



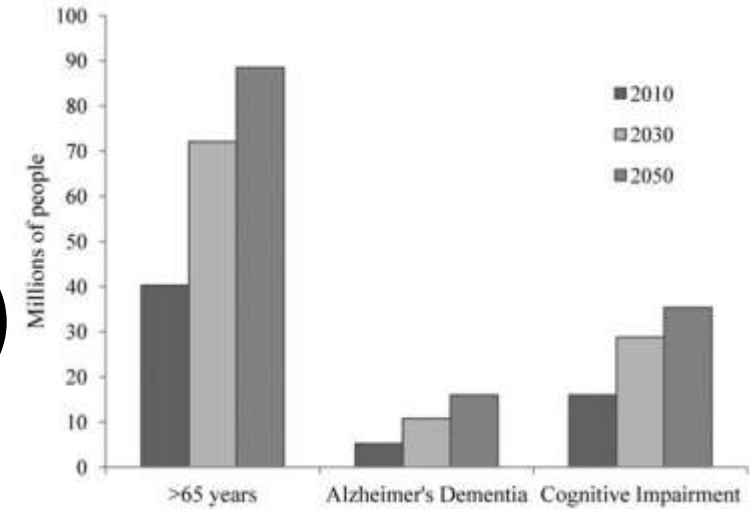
דמנציה: אתגר ההווה והעתיד

ד"ר יקיר קאופמן

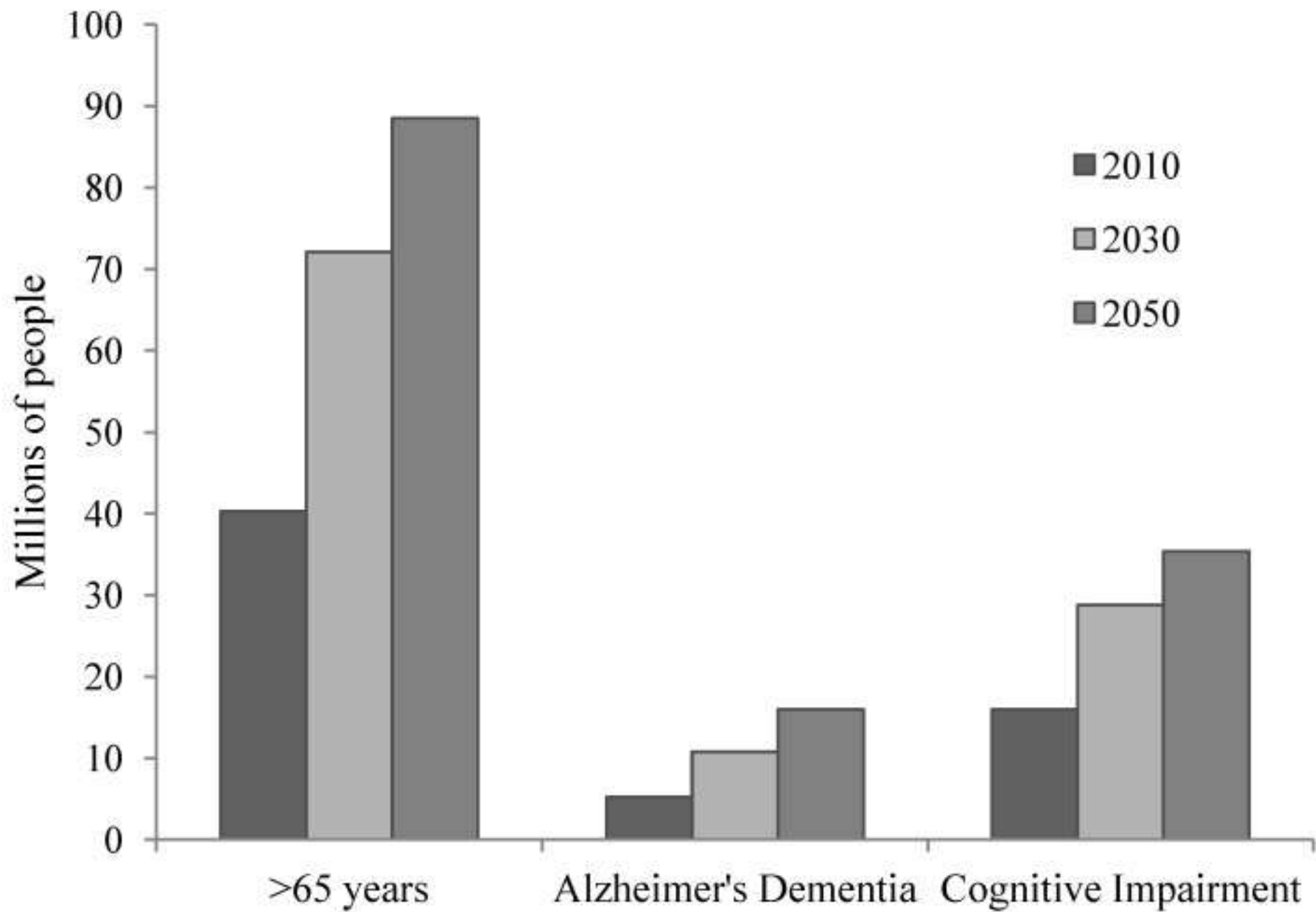
מנהל המחלקה הנוירו-פסיכו-גריאטרית,
מנהל רפואי, מרכז רפואי הרצוג,
ירושלים תובב"א

