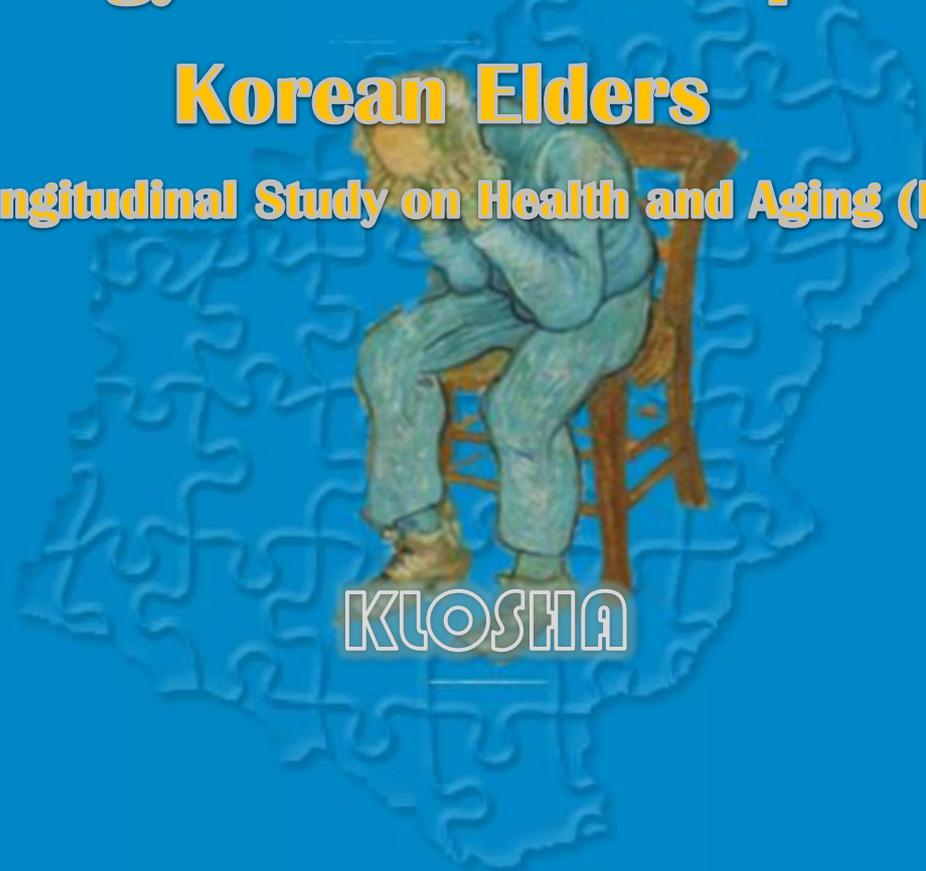


Epidemiology of Late Life Depression in Korean Elders

Korean Longitudinal Study on Health and Aging (KLOSHA)

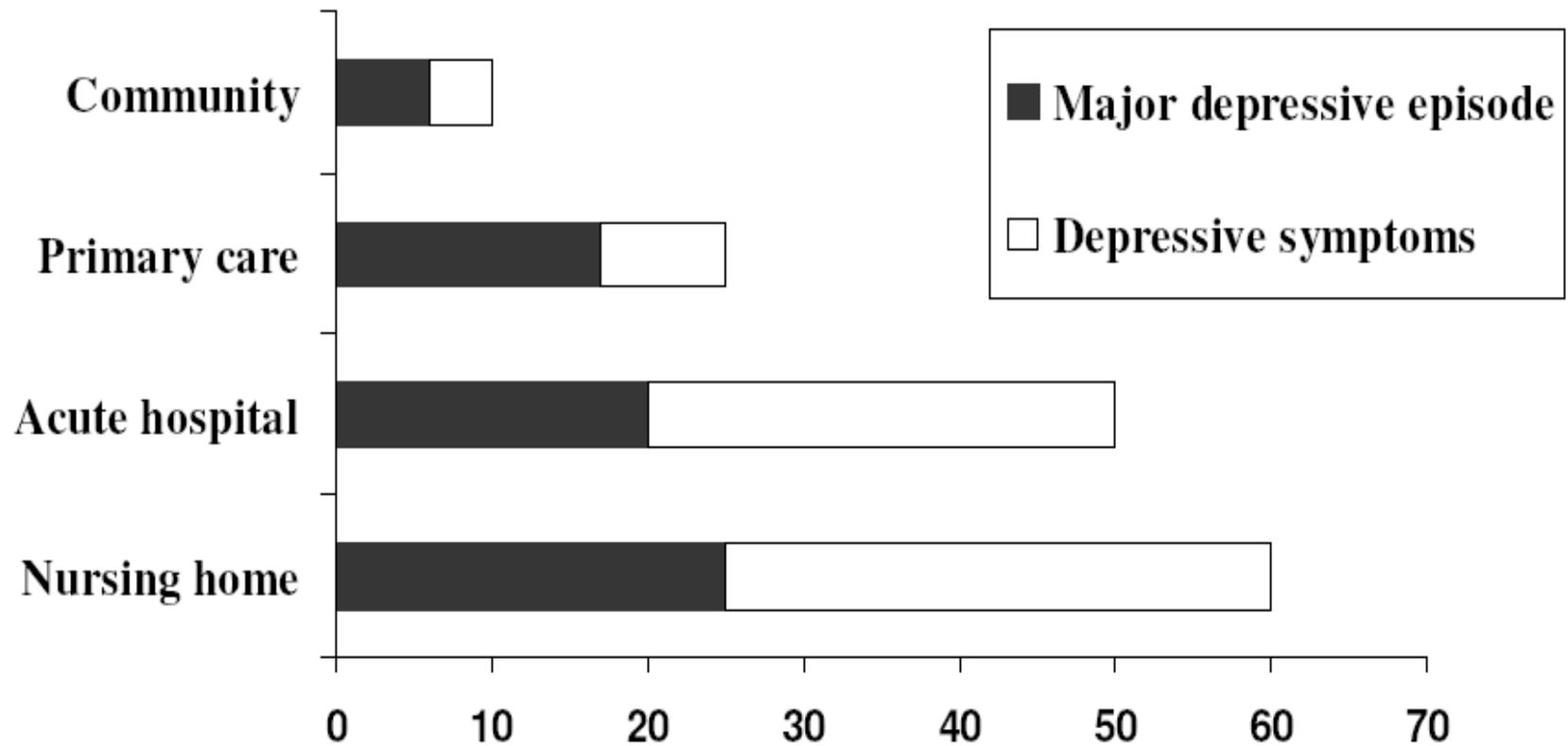


2009년 11월 27일

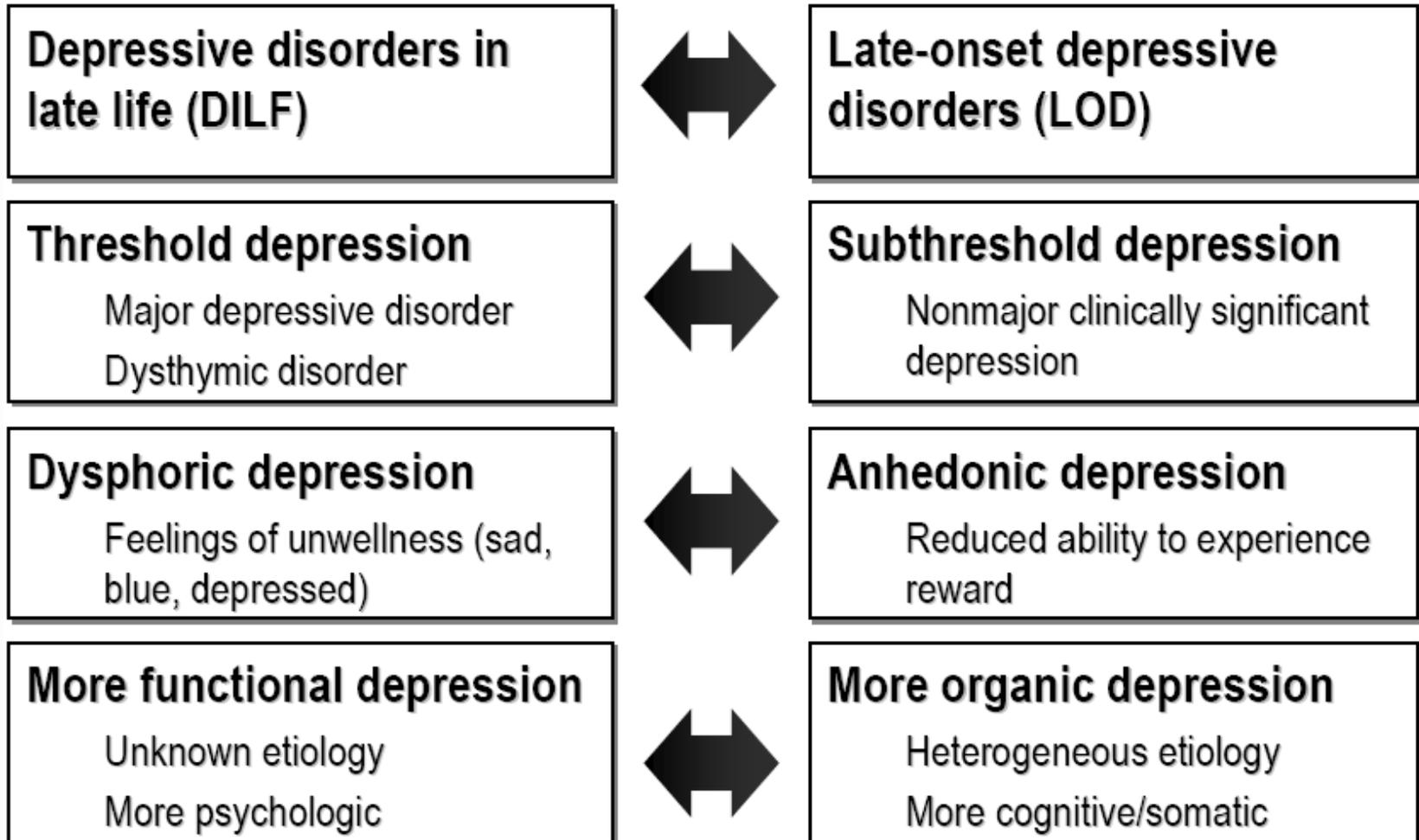
분당서울대학교병원 신경정신과 김기웅

Late Life Depression (LLD)

