Mental Health - Promotion, Prevention and Care, in Europe and beyond

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KING'S College LONDON

The Holy Grail

- Can we modify trajectories of ageing through prevention and targeted intervention?

- **Increased longevity without quality of life is an empty prize. Health expectancy is more important than life expectancy".**
  Dr Hiroshi Nakajima, Director-General, WHO 1997

- Can we add 'life to years' as well as 'years to life'?

The Challenges

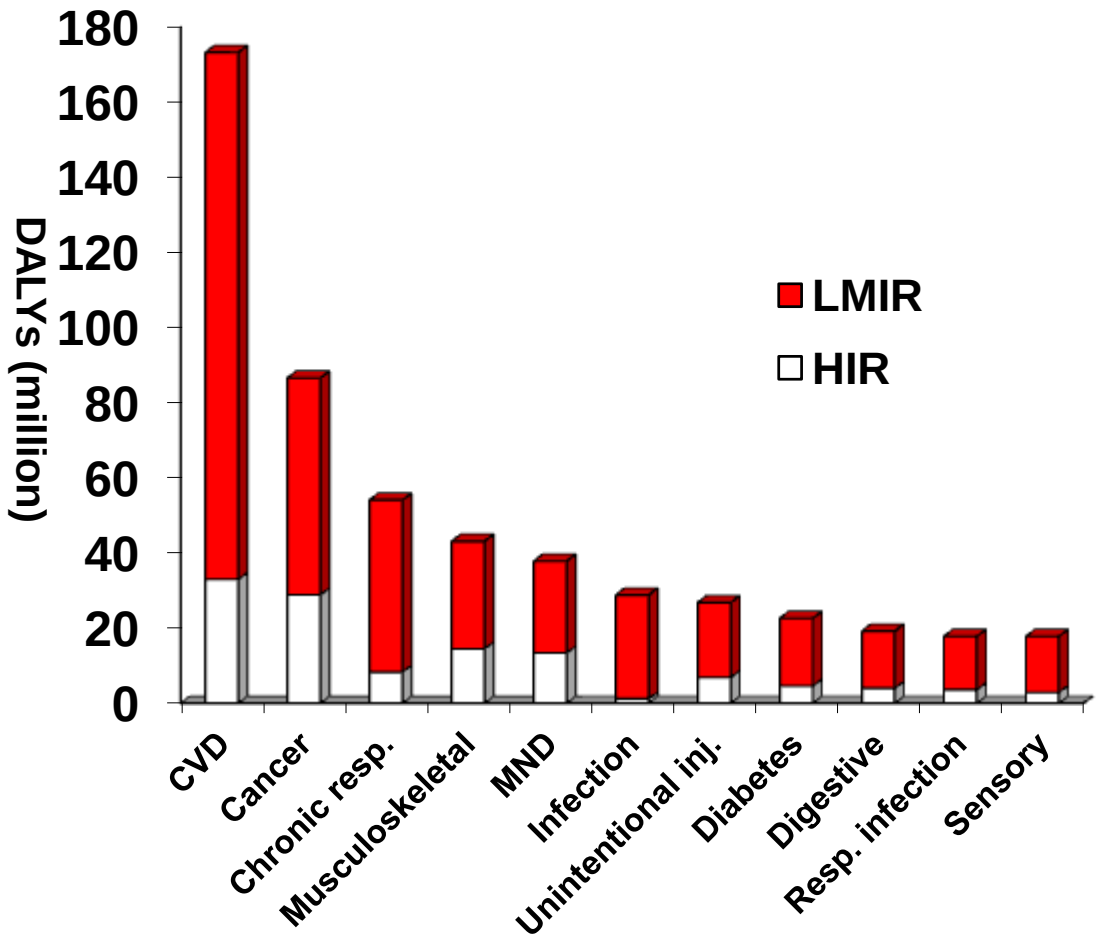
Ageing 2

The burden of disease in older people and implications for health policy and practice

Martin J Prince, Fan Wu, Yanfei Guo, Luis M Gutierrez Robledo, Martin O'Donnell, Richard Sullivan, Salim Yusuf

- What is different about old age?
  - Degenerative disorders – stroke, dementia
  - Not one condition but several (multimorbidity)
  - Disability, and needs for long-term care
  - Fragile economic and social protection
- Why do older people matter?
  - Majority of disease burden and cost (health and societal)
  - Underserved
- Major Challenges?
  - Access to effective, age-appropriate healthcare
  - Attention to dependence and long-term care