Dementia

- One of the greatest challenges (threats)
- > 35 million people worldwide
- Expected to triple over the next 40 years
- 100 years of research
- Enormous investment (economic, social, personal, other)
- No cure (!)



Why?



Why?

- “Looking for the key under the lamp”
- “Statistically significant but clinically irrelevant studies”
- Biological downstream factors
- Intervention not Prevention

G8 dementia summit: Global action against dementia - 11 December 2013

- Call upon the WHO and OECD to identify dementia as **an increasing threat to global health**
- **Annual world cost of US\$604 billion**

Cost of Dementia

- Total annual costs of up to **\$70,911 per patient**
- Overall main cost drivers:
- Informal costs due to **home based long term care and nursing home expenditures** rather than direct medical costs (inpatient and outpatient services, medication).

- **CONCLUSIONS:**

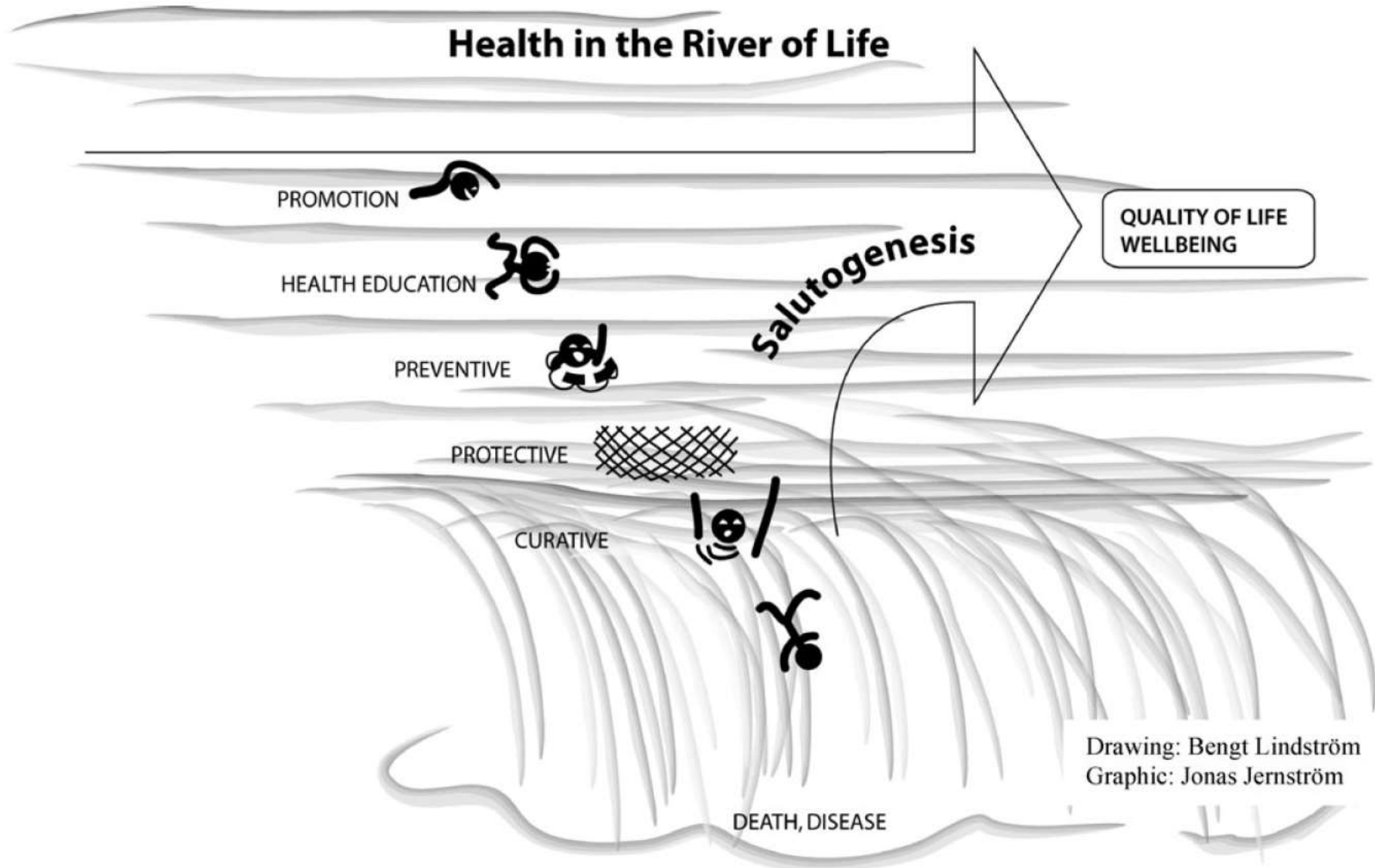
Significant economic burden of dementia for patients, families and healthcare systems and thus are **important for future health policy planning**