양성평생교육사업
연구사업
연구결과



Characteristics of LLD



Burden of LLD

TABLE 3. Weekly Hours and Yearly Cost of Informal Care Received by Respondents to a Nationally Representative Survey of Elderly Americans, by Number of Reported Depressive Symptoms in the Last Week (N=6,649)^a

Respondents Grouped by Number of Depressive Symptoms	Weekly Hours		Yearly Cost (\$)	
	Adjusted Number of Hours ^b	95% CI	Adjusted Cost ^c	95% CI
None (N=2,531)	2.9	2.8–3.1	1,240	1,200–1,330
1–3 (N=2,954)	4.3	4.1–4.4	1,840	1,750–1,880
4–8 (N=1,164)	6.0	5.7–6.2	2,570	2,440–2,650

Cost-effectiveness of Improving Primary Care Treatment of Late-Life Depression

Wayne J. Katon, MD; Michael Schoenbaum, PhD; Ming-Yu Fan, PhD; Christopher M. Callahan, MD; John Williams, Jr, MD, MHS; Enid Hunkeler, MA; Linda Harpole, MD, MPH; Xiao-Hua Andrew Zhou, PhD; Christopher Langston, PhD; Jürgen Unützer, MD, MPH; for the IMPACT Investigators

Arch Gen Psychiatry. 2005;62:1313-1320

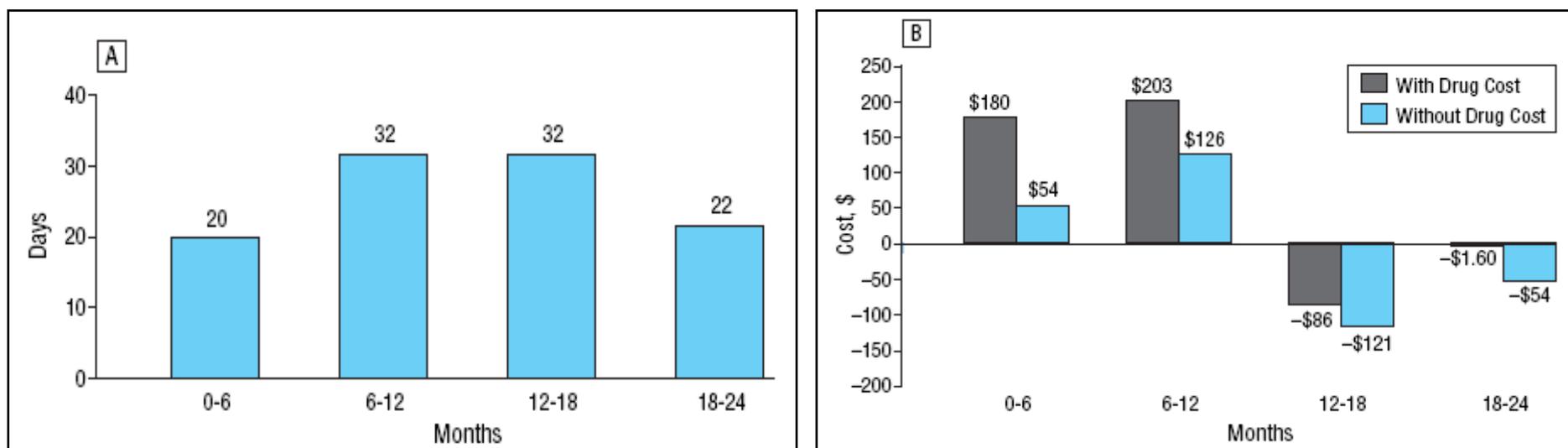
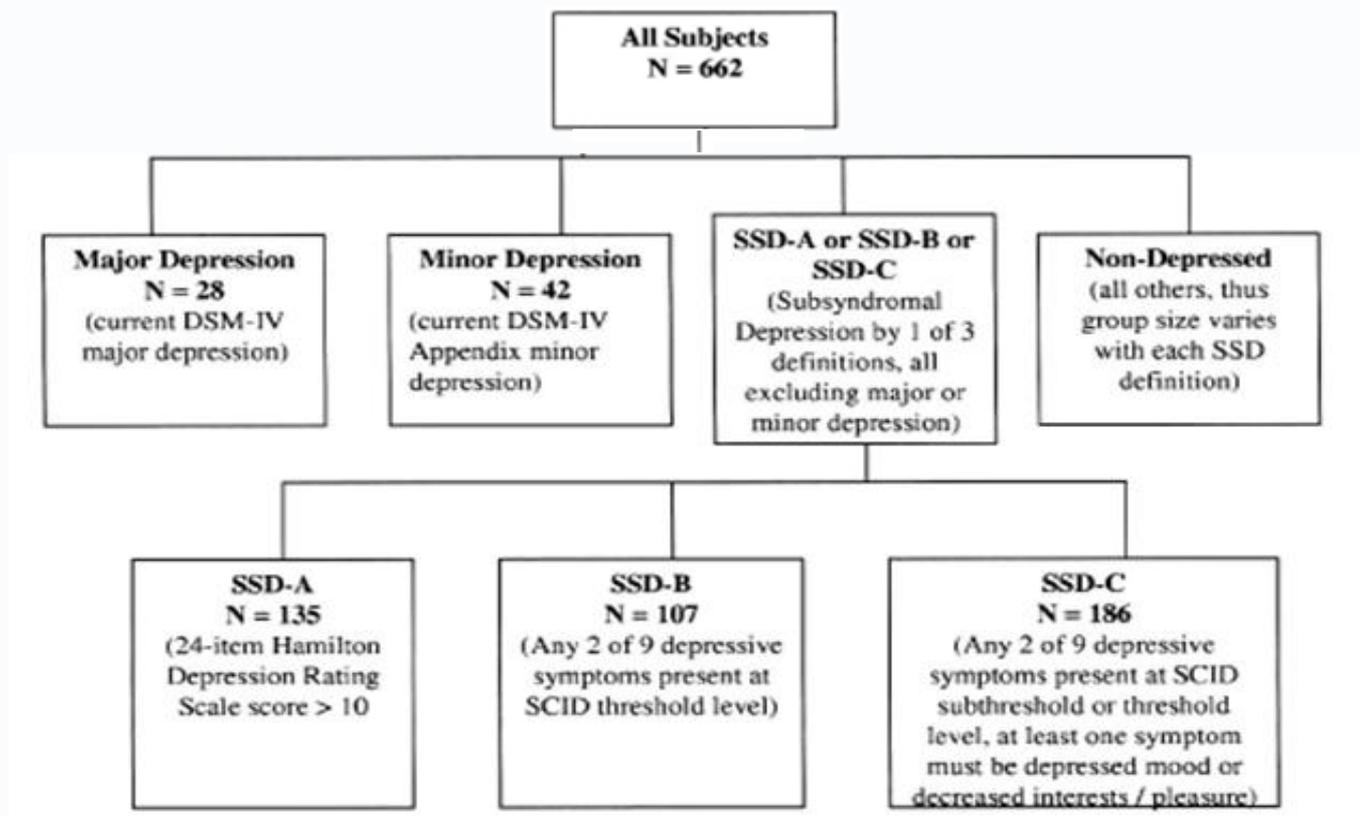


Figure 2. Incremental depression-free days by 6-month period (intervention vs usual care) (A) and incremental total outpatient costs by 6-month period (B).

Subsyndromal Depression (SSD)

- **Variously labeled**
 - Minor depression, Subthreshold depression, Subsyndromal depression
- **Nonmajor but clinically significant**
 - Increased social dysfunction and disability (Lyness, 1999; Lavretsky, 2002)
 - Increased risk of suicide (Saden and Bona, 2000)
 - Increased risk for future mood disorders (Judd et al, 1997)
 - Adverse clinical outcomes (Wells et al., 1989; Broadhead et al., 1990; Judd et al., 1996; Kessler, 1997)
 - Increased uses of medical and mental health services (Johnson, 1992; Wagner, 2000)
- **Prevalent**
 - 2-3 times more prevalent than MDD in late life

Variable Frequency of SSD by Diagnostic Criteria



Depressive disorders	MDD	MnDD	SSD-A	SSD-B	SSD-C
Frequency	4.2%	6.3%	20.4%	16.2%	28.1%

An Overview of the Korean Longitudinal Study on Health and Aging

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Kwang-Il Kim, MD,²
Moon-Ku Han, MD, PhD,³
In Young Yoon, MD, PhD,¹
Jong-Min Kim, MD, PhD,³
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Objective The Korean Longitudinal Study on Health and Aging (KLoSHA) was developed 1) to estimate the prevalence, incidence and progression of common geriatric diseases; 2) to determine the risk factors for common geriatric diseases and to develop preventive strategies by managing potentially modifiable determinants; 3) to investigate the influence of common geriatric diseases on the quality of life and general health status; 4) to evaluate the levels of health and functional status of Korean elderly persons.