Contributors to burden of disease among older people

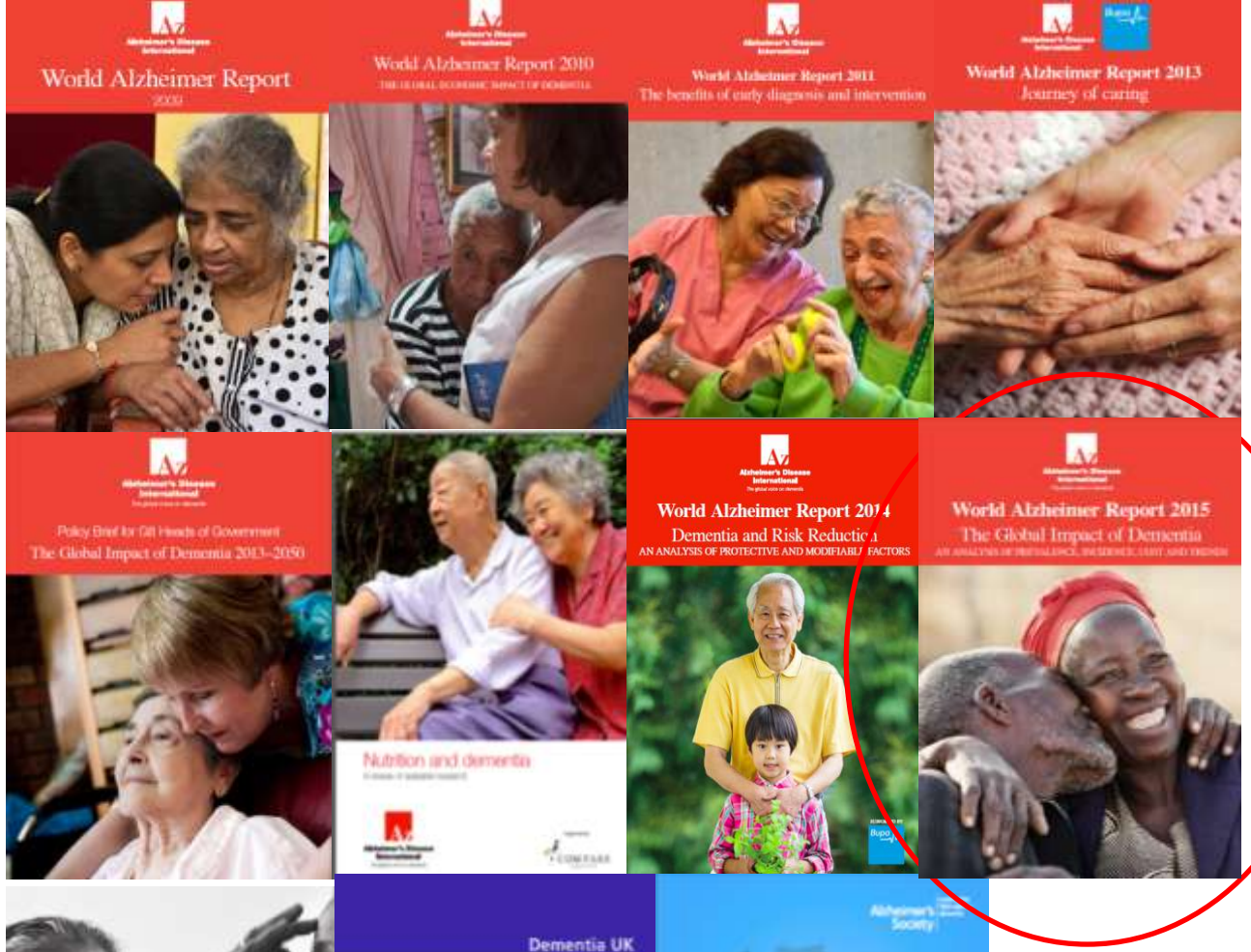


Millions of Disability Adjusted Life Years (DALYs) by cause and region

Prince et al, Lancet 2015

Health condition/ impairment	PAF (needs for care)	PAF (Disability)
1. Dementia	36.0%	25.1%
2. Limb paralysis/ weakness	11.9%	10.5%
3. Stroke	8.7%	11.4%
4. Depression	6.5%	8.3%
5. Visual impairment	5.4%	6.8%
6. Arthritis	2.6%	9.9%