Results

OVERALL, THE COST OF PATIENTS WITH DEMENTIA IS OVER 11.9B NIS P.A.¹

- **Dementia affects 1% of population**
 - **But sufferers consume over 6% of the Public Healthcare spend²...**
 - 14% of Private Healthcare spend and all this...
 - is set to grow 52% over the next 15 years
- **Hence the Health Service will require:**
 - at least³ another 15,000⁴ care beds by 2030 and
 - additional annual expenditure (healthcare and social) of 6b NIS by 2030

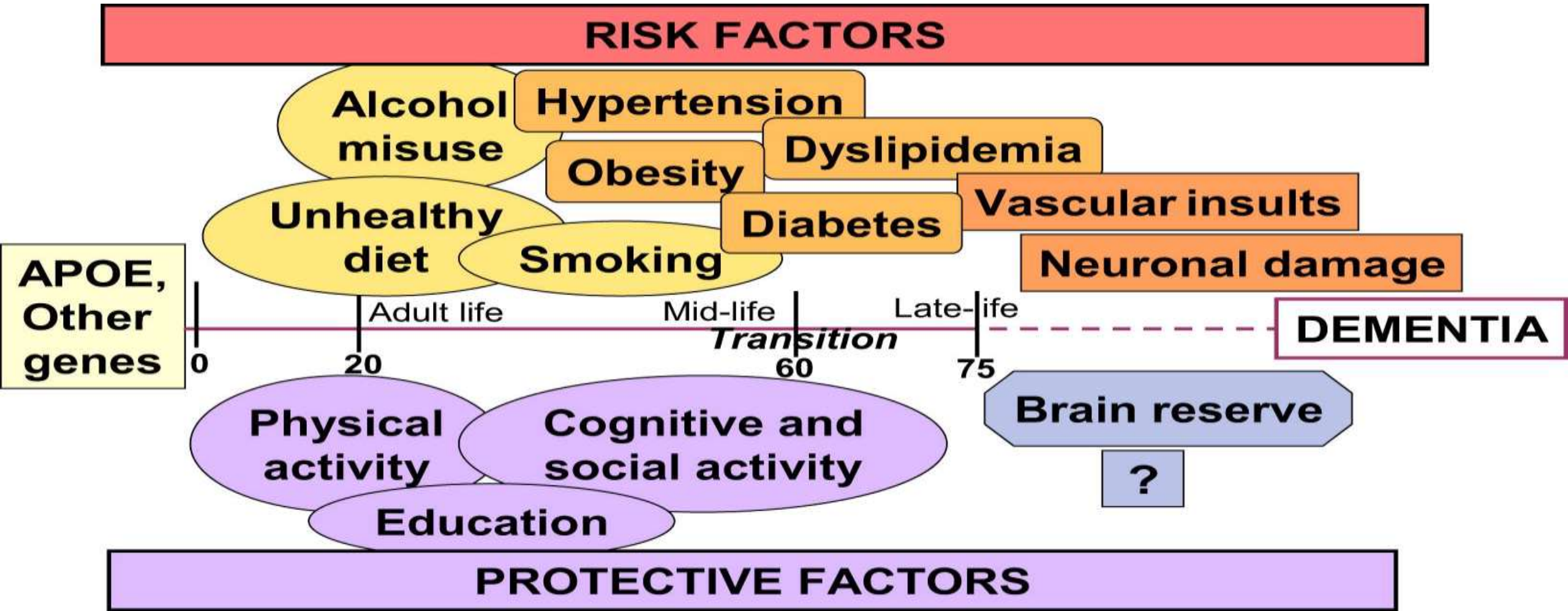
¹ Israel \$39,000 per dementia sufferer compares with USA \$42,000-\$56,000 per sufferer (Hurd et al, NEJM, 2013) and UK \$50,000 per sufferer (PSSRU, 2014) ²Based on best estimate – may be larger if capitation figures are understated. ³ Change in carer demographics i.e. more women working means less will be cared for at home ⁴ Misrad HaBriyut data - see slide 18



Drawing: Bengt Lindström
Graphic: Jonas Jernström

Fig. 1: Health in the River of Life.