Methods The KLoSHA was designed as a population-based prospective cohort study on health, aging and common geriatric diseases of Korean elders aged 65 years and over. The baseline study of the KLoSHA was conducted from September 2005 through September 2006 in Seongnam. Follow-up studies will be performed at 4-year intervals without an endpoint.

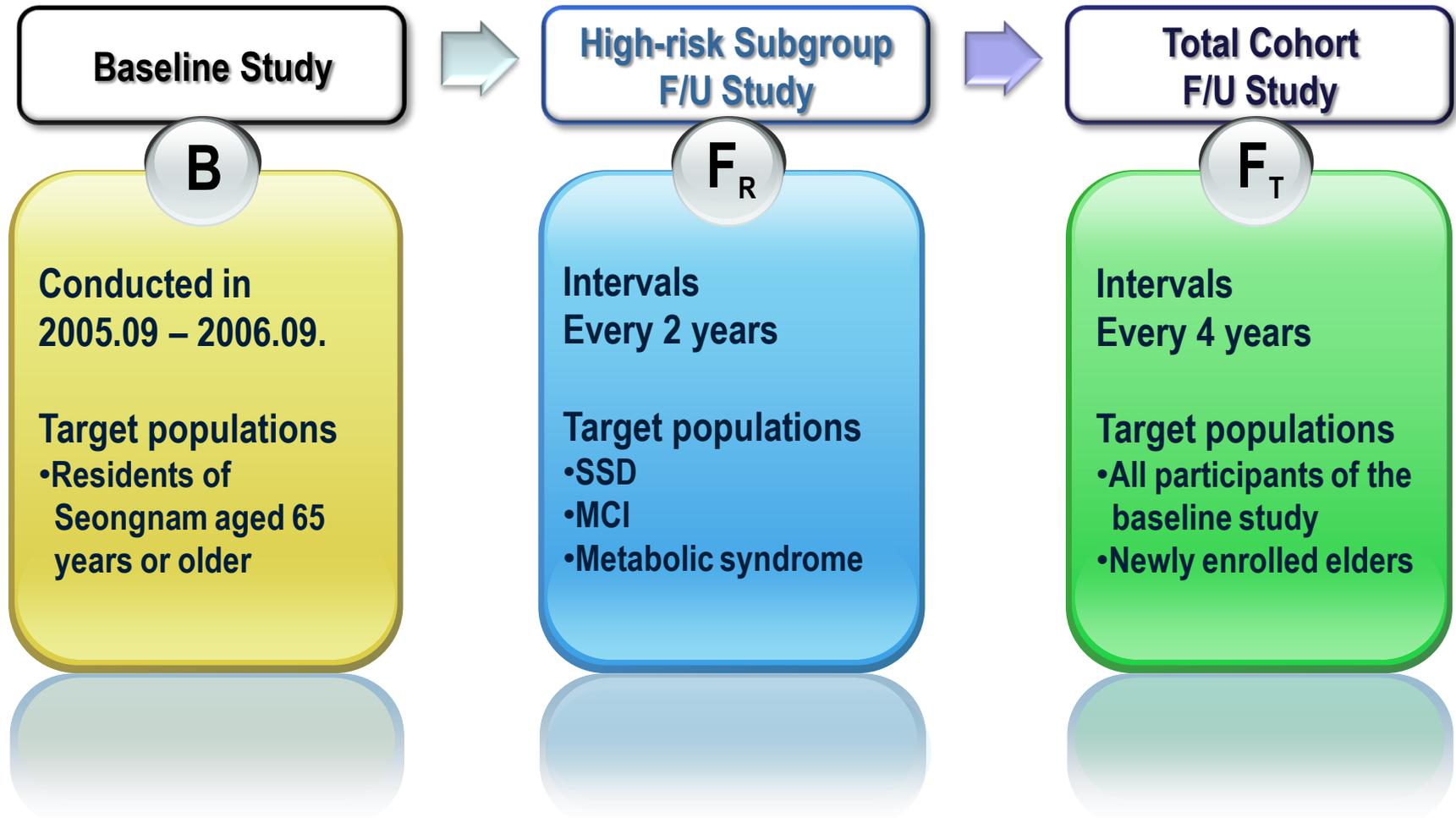
Results At the baseline study, 992 subjects (714 randomly sampled elderly subjects aged 65 years or over, 278 volunteers aged 85 years or over) were enrolled and completed the study. Prevalences and risk factors of common geriatric disorders in Korean elders were estimated, and the normative data of neuropsychological measures, general health parameters, and laboratory tests were drawn.

Conclusion The KLoSHA may not only provide comprehensive epidemiological data on the health status and common geriatric disorders of Korean elders, but also may stimulate comprehensive multidisciplinary and interdisciplinary researches on aging and geriatric disorders and contribute to policy formulation and planning of health management programs and social services in Korea.

KEY WORDS: Korean, Longitudinal study, Health, Aging, Cohort, Epidemiology.

Follow-up Schedule

KLOSHA



Criteria for LLD

KLOSHA

Symptoms	MDD	MnDD	SSD-A	SSD -B	SSD-C	SSD-D	SSD-E
Number	≥ 5	≥ 2	-	≥ 2	≥ 2	≥ 2	≥ 2
Hierarchy	+	+	-	-	-	+	+
Threshold	≈ 100%	≈ 100%	-	≈ 100%	-	-	≥ 50%
Scales	-	-	>cutoffs	-	-	-	-
Ref	APA 1994	APA 1994	Beekman et al. 1995 Snowdon et al. 1996 Chopra et al. 2005 da Silva et al. 2007	Judd et al. 1997 Judd et al. 1998	Lyness et al. 2006 McAvay et al. 2004	Lyness et al. 2006 McAvay et al. 2004	Park et al. 2008

Hierarchy: presence of core depressive symptoms (depressive mood or loss of interest)

Threshold: most of day, nearly every day” over 2–week period

Scales: CES-D or GDS or HAMD

Subjects

KLOSHA

	Men	Women	Total
Total	299 (100.0)	415 (100.0)	714(100.0)
Age (years)			
65-69	138 (46.2)	169 (40.7)	307 (43.0)
70-74	99 (33.1)	118 (28.4)	217 (30.4)
75-79	41 (13.7)	77 (18.6)	118 (16.5)
≥80	21 (7.0)	51 (12.3)	72 (10.1)
Education (years)			
0	16 (5.4)	132 (31.8)	148 (20.7)
1-6	67 (22.4)	147 (35.4)	214 (30.0)
≥7	216 (72.2)	136 (32.8)	352 (49.3)

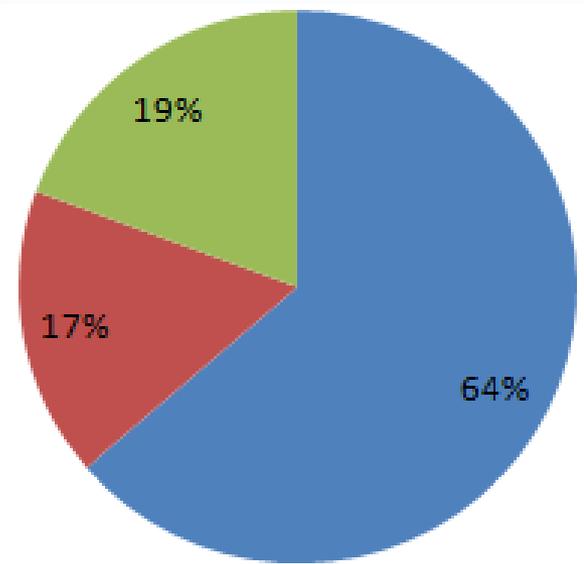
Prevalence of LLD

KLOSHA

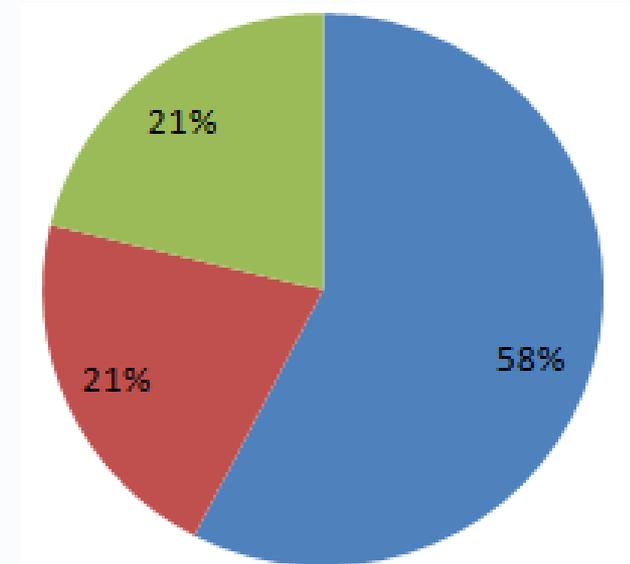
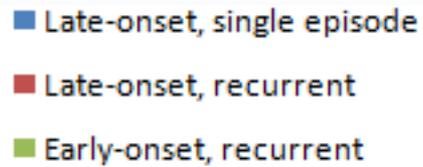
	MDD	MnDD	SSD-E	Depressive symptoms		
				CES-D \geq 16	GDS \geq 11	GDS \geq 17
Age (years)						
65-69	5.5 (3.3-8.7)	3.6 (1.8-6.3)	6.5 (4.0-9.9)	22.8 (18.1-27.5)	45.9 (40.3-51.5)	27.7 (22.7-32.8)
70-74	3.2 (1.3-6.5)	4.6 (2.2-8.3)	8.8 (5.4-13.3)	27.7 (21.7-33.7)	45.5 (38.9-52.2)	23.8 (18.1-29.5)
75-79	9.3 (4.8-16.1)	5.9 (2.1-11.8)	9.3 (4.8-16.1)	34.5 (25.8-43.1)	58.6 (49.7-67.6)	32.8 (24.2-41.3)
\geq 80	1.4 (0.0-7.5)	6.9 (2.3-15.5)	11.1 (4.9-20.7)	35.4 (23.8-47.0)	64.6 (53.0-76.2)	35.4 (23.8-47.0)
Gender						
Men	2.3 (0.9-4.7)	2.7 (1.2-5.2)	5.0 (2.8-8.1)	17.3 (13.0-21.7)	36.1 (30.6-41.5)	19.7 (15.2-24.3)
Women	7.0 (4.8-9.9)	6.1 (4.0-8.8)	10.4 (7.6-13.8)	34.7 (30.1-39.4)	59.6 (54.8-64.3)	34.2 (29.5-38.8)
Overall*	5.0 (3.6-6.8)	4.8 (3.4-6.6)	8.4 (6.47-10.5)	28.3 (24.9-31.6)	51.2 (47.5-54.9)	28.9 (25.5-32.3)