Sousa et al, Lancet, 2009; BMC Geriatrics 2010



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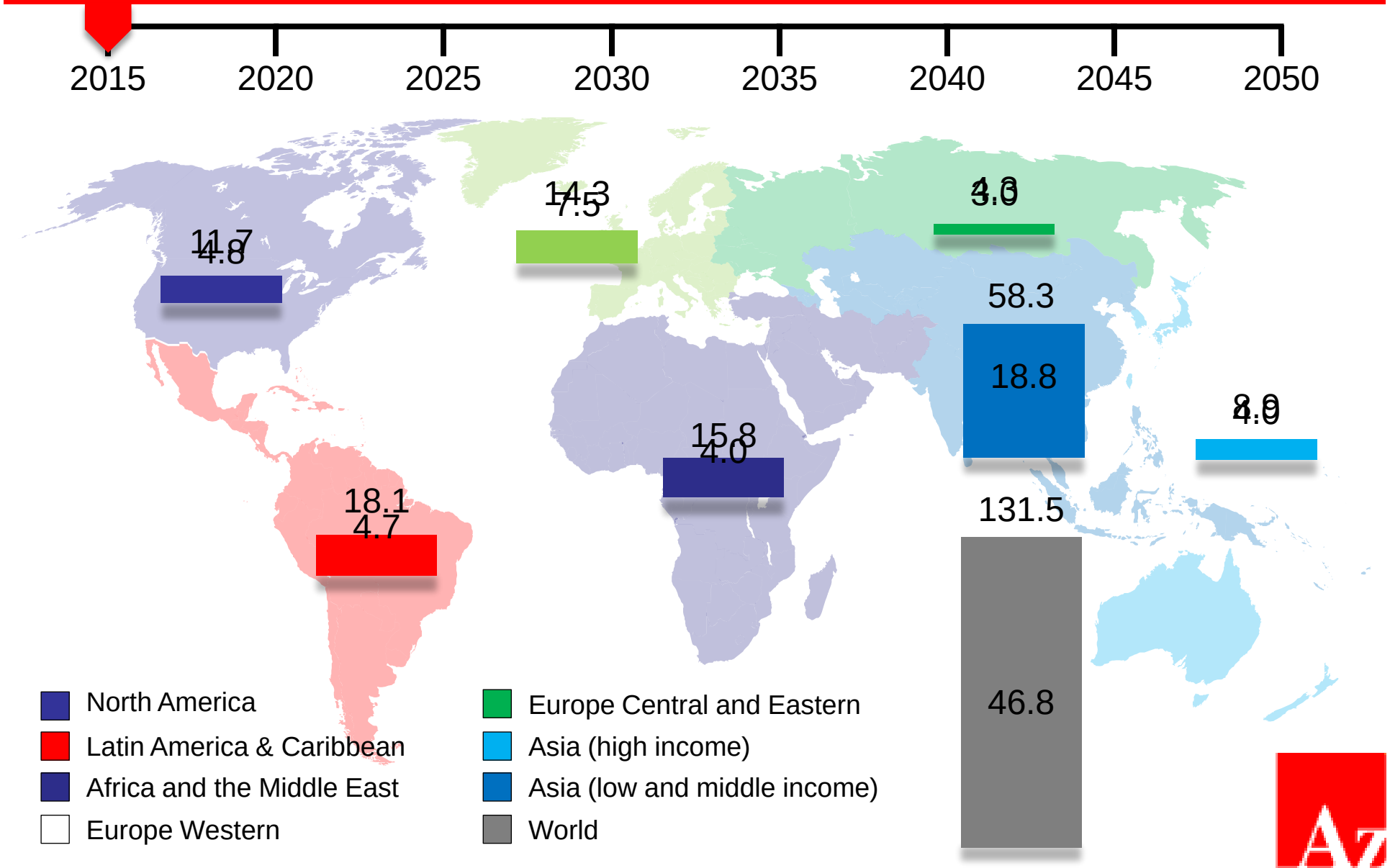
Global Observatory for Ageing and Dementia Care

Alzheimer's Disease International
The global voice on dementia

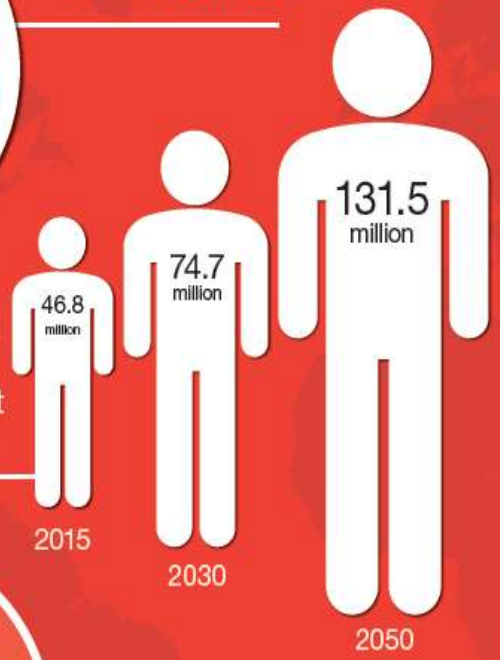
Numbers of people with dementia by world region (2015-2050)



The global impact of dementia

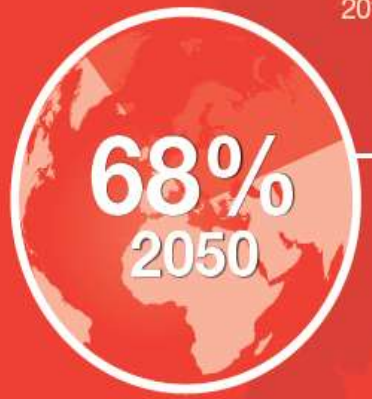
Around the world, there will be 9.9 million new cases of dementia in 2015,

one every 3 seconds

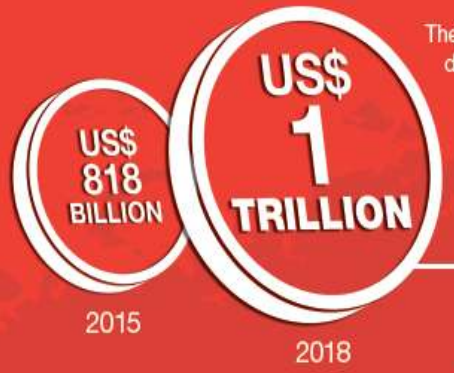


46.8 million people worldwide are living with dementia in 2015.

This number will almost double every 20 years.



Much of the increase will take place in low and middle income countries (LMICs):
in 2015, 58% of all people with dementia live in LMICs, rising to 63% in 2030 and 68% in 2050.



The total estimated worldwide cost of dementia in 2015 is US$ 818 billion. By 2018, dementia will become a trillion dollar disease, rising to

US$ 2 trillion by 2030

If global dementia care were a country, it would be the

18th largest economy

in the world exceeding the market values of companies such as Apple and Google

(source: Forbes 2015 ranking).

This map shows the estimated number of people living with dementia in each world region in 2015.