A salutogenic interpretation of the Ottawa Charter, Health Promotion International, 2008, 23:190-99



The projected effect of risk factor reduction on AD prevalence

- Summarises the evidence regarding seven potentially modifiable risk factors for AD: **diabetes, midlife hypertension, midlife obesity, smoking, depression, cognitive inactivity or low educational attainment, and physical inactivity.**
- **Half of AD cases worldwide** (17.2 million) and in the USA (2.9 million) are potentially attributable to these factors.
- A **10-25% reduction** in all seven risk factors could **potentially prevent as many as 1.1-3.0 million AD cases worldwide and 184,000-492,000 cases in the USA.**

NUMBER 1332

ME

THE LONGEVITY ISSUE

The Alzheimer's Pill

A radical new drug could change old age
By Alice Park

Plus
How to be wealthy at 100
Three daily habits to change now
Long-life secrets from a clam



THE OLYMPIC EDGE: WHAT SETS WINNERS APART? page 38

SCIENTIFIC AMERICAN MIND

BEHAVIOR • BRAIN SCIENCE • INSIGHTS

July/August 2016

Mind.ScientificAmerican.com

THE FOLLIES OF ONLINE DATING

page 9



HOW TO PREVENT ALZHEIMER'S

What research says about steps you can take right now

THE PARADOX OF EATING MEAT

TRICKS OUR EYES PLAY

NEARSIGHTED KIDS: AN EPIDEMIC



\$6.99 U.S. U.K. £4.99

MIND 1.3

Annual Saving
(for 10-25% in seven risk factors)

50,000 \$

X 3,000,000

150,000,000,000 \$

What **Make**s Us Healthy vs. What We **Sp**end

What **Make**s Us Healthy



What We **Sp**end On Being Healthy



Source: Derived from information from the Boston Foundation (June 2007).

Hypertension

- SYST-EUR study
 - >3000 patients over 60 with hypertension
 - BP protocol medication vs. placebo
 - Outcome: dementia (MMSE, diagnostic testing)
 - Incidence of dementia 7.7 cases per 1000 (placebo) compared to 3.8 (treatment), RR 0.47 (0.28-0.78)
- Meta-analysis of 4 RCT trials: RR dementia after htn treatment = 0.80 (0.63-1.02)

Forette F et al. Lancet 1998;352:1347-51

Feigin V et al. Journal of the Neurological Sciences, 2005;229-230:151-5

Lifestyle – Cognitive Activity

- Washington Heights Study
- Prospective cohort, 1,772 healthy participants
- Reduced risk of all cause dementia (RR 0.62) among participants who engaged in higher level of leisure activity (self-reported >6 of 13 activities vs. < 6 activities in previous month)

Scarmeas et al. Neurology 2001;57:2235-42

- RCT: 2,832 healthy participants, improved cognition with different cognitive training interventions

Willis SL et al. JAMA 2006; 296:2805-14

Lifestyle – Physical Activity

- Canadian Study of Health & Aging
- 6,434 participants, 5 year f/u, 283 developed dementia (194 AD)
- Self reported frequency & intensity rated:
 - High $\geq 3x/week$ & $>$ vigorous than walking
 - Moderate $\geq 3x/week$ & equal to walking
 - Low $\leq 3x/week$ or $<$ vigorous than walking
- High activity: AD OR = 0.50 (0.28-0.90)
- Trend for increase protection with increase physical activity

Laurin et al, Arch Neurol 2001; 58:498-504

Polypharmacy and Cognitive Impairment

- Anticholinergic agents
- Antidepressant
- Antipsychotic (neuroleptic)
- Antiarrhythmic agents
- Antifungal agents
- *Sedative/hypnotic agents*
 - Benzodiazepine derivatives
 - Barbiturate acid derivatives
- *Antihypertensive agents*
 - Beta adrenergic antagonists
 - Alpha-2 agonists
 - Alpha-1 antagonists
- Calcium channel blockers
- Inotropic (cardiotonic) agents
- Corticosteroids
- Nonsteroidal anti-inflammatory agents
- Analgesics
- Antibiotics
- Radiocontrast media
- H₂ blockers
- Immunosuppressive agents
- Antineoplastic agents
- Anticonvulsants
- Anti-Parkinsonian and anticholinergic agents)
- Antiemetics
- Skeletal muscle relaxants
- Antihistamines/decongestants
- OTC cough/cold, suppressant preps
- New medications appear regularly.