Subtypes of LLD

KLOSHA



Major depressive disorder



Minor depressive disorder

Lifetime and 12-Month Prevalence of DSM-IV Psychiatric Disorders Among Korean Adults

The Journal of Nervous and Mental Disease • Volume 195, Number 3, March 2007

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 Tongwoo Suh, MD, DrPH,† In-Won Chung, MD, PhD,‡ Jin Pyo Hong, MD, PhD,§
 Jae-Nam Bae, MD, PhD,|| Dong-Woo Lee, MD, PhD,¶ Jong-Ik Park, MD, PhD,#
 Seong-Jin Cho, MD, PhD,** Choong-Koung Lee, MD,†† and Bong-Jin Hahm, MD, PhD*



Characteristics	Major Depressive Disorder	
	Unadjusted OR	Adjusted OR (95% CI)
Gender		
Female	3.0***	2.4 (1.4–4.0)***
Male	1.0	1.0
Age, y		
18–24	0.9	0.5 (0.2–1.3)
25–34	1.0	1.0
35–44	0.6	0.6 (0.3–1.3)
45–54	1.7*	1.2 (0.6–2.6)
55–64	1.3	0.7 (0.3–1.7)
Place of residence		
Metropolitan	1.3	1.3 (0.6–2.7)
Urban	1.0	1.0
Rural	2.0	1.8 (0.7–4.5)
Education, y		
0–11	1.6	1.4 (0.7–2.8)
12	1.0	1
13–15	2.0*	2.6 (1.4–5.1)**
≥16	0.4*	0.5 (0.2–1.3)

Diagnoses	Lifetime			12-month		
	Male	Female	Total	Male	Female	Total
Affective disorders	2.7 (0.6)	6.9 (0.4)	4.8 (0.4)	0.9 (0.3)	3.2 (0.4)	2.1 (0.2)
Major depressive disorder	2.6 (0.6)	5.9 (0.5)	4.3 (0.4)	0.8 (0.3)	2.5 (0.4)	1.7 (0.2)
Dysthymia	0.1 (0.0)	0.9 (0.2)	0.5 (0.1)	0.1 (0.0)	0.6 (0.2)	0.4 (0.1)
Bipolar disorder ^c	0.0 (0.0)	0.3 (0.1)	0.2 (0.1)	0.0 (0.0)	0.3 (0.1)	0.1 (0.1)

Prevalence of major depressive disorder in the general population of South Korea

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Received 26 August 2004; revised 9 February 2005; accepted 22 February 2005

Point prevalence of major depressive disorders by sociodemographic characteristics

	<i>N</i>	Prevalence	95%CI
<i>Gender</i>			
Male	1842	3.2	[2.4–4.0]
Female	1877	4.0	[3.2–4.9]
<i>Age groups (yrs)</i>			
15–24	779	3.8	[2.4–5.1]
25–34	899	3.1	[2.0–4.2]
35–44	841	4.2	[2.8–5.5]
45–54	500	4.1	[2.3–5.8]
55–64	386	2.1	[0.7–3.6]
>=65	313	4.6	[2.3–7.0]

Cross-national difference in the prevalence of depression caused by the diagnostic threshold

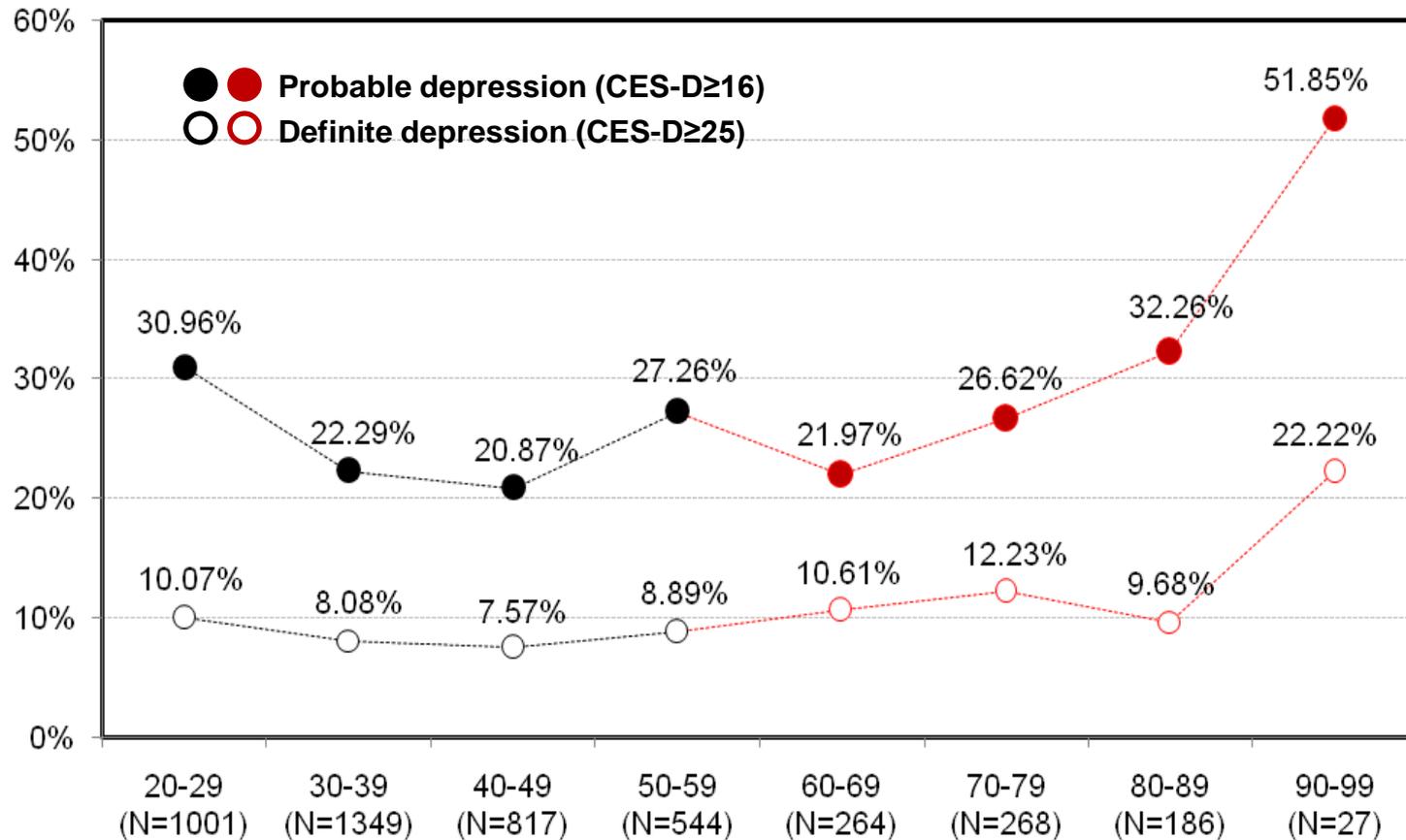
Sung Man Chang^a, Bong-Jin Hahm^{a,b,c}, Jun-Young Lee^{a,b}, Min Sup Shin^{a,b,c},
 Hong Jin Jeon^a, Jin-Pyo Hong^d, Hochang B. Lee^e,
 Dong-Woo Lee^f, Maeng Je Cho^{a,b,c,*}

Journal of Affective Disorders 106 (2008) 159–167

Symptoms of MDD ^b	Differential item functioning (DIF)			
	Mantel–Haenszel statistics		α_{MH}^a	
	Chi-square	<i>p</i> -value	Value	Direction
Depressed mood	77.5	<0.001 *	0.37	U.S.
Loss of interest	0.3	0.584	0.07	–
Appetite/weight	0.8	0.369	0.79	–
Sleep disturbance	0.8	0.387	0.90	–
Psychomotor change	4.1	0.044	0.79	–
Low energy	46.6	<0.001 *	2.38	Korea
Guilt/worthless	4.1	0.042	1.24	–
Concentration	202.5	<0.001 *	6.55	Korea
Thought of death	126.6	<0.001 *	0.30	U.S.