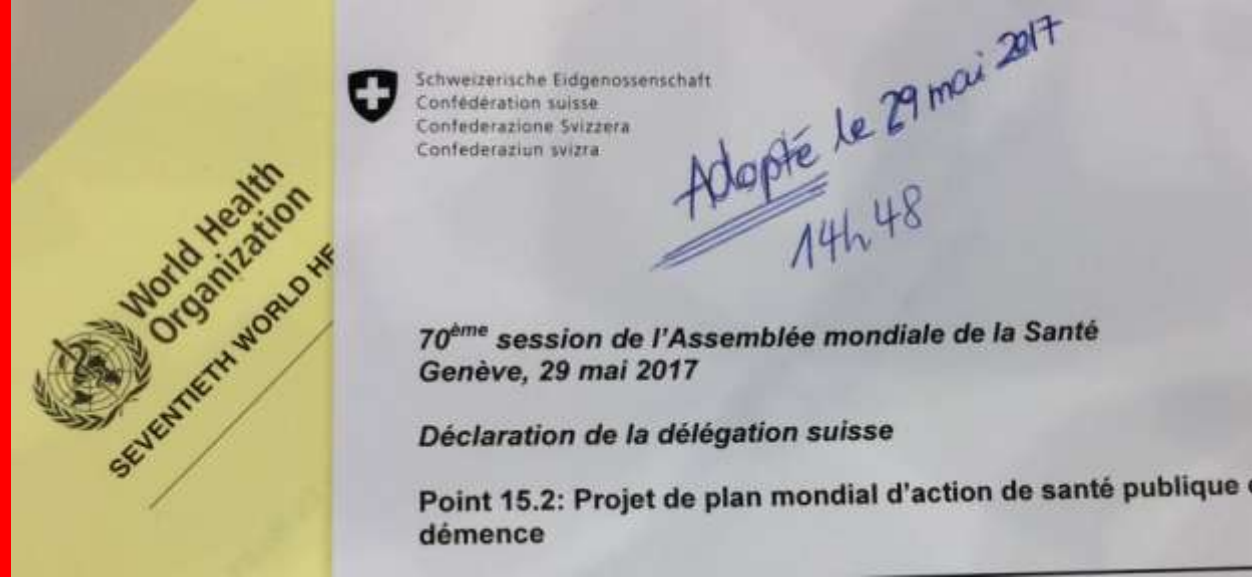
We must now involve more countries and regions in the global action on dementia.

The World Alzheimer Report 2015 was independently researched by King's College London and supported by Bupa.

Alzheimer's Disease International

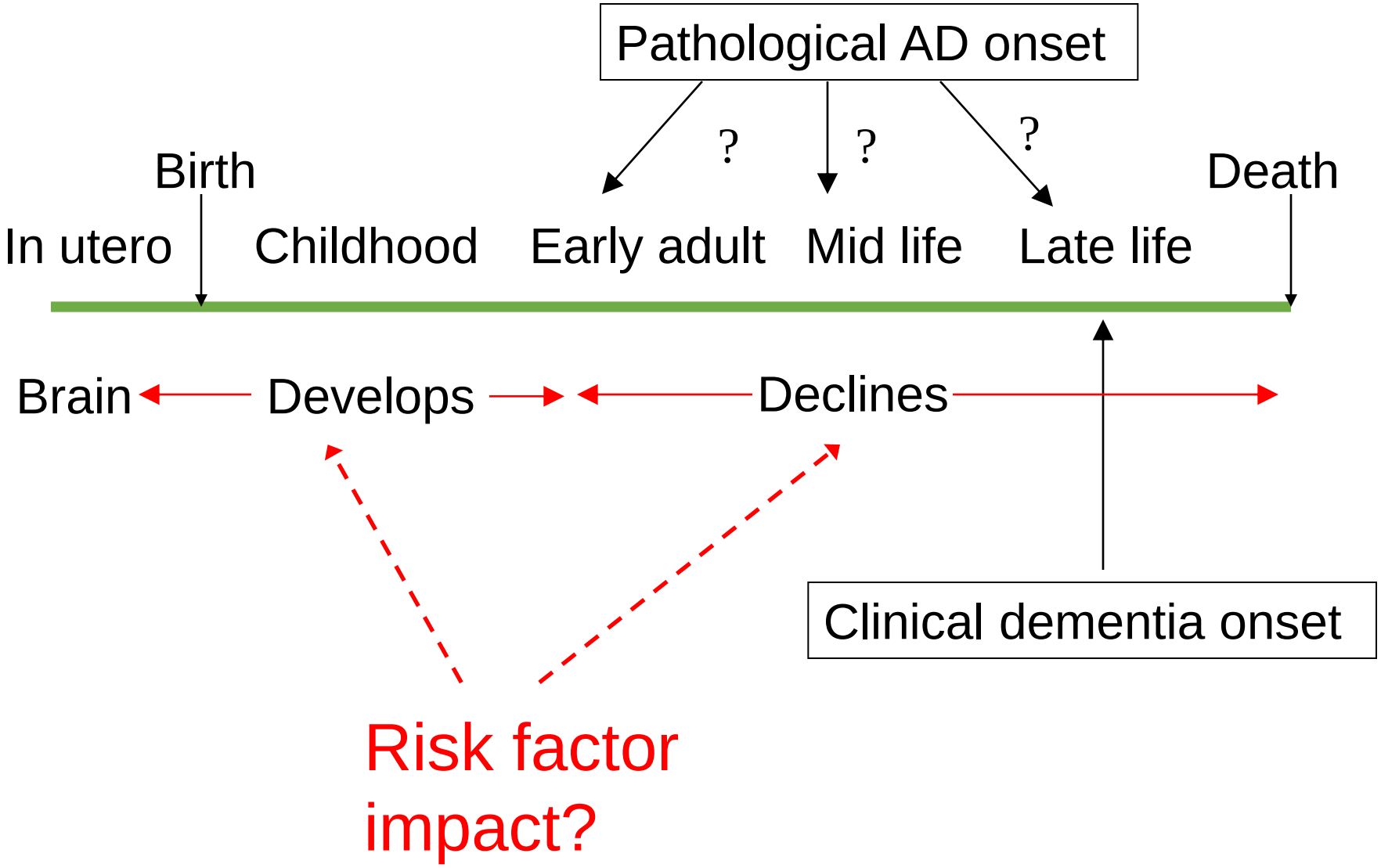
The global voice on dementia

What has been achieved?