Incidence of Dementia and Number of Medications Used

- 7,135 new dementia in 2000–2008 vs. 28,540 controls
- **Incidence of dementia increased with the number of medications used.**
- Odds ratios (OR) of dementia were:
 - **1.28 for 2-4 drugs,**
 - **1.34 for 5-9 drugs and**
 - **1.56 for ≥ 10 drugs**
- **Conclusions: The risk of dementia increases steadily with the number of medications used....**

Modifiable Risk Factor Combinations and Overall Dementia (HAAS)

- n=3,468

- **One low-risk factor † 0.72** (0.50–1.03)

Nonsmoking

- **Two low-risk factors ‡ 0.66** (0.44–0.99)

Nonsmoking + Diet score in top 40%

- **Three low-risk factors § 0.57** (0.35–0.94)

Nonsmoking + Diet + BMI <25.0 kg/m²

- **Four low-risk factors ¶ 0.36** (0.15–0.84)

Nonsmoking + Diet + BMI + High physical activity

Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER) study

A proof-of-concept randomised controlled trial **assesses a multidomain approach to prevent cognitive decline** in at-risk elderly people from the general population.

double-blind randomised controlled trial; aged 60–77 years

2 year multidomain intervention (diet, exercise, cognitive training, vascular risk monitoring), or a control group (general health advice).

Primary outcome: change in cognition - comprehensive neuropsychological test battery (NTB) Z score.

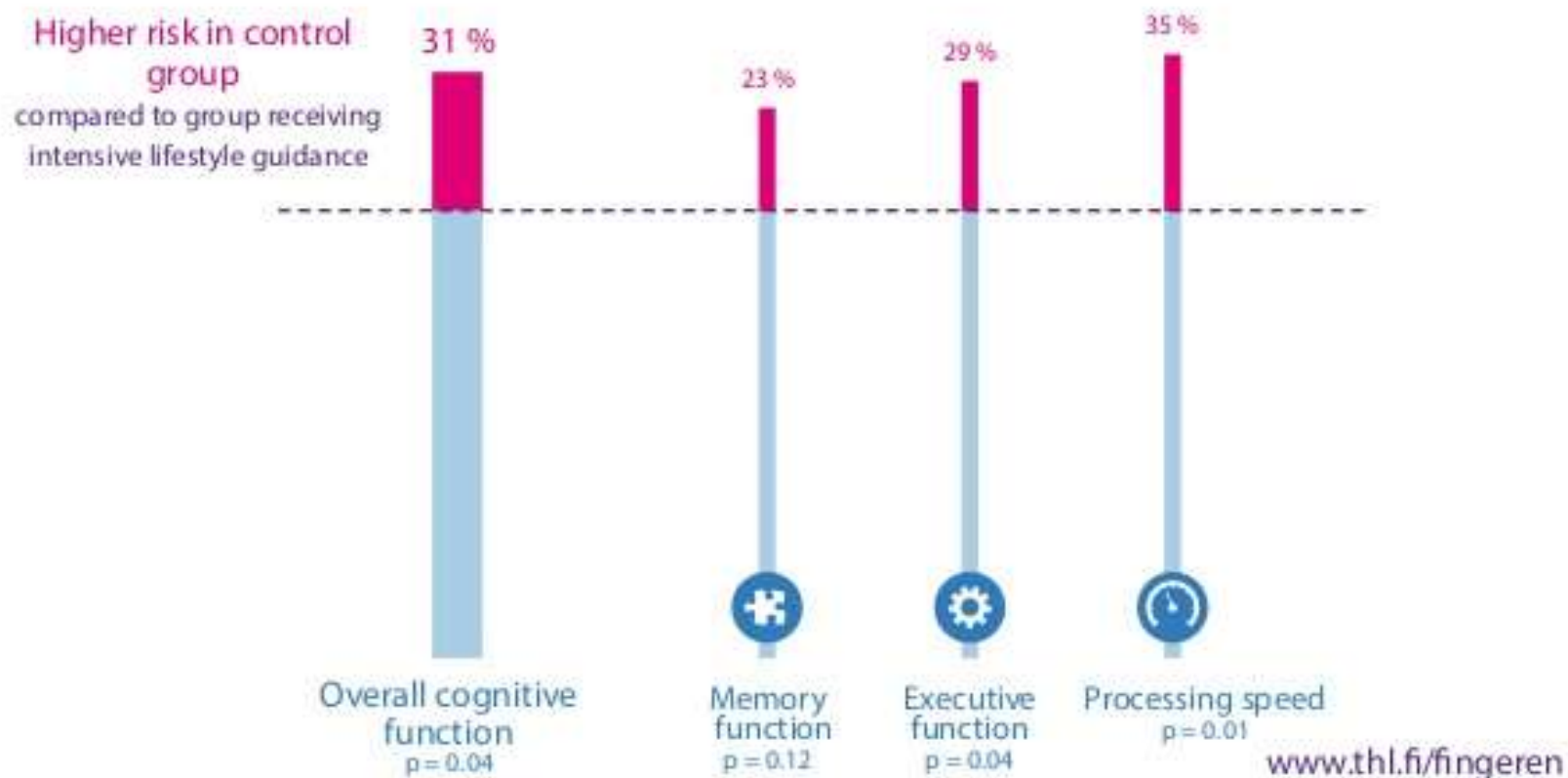
Screened 2654 individuals and randomly assigned 1260 to the intervention group (n=631) or control group (n=629).