Prevalence of SSD-A by Age

KLOSHA



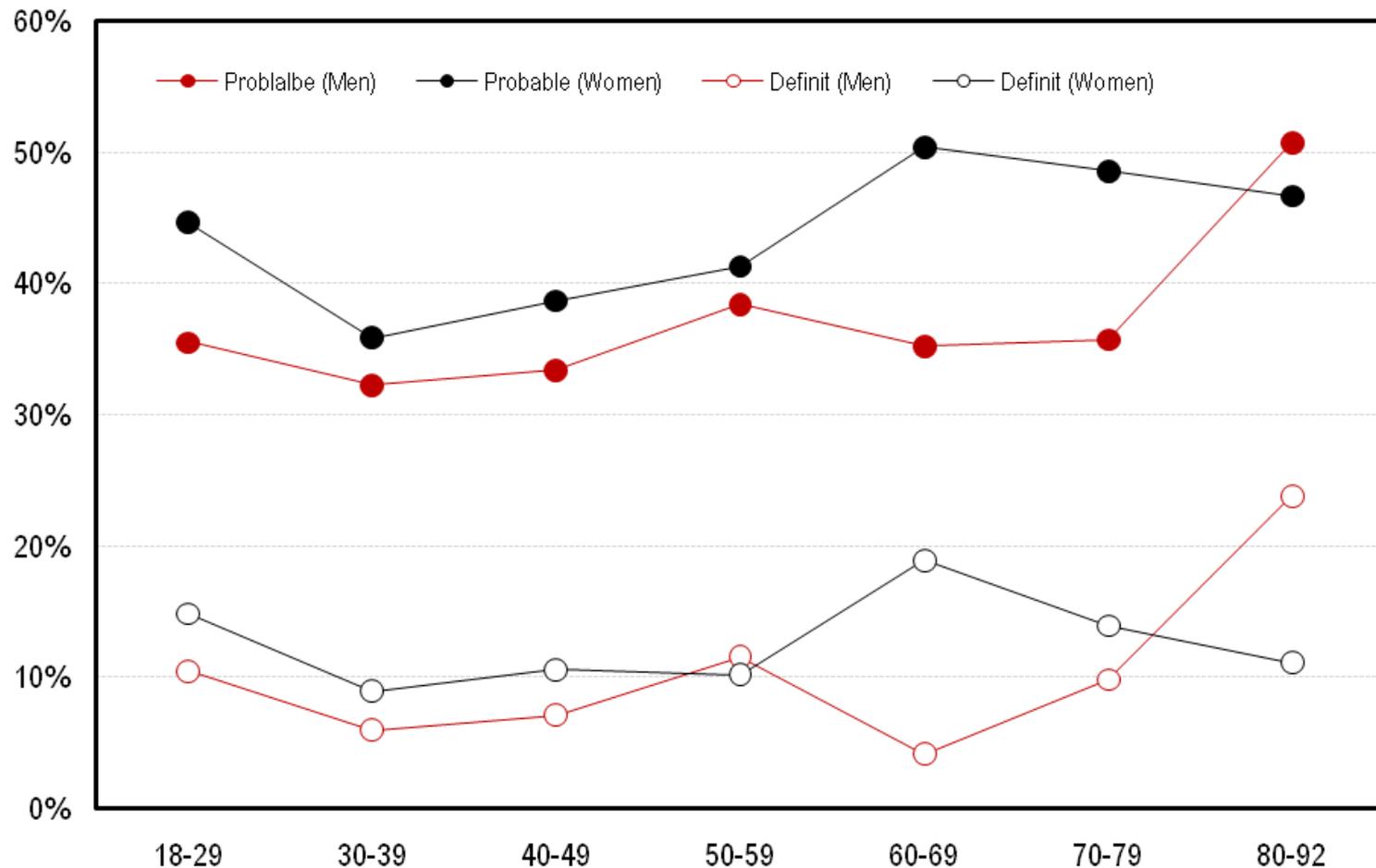
National Health and Health Behavior Examination Survey
(Cho et al. 1998).

Korean Longitudinal Study on Health and Aging
(Kim et al. 2006).

A Survey of Depressive Symptoms among South Korean Adults after the Korean Financial Crisis of Late 1997: Prevalence and Correlates

EUNKYUNG KIM, MS, SANGMEE AHN JO, PhD, JI-YUN HWANG, MS, CHOL SHIN, MD, PhD, DOH KWAN KIM, MD, PhD, EUN KYUNG WOO, MS, SUNG-SOO KIM, PhD, KYUNG RIM SHIN, EdD, AND INHO JO, PhD

Ann Epidemiol 2005;15:145–152.



Does Growing Old Increase the Risk for Depression?

Robert E. Roberts, Ph.D., George A. Kaplan, Ph.D.,
Sarah J. Shema, M.S., and William J. Strawbridge, Ph.D.

(Am J Psychiatry 1997; 154:1384–1390)

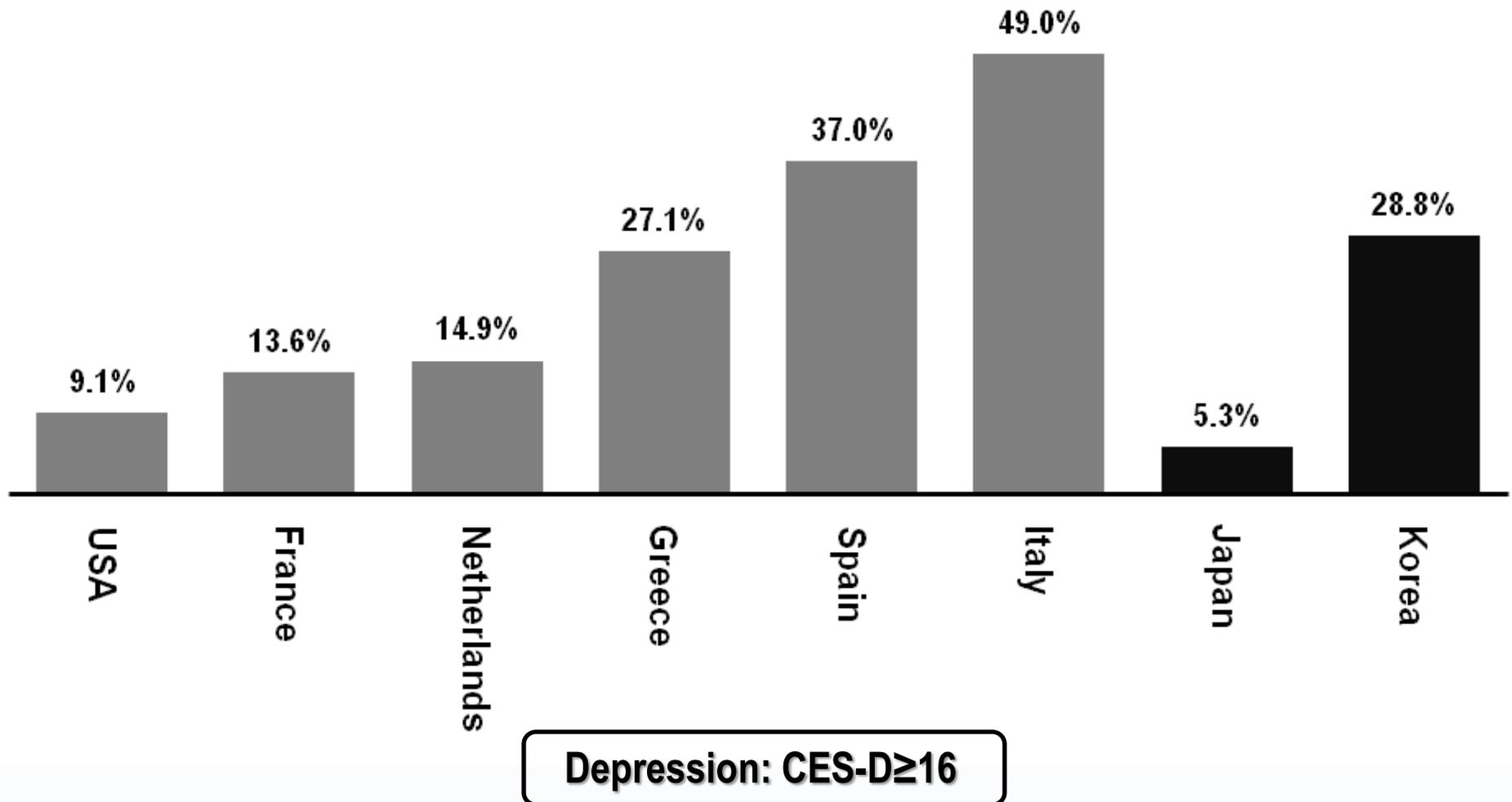
TABLE 3. Sequential Logistic Regression Models Showing Relation Between Age in 1994 and Depression in 1995, With Adjustment for 1994 Risk Factors, for 2,026 Community Residents Who Were 50 Years Old or Older in 1994^a

Model	Age Group (years)								
	60–69			70–79			≥80		
	Odds Ratio	95% Confidence Interval	p	Odds Ratio	95% Confidence Interval	p	Odds Ratio	95% Confidence Interval	p
I: crude (unadjusted)	1.07	0.65–1.78	0.79	1.42	0.85–2.34	0.18	2.35	1.28–2.60	0.006
II: model I adjusted for gender and marital status	1.09	0.65–1.81	0.74	1.49	0.89–2.47	0.13	2.46	1.48–4.09	0.004
III: model II plus adjustments for education and financial difficulties	1.13	0.68–1.88	0.64	1.58	0.94–2.66	0.09	2.50	1.29–4.82	0.006
IV: model III plus adjustments for chronic medical conditions and activities of daily living and cognitive problems	0.93	0.54–1.57	0.77	1.03	0.61–1.76	0.91	1.30	0.63–2.62	0.48
V: model IV plus adjustments for life events and neighborhood quality	0.95	0.55–1.62	0.84	1.08	0.60–1.92	0.80	1.45	0.70–2.98	0.32
VI: model V plus adjustments for social isolation and social support	0.98	0.57–1.68	0.93	1.08	0.60–1.94	0.79	1.42	0.68–2.94	0.35

^aExcludes subjects who were depressed in 1994.