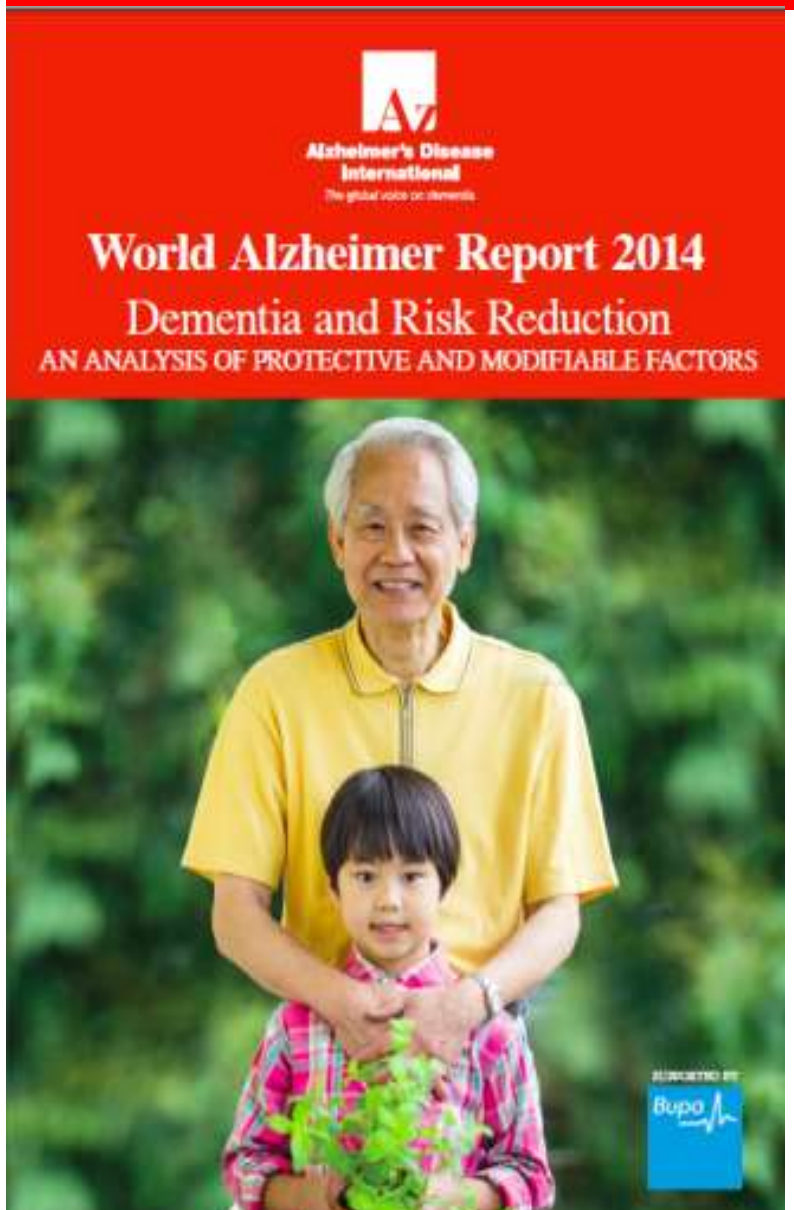


- Everyone is using our figures
- A shift in tone
  - Acknowledging that most of the burden is in low and middle income countries
  - Care now, if we must wait for cure later
  - A public health approach to treatment and care
  - Recognizing potential for brain health promotion and dementia risk reduction
  - New research priorities
- A WHO Global Action Plan!

Options for prevention
Dementia risk - a lifecourse perspective



Robust findings on modifiable risk factors



Exposure	Period
Education	**Early life**
Hypertension	**Midlife**
Diabetes	**Mid- to late-life**
Smoking	**Mid- to late-life**

Mechanisms

- Cognitive/ brain reserve (education)
- Vascular disease (hypertension, smoking, diabetes)
- Specific effects on AD pathology?