Estimated mean change in NTB total Z score at 2 years was 0·20 (SE 0·02, SD 0·51) in the intervention group and 0·16 (0·01, 0·51) in the control group.

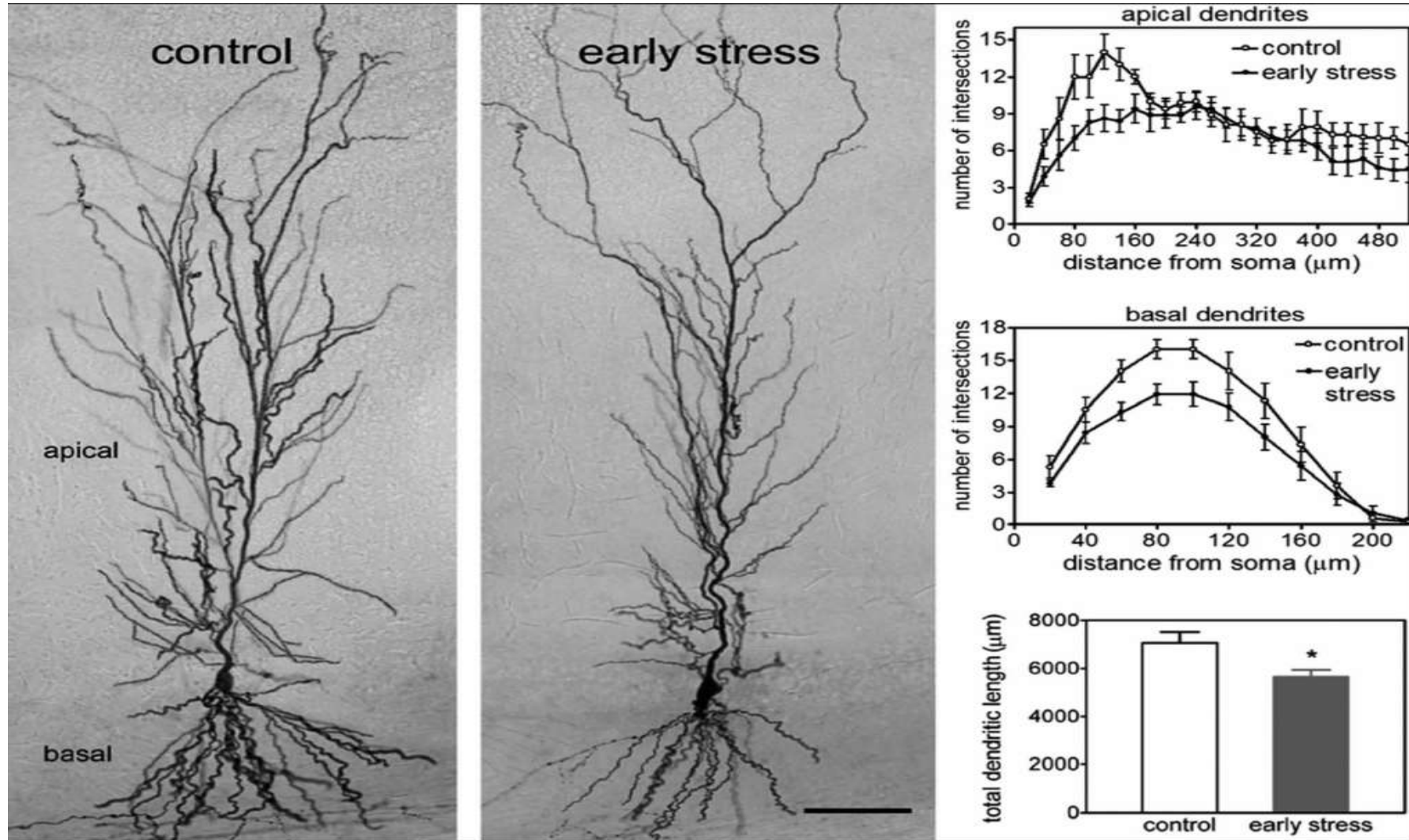
Findings from this large, long-term, randomised controlled trial suggest that a **multidomain intervention could improve or maintain cognitive functioning in at-risk elderly people from the general population.**

Cognitive decline can be prevented by implementing lifestyle changes

Results from the FINGER research project show that when people received regular health advice, the risk of cognitive decline was 31 % higher than when they received intensive lifestyle guidance.

