you for your attention!**