Attending to these and other risk factors could reduce incidence by 8-15%

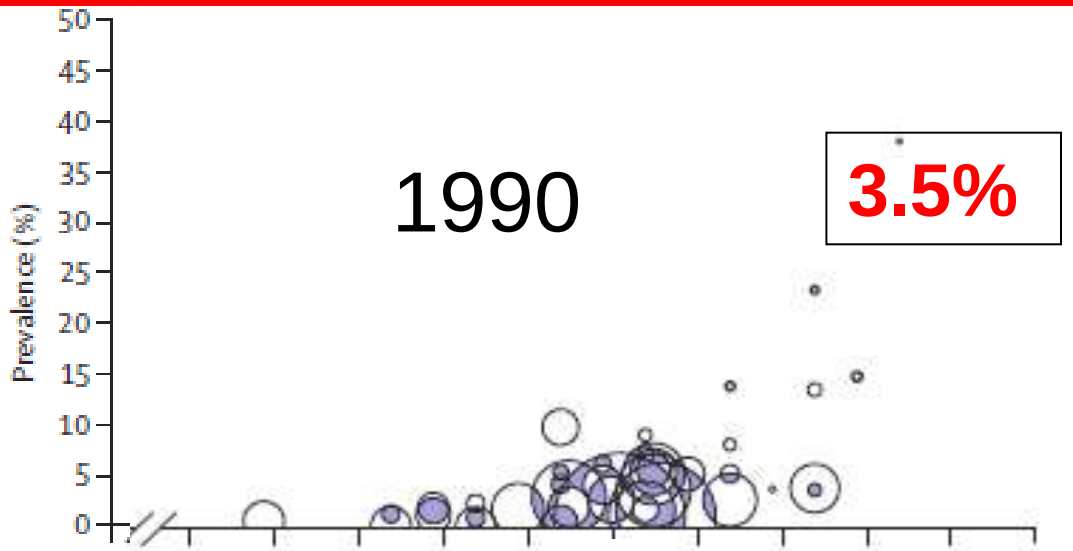
(Norton et al Lancet Neurology 2014)

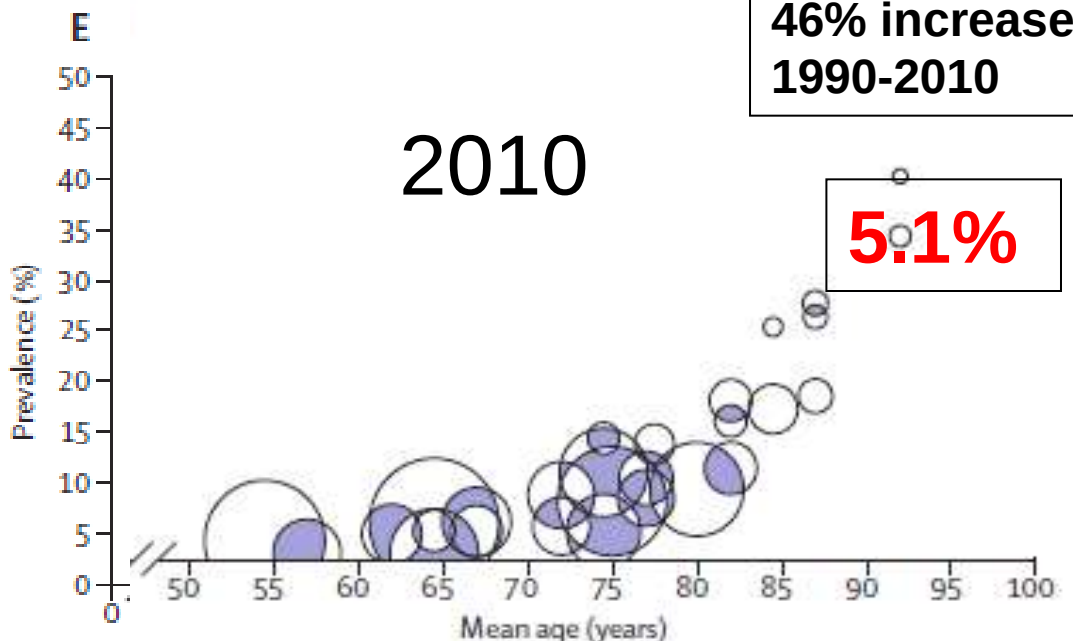
Making progress?

- Cardiovascular health is improving in many developed countries
  - Less smoking, declining BP and cholesterol
  - Increased physical activity
  - Prevalence of obesity and diabetes is increasing
  - Falling incidence of heart disease and stroke
- Better education

- A natural experiment
  - Is dementia becoming less frequent?

But is the prevalence of dementia increasing in China?