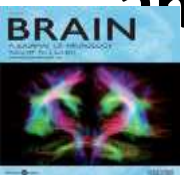


Stress and Neuron Atrophy



Psychological Stress and Risk of Dementia

- **35-year** longitudinal population study
- **Females (n = 1462)**, 38–60 YO, 1968–69 , 1974–75, 1980–81, 1992–93, 2000–03.
- **161 females developed dementia** (105 AD, 40 VD and 16 other dementias).
- Stress at one, two or three examinations was related to a **sequentially higher dementia risk**:
 - **1.10 (0.71–1.71)** for stress at one examination,
 - **1.73 (1.01–2.95)** stress at two examinations
 - **2.51 (1.33–4.77)** at three examinations
- Conclusion: **Association between psychological stress in middle-aged women and development of dementia especially Alzheimer's disease.**



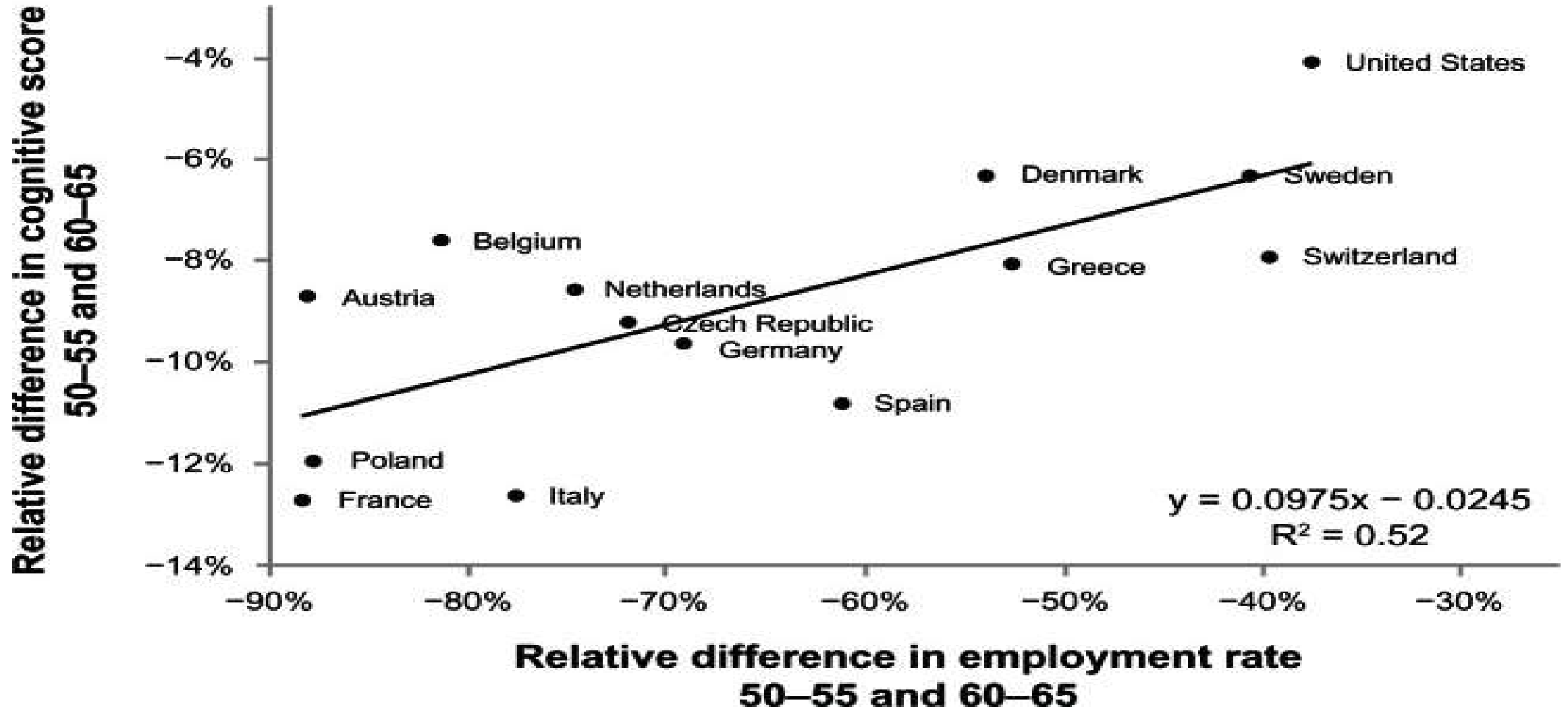
Depression and Dementia

- Systematic review and meta-analysis, 23 community-based prospective studies
- Late-life depression was associated with a significant risk of
 - **All-cause dementia (1.85, 95% CI 1.67-2.04, P<0.001)**
 - **Alzheimer's disease (1.65, 95% CI 1.42-1.92, P<0.001)**
 - **Vascular dementia (2.52, 95% CI 1.77-3.59, P<0.001)**

CONCLUSIONS:

- **Late-life depression is associated with an increased risk for all-cause dementia, VD and AD.**
- **Valuable to design clinical trials on the effect of late-life depression prevention on risk of dementia (VD and AD)**

Occupation: Age of Retirement and Cognition



Effect of a Purpose in Life on Risk of Incident Alzheimer Disease and Mild Cognitive Impairment in Community-Dwelling Older Persons

Patricia A. Boyle, PhD; Aron S. Buchman, MD; Lisa L. Barnes, PhD; David A. Bennett, MD

Context: Emerging data suggest that psychological and experiential factors are associated with risk of Alzheimer disease (AD), but the association of purpose in life with incident AD is unknown.

Objective: To test the hypothesis that greater purpose in life is associated with a reduced risk of AD.

Design: Prospective, longitudinal epidemiologic study of aging.

Setting: Senior housing facilities and residences across the greater Chicago metropolitan area.

Participants: More than 900 community-dwelling older persons without dementia from the Rush Memory and Aging Project.

Main Outcome Measures: Participants underwent baseline evaluations of purpose in life and up to 7 years of detailed annual follow-up clinical evaluations to document incident AD. In subsequent analyses, we examined the association of purpose in life with the precursor to AD, mild cognitive impairment (MCI), and the rate of change in cognitive function.