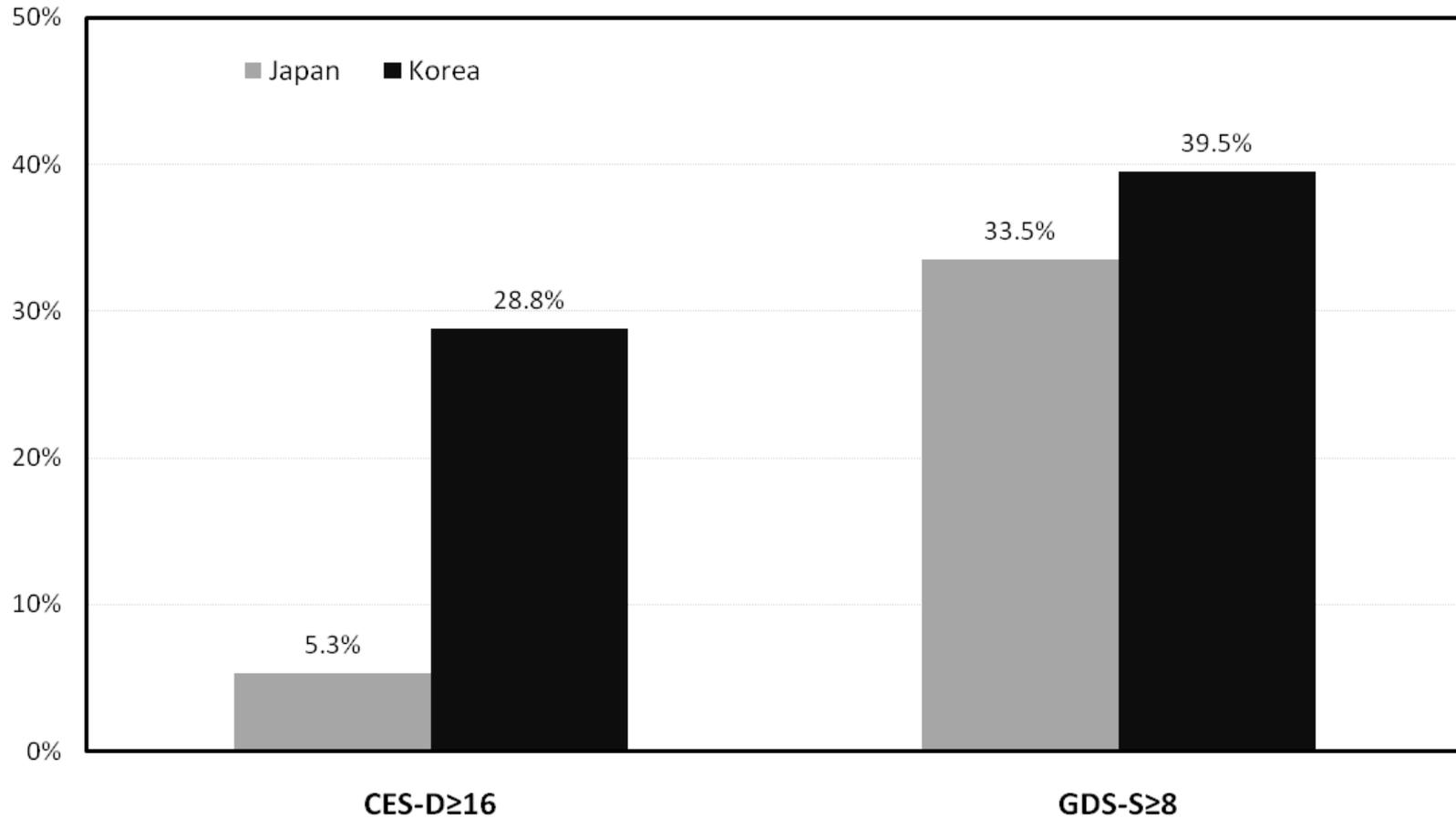
Crossnational Comparison of Depressive Symptoms

Depression: CES-D ≥ 16



Crossnational Comparison of Depressive Symptoms

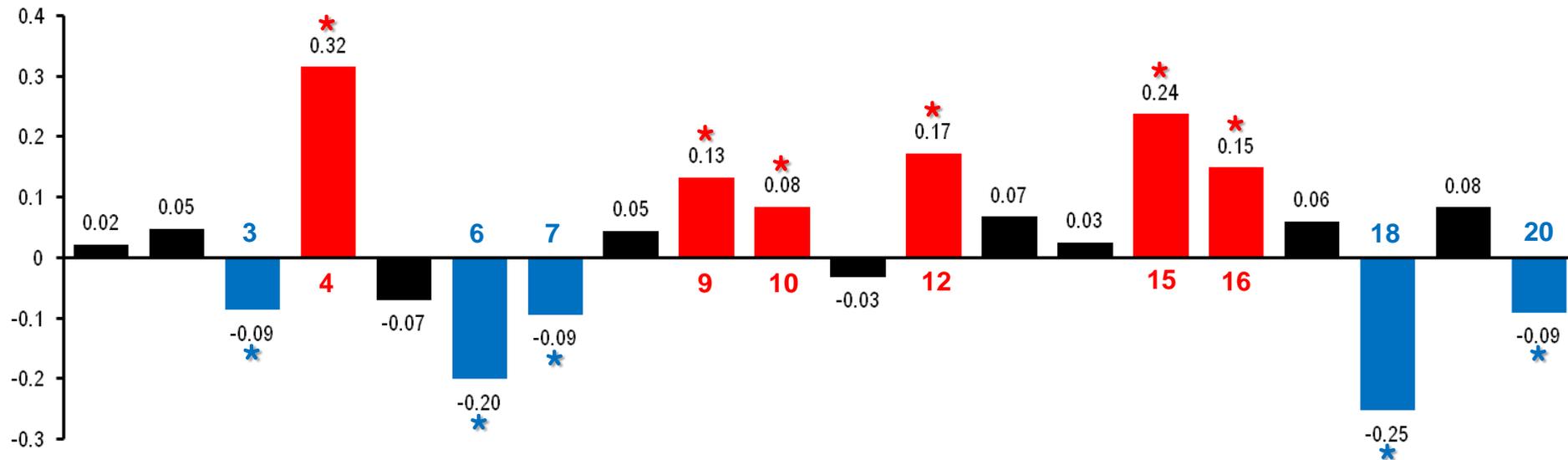
이성희, 김민준, 최지현
2023.10.10



Crosscultural Differences

KLOSHA

($p < 0.0025$, partial correlation adjusting age, gender, education, total CES-D score and diagnosis)

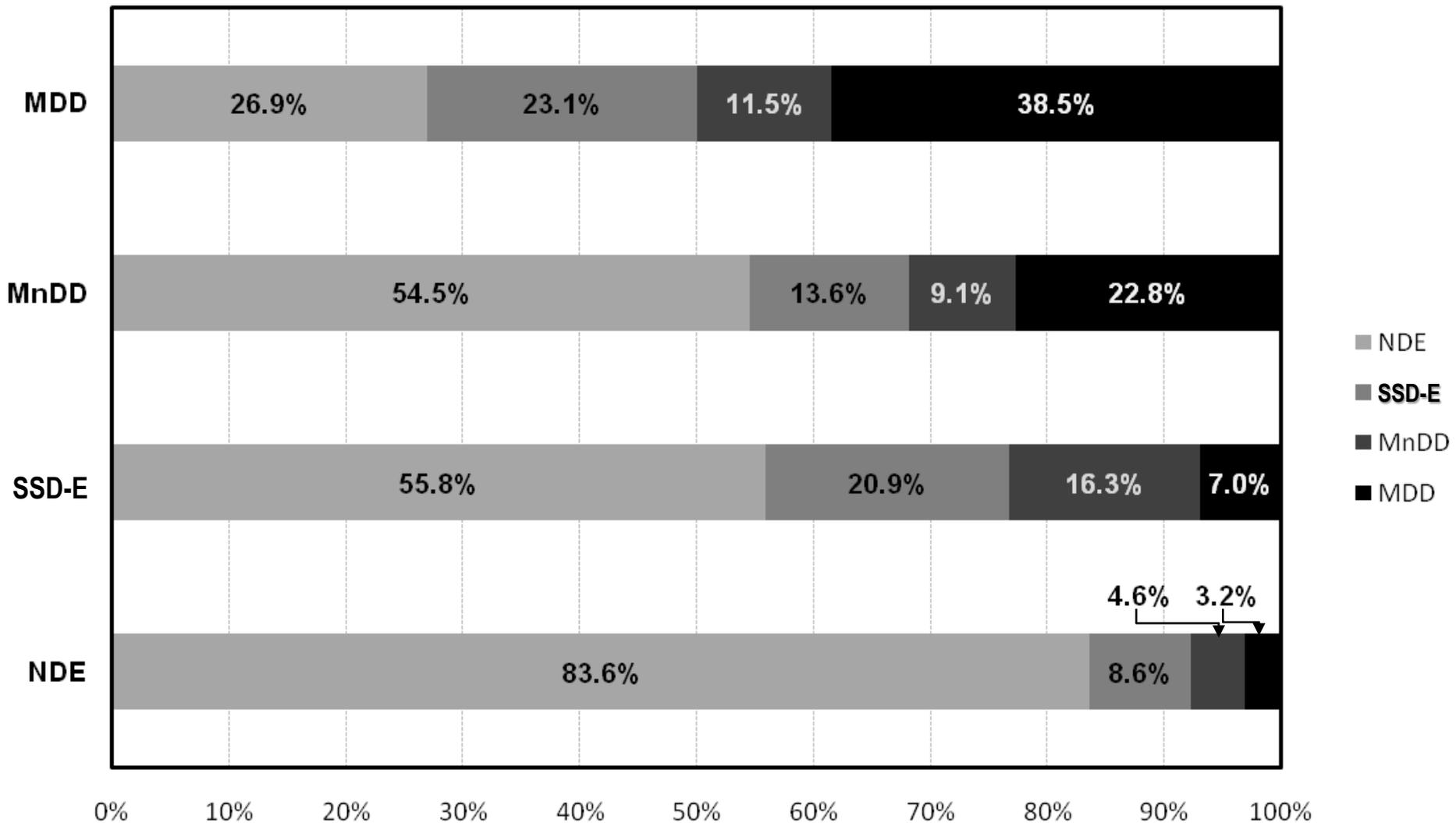


- 4. I felt I was just as good as other people
- 9. I thought my life had been a failure
- 10. I felt fearful
- 12. I was happy
- 15. People were unfriendly
- 16. I enjoyed life