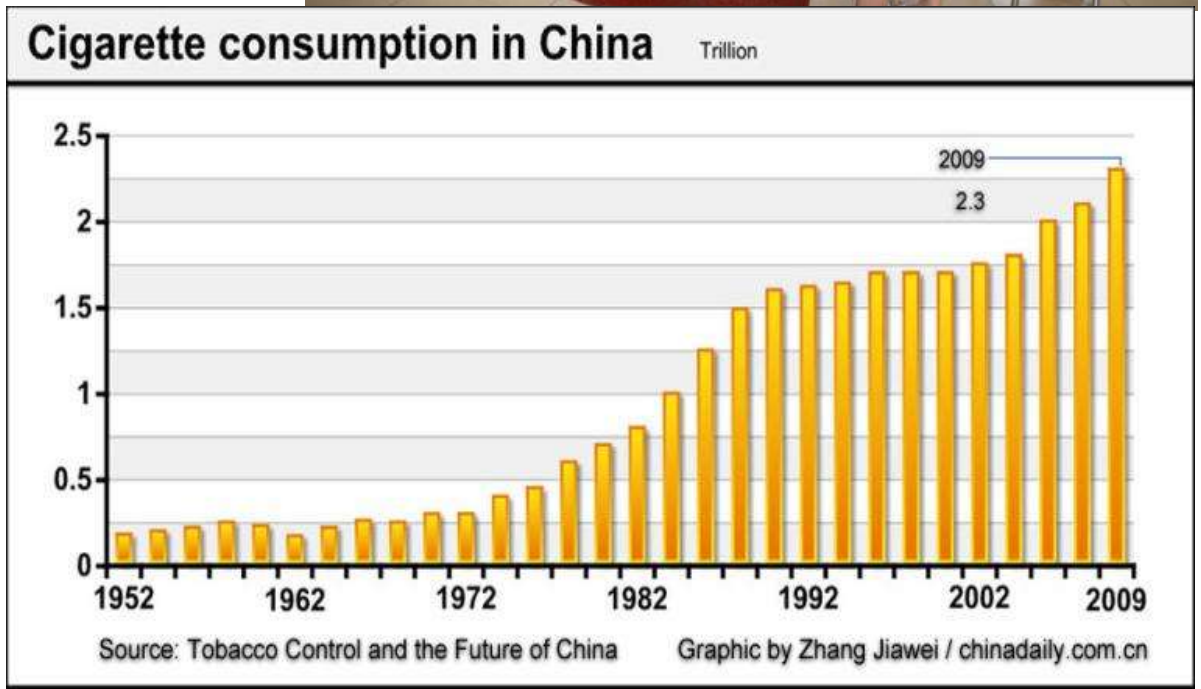




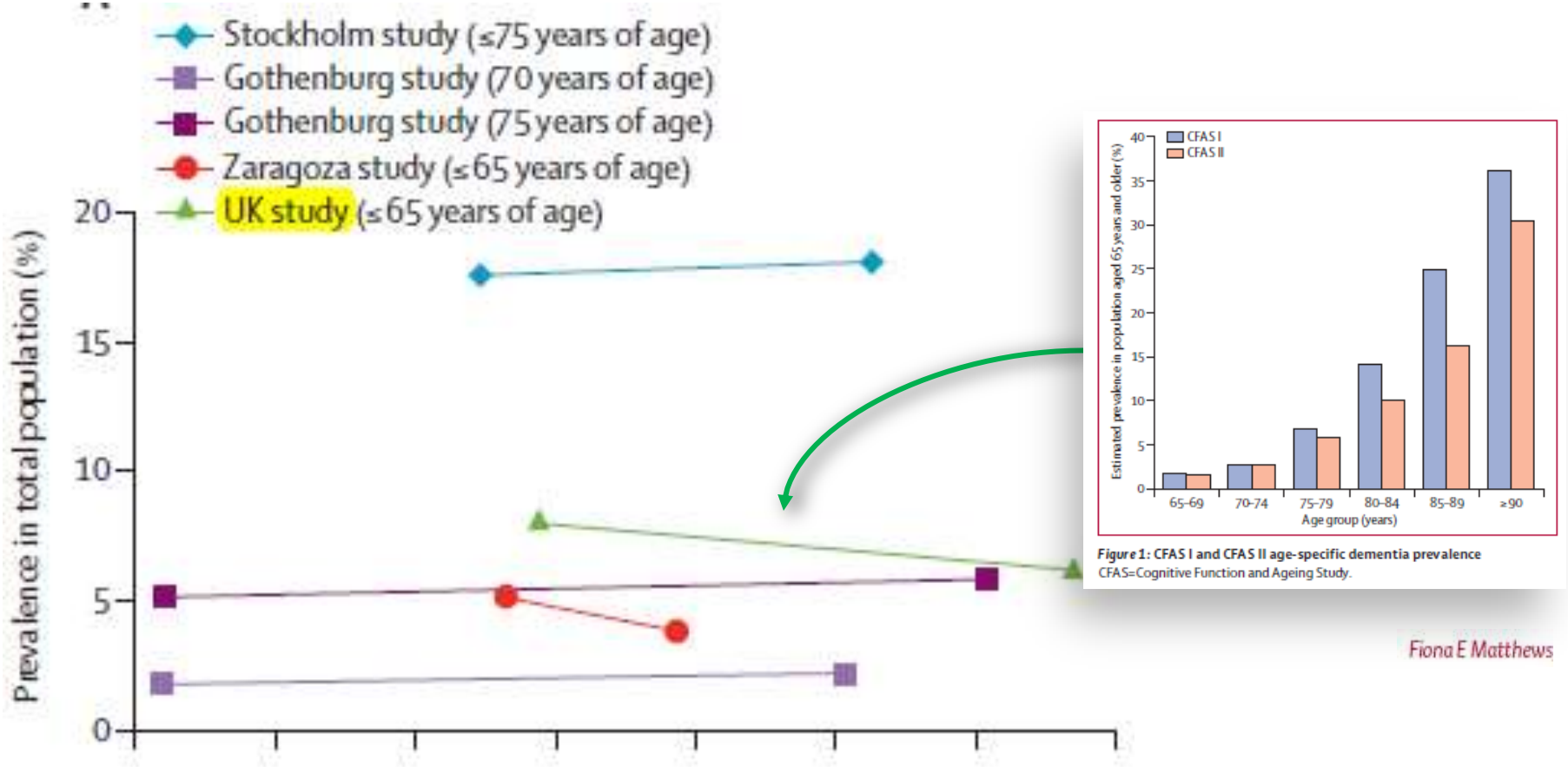
46% increase 1990-2010

The prevalence of dementia in China 1990-2010

Chen et al, Lancet 2013



Trends in dementia prevalence in Europe



Dementia in western Europe: epidemiological evidence and implications for policy making *Lancet Neurol 2015*