Results: During up to 7 years of follow-up (mean, 4.0 years), 155 of 951 persons (16.3%) developed AD. In a proportional hazards model adjusted for age, sex, and education, greater purpose in life was associated with a substantially reduced risk of AD (hazard ratio, 0.48; 95% confidence interval, 0.33-0.69; $P < .001$). Thus, a person with a high score on the purpose in life measure (score = 4.2, 90th percentile) was approximately 2.4 times more likely to remain free of AD than was a person with a low score (score = 3.0, 10th percentile). This association did not vary along demographic lines and persisted after the addition of terms for depressive symptoms, neuroticism, social network size, and number of chronic medical conditions. In subsequent models, purpose in life also was associated with a reduced risk of MCI (hazard ratio, 0.71; 95% confidence interval, 0.53-0.95; $P = .02$) and a slower rate of cognitive decline (mean [SE] global cognition estimate, 0.03 [0.01], $P < .01$).

Conclusion: Greater purpose in life is associated with a reduced risk of AD and MCI in community-dwelling older persons.

Arch Gen Psychiatry. 2010;67(3):304-310

Meaninglessness



Uncontrollability



Stress



Well-being ↓



Dementia

Effect Size

Subjective >> Objective
Psychosocial Physical

- Stress
- Depression
- Loneliness
- Meaninglessness

Future: paradigm shift

Intervention



Prevention

Disease-oriented
medical system



Health-oriented medical
system

Disease
Management



Health promotion +
maintenance

Passive
(hospitals, clinics)



Proactive, earlier
(wellness centers)

תכנית למניעה ראשית של דמנציה

- מיפוי וזיהוי "שקופים" בקהילה עם גורמי סיכון לא מטופלים לדמנציה כולל גורמי סיכון פסיכוסוציאליים
- התערבות רב-תחומי עם מעקב רפואי/סיעודי/רווחה – case manager
- היפוך תגמולים כפול
- פיילוט שכונה מול שכונת ביקורת (דומות)
- מרכזי תעסוקה – אקטיבית בעדיפות
- הכנה לקריירה שניה
- דחיית גיל הפנסיה
- Ageism busters
- העצמה לימודית קבוצתית
- יצירת מנהיגות, הכשרות והעברת מטה ועצמאות/ניהול עצמי/ העצמה/משמעות
- העצמת איכות חיים פיסיים, חברתית, תעסוקתית, נפשית ורוחנית



האוניברסיטה העברית בירושלים
The Hebrew University of Jerusalem



בס"ד

תודה

02-531-6814/3

Health is a state
of complete physical,
mental, and social
well-being and
not merely the
absence of disease
or infirmity.