- 3. I felt that I could not shake off the blues
- 6. I felt depressed
- 7. I felt everything I did was an effort
- 18. I felt sad
- 20. I could not get going

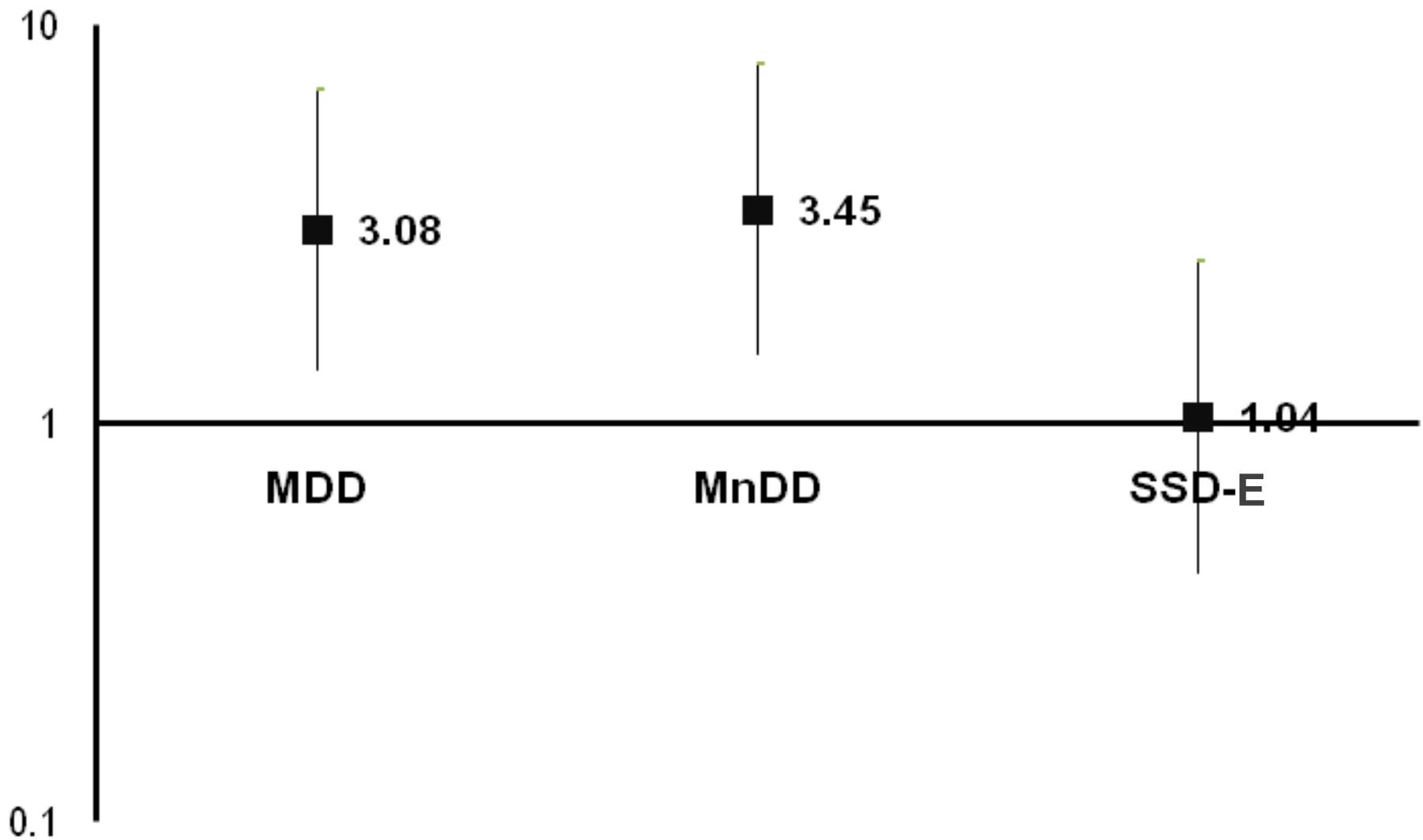
Outcomes of LLD

KLOSHA



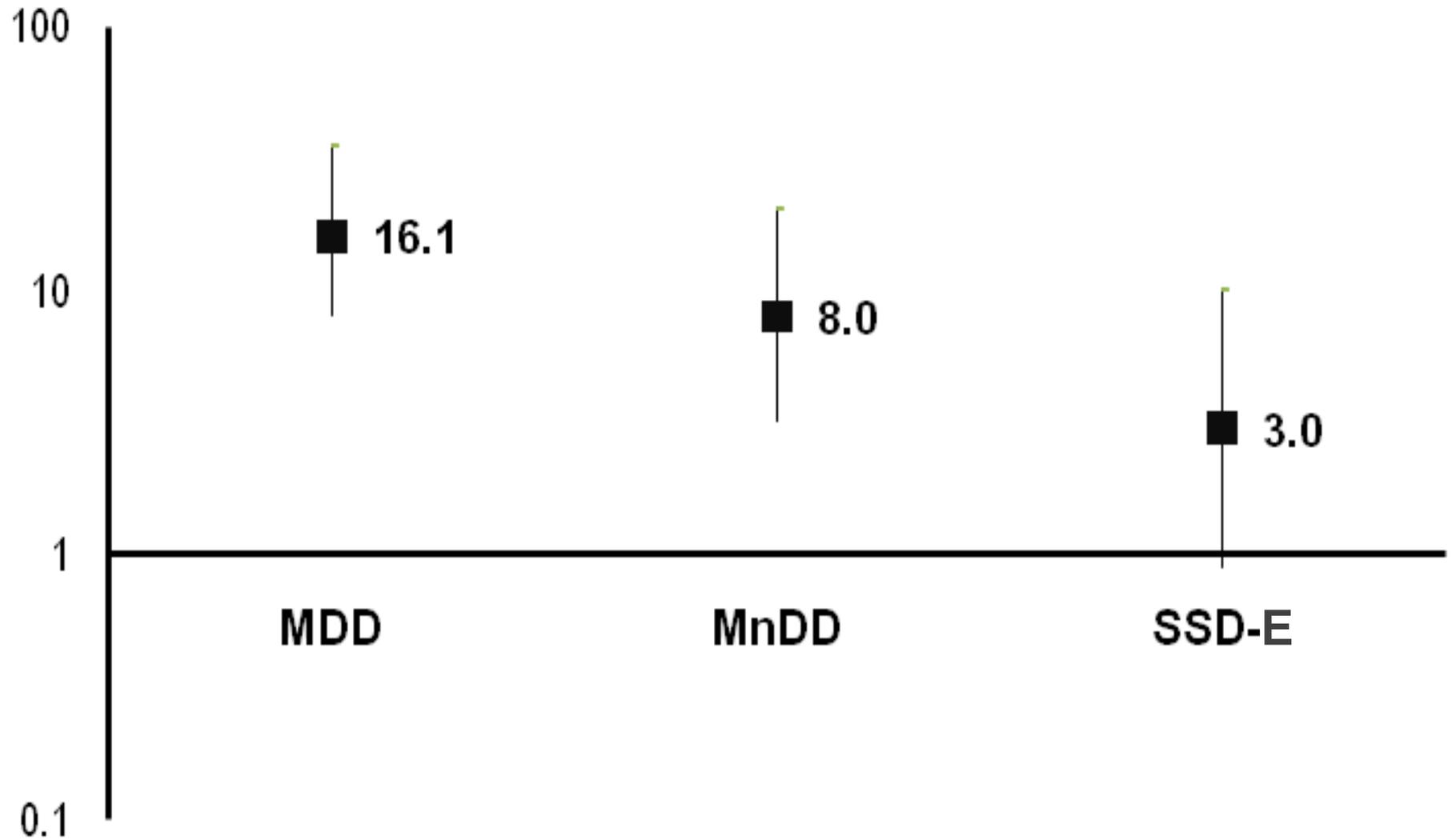
Association with History of MDD

KLOSHA



Relative Risks for MDD

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Risk Factors for LLD

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Factor	Odds ratios (95% confidence interval)	
	MDD	MnDD
Age [†]		
70-74 years old	0.59 (0.24-1.45)	1.30 (0.54-3.13)
75-79 years old	1.88 (0.85-4.17)	1.85 (0.70-4.92)
80 years old or over	0.26 (0.34-2.01)	2.03 (0.68-6.07)
Women	3.55 (1.53-8.24)*	2.68 (1.19-6.04)*
Not educated	2.75 (1.30-5.85)*	1.39 (0.60-3.20)
Low income (≤\$12,000/year)	2.83 (1.02-7.88)*	1.75 (0.68-4.47)
Never married/widowed/ divorced	1.18 (0.54-2.60)	1.15 (0.50-2.66)
History major depressive episode	3.07 (1.38-6.82)**	3.44 (1.49-7.94)**
Smoking	0.62 (0.13-2.89)	1.38 (0.42-4.50)
Heavy drinking (≥14 drinks/week)	0.80 (0.16-3.88)	0.84 (0.18-4.00)
Body mass index (≥23)	0.52 (0.25-1.05)	0.99 (0.43-2.27)
Stroke or transient ischemic attack [‡]	3.45 (1.62-7.35)**	2.95 (1.34-6.52)**
Hypertension [‡]	1.66 (0.74-3.75)	1.04 (0.48-2.24)
Diabetes mellitus [‡]	1.32 (0.65-2.67)	1.24 (0.59-2.58)
Chronic renal disease (Grade≥3) [‡]	1.17 (0.58-2.37)	1.27 (0.62-2.61)