Yu-Tzu Wu, Laura Fratiglioni, Fiona E Matthews, Antonio Lobo, Monique M B Breteler, Ingmar Skoog, Carol Brayne

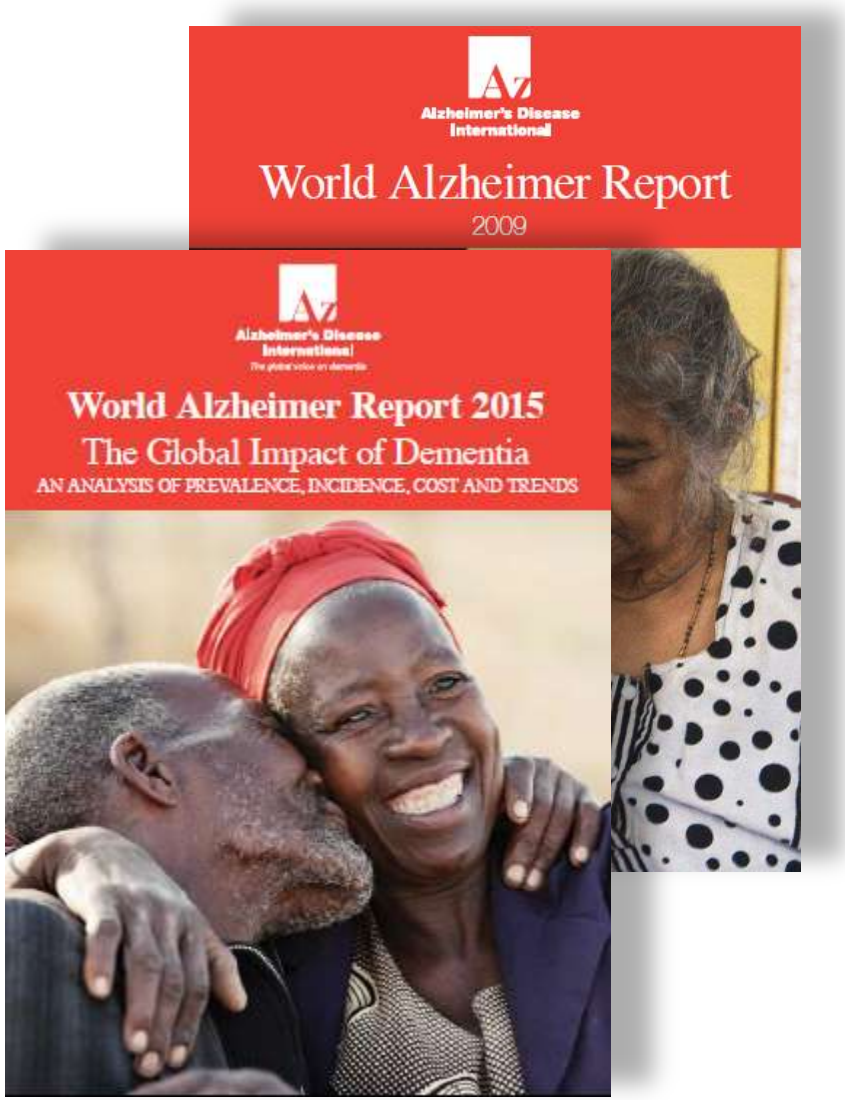
Reviews of trends in Prevalence, Incidence and Mortality

INCLUSION CRITERIA

1. Sampling
2. Dementia ascertainment
3. Same methods between successive prevalence or incidence waves

FINDINGS

1. No trend in prevalence
2. Fall in incidence?
3. Longer survival with dementia?



Prince et al, Alzheimer's Research and Therapy, 2016

10/66

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The 10/66 Dementia Research Group

The 10/66 Dementia Research Group is a collective of researchers carrying out population-based research into dementia, non-communicable diseases and ageing in low and middle income countries.

10/66 refers to the two-thirds (66%) of people with dementia living in low and middle income countries, and the 10% or less of population-based research that has been carried out in those regions.

10/66 is a part of Alzheimer's Disease International, and is co-ordinated from the Institute of Psychiatry, King's College London.

10/66 study
Dementia risk

1. Early life development
2. Cardiovascular risk factors

Incidence wave, by country

Country	Cohort	Inter-viewed	Dead	Lost to follow-up	Median follow-up (years)	Person years (dementia)
Cuba	2813	2007	608	198	4.5	8701
DR	2011	1197	467	347	5.1	5561
Puerto Rico	2009	1268	299	442	4.4	5509
Peru	1933	1311	152	470	3.3	3914
Venezuela	1965	1257	200	508	4.3	5269
Mexico	2003	1462	209	332	3.0	4164
China	2162	1452	515	195	5.1	7109
Total	14896	9954	2450	2492		40227
Total (%)		67%	16%	17%		

Prina et al, IJE, 2015

Sociodemographic and socioeconomic/ cognitive reserve risk factors for incident 10/66 dementia

Risk factor	RR*	95% CI	Heterogeneity Higgins I^2
Base model (mutually adjusted)			
Older Age	1.67	1.56-1.79	49 (0-76)
Sex (M vs F)	0.72	0.61-0.84	25 (0-64)
More education	0.89	0.81-0.97	50 (0-77)
Lower occupation attainment	1.04	0.95-1.13	0 (0-65)
More assets (per asset)	0.93	0.88-1.00	63 (24-82)
Extensions