Impacts of Poor Social Support on General Health Status in Community-Dwelling Korean Elderly: The Results from the Korean Longitudinal Study on Health and Aging

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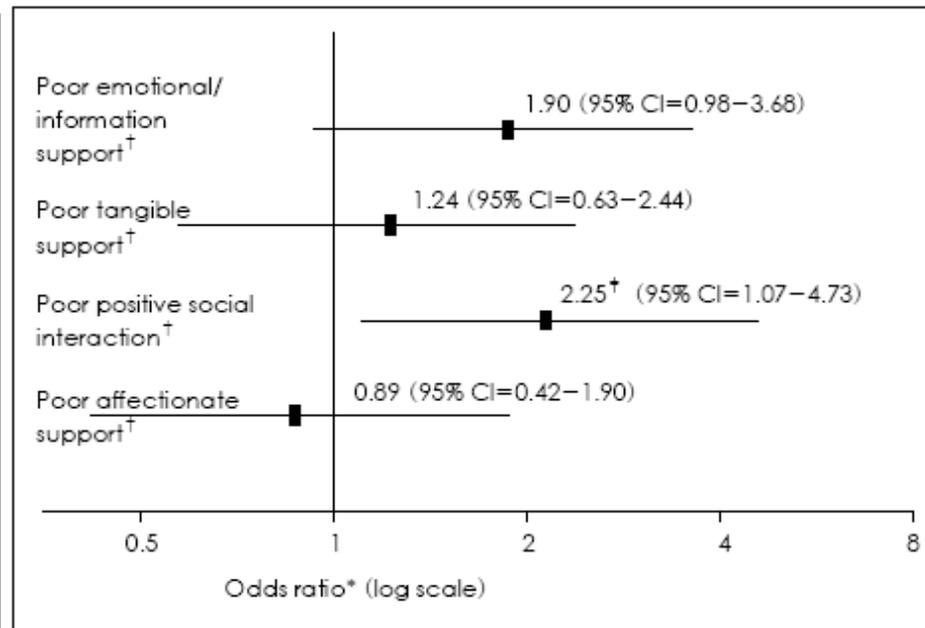


FIGURE 1. Risk of late-life depression conferred to poor social support. *Multiple logistic regression analysis with adjustment for age, gender, education, cohabitation, low income with Enter method, [†]Lower than 25th percentile, [‡]Significance<0.05.

Impacts of LLD

KLOSHA

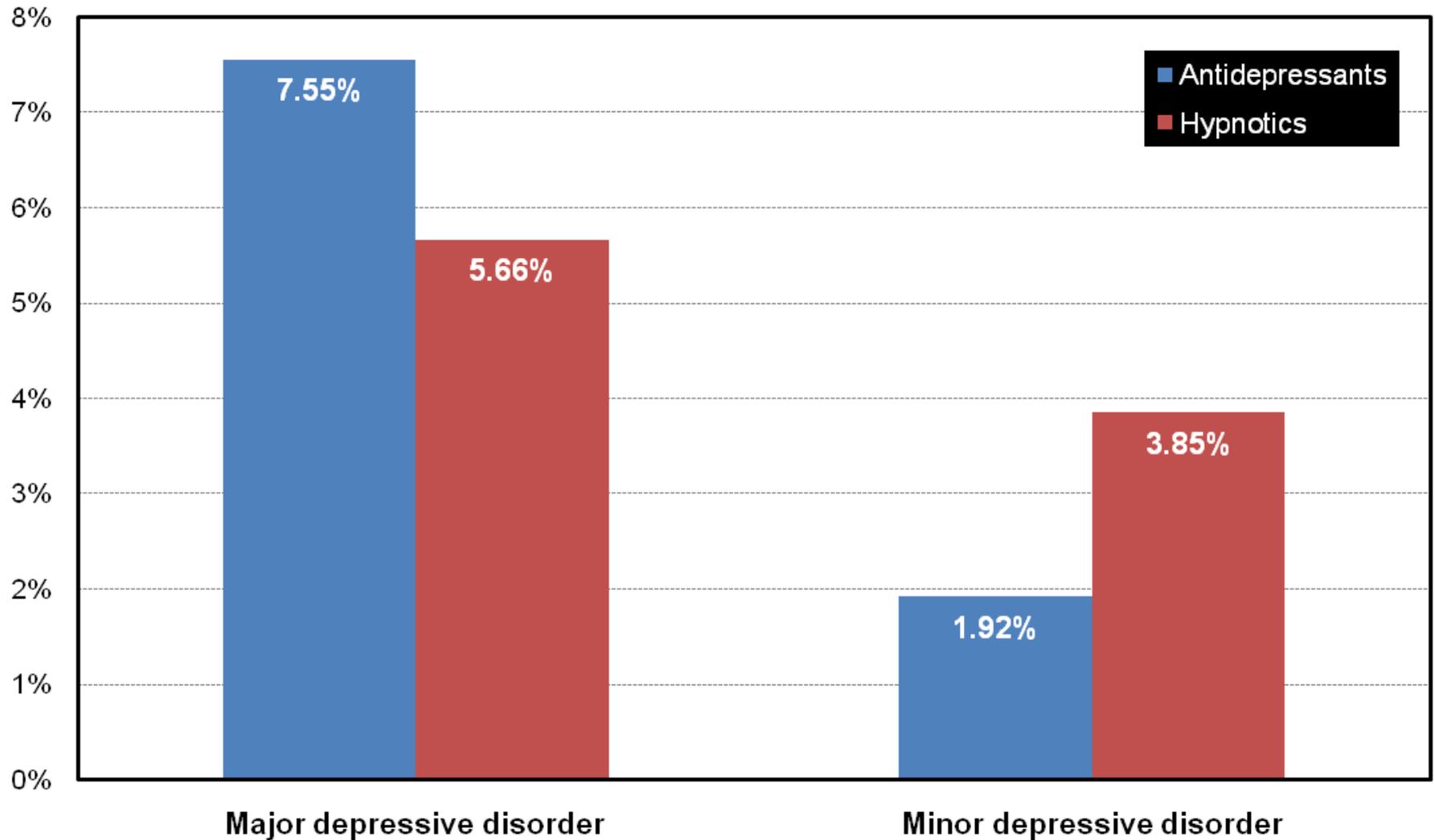
	MDD ^a	MnDD ^b	SSD-E ^c	NDE ^d	Statistics	
	(N=36)	(N=33)	(N=58)	(N=587)	F or X ²	post hoc
Age (years)	71.2±4.9	73.0±5.8	73.0±6.2	71.8±5.7	1.37	a = b = c = d
Education (years)	4.4±4.9	5.5±5.3	5.8±5.7	8.2±5.7	9.35*	a = b = c < d
Gender (women, %)	80.6	75.8	74.1	53.8	22.15*	a = b = c ≠ d
HAM-D	15.4±4.3	9.4±2.3	6.9±2.7	3.0±2.6	298.31*	a > b > c > d
GDS	22.3±5.8	18.7±5.1	15.7±6.1	10.2±6.8	58.56*	a = b = c > d
CES-D	25.4±11.1	21.7±11.8	17.1±10.3	11.6±8.6	40.33*	a = b > c > d
MMSE	21.7±5.2	22.5±5.0	21.9±5.3	24.1±4.4	7.12*	a = b = c < d
FAB	10.8±3.4	11.6±3.2	11.2±3.5	12.9±3.5	8.39*	a = b = c < d
SF-36						
Physical component summary	41.6±12.2	43.6±14.1	51.5±13.3	58.4±12.8	32.09*	a = b < c < d
Mental component summary	38.6±9.4	42.7±7.6	47.7±10.5	54.4±9.0	50.93*	a = b = c < d
CIRS	4.2±2.5	4.4±3.3	3.7±2.5	3.6±2.4	1.89	a = b = c = d

FAB = Frontal Assessment Battery; SF-36 = Short Form 36; CIRS = Cumulative Illness Rating Scale

(Park et al. in preparation)

Undertreatment of LLD

KLOSHA



- **Prevalence of LLD in Korean elders was about 18% (MDD:MnDD:SSD-E = 1:1:1.7)**
- **Late onset single episode was most prevalent subtype.**
- **Considerable proportion of LLD was chronic.**
- **LLD was dynamic and pleomorphic in nature.**
- **SSD was as clinically significant as MDD.**
- **LLD was under-recognized and under-treated in Korean elders.**

KFOSTVA

Thank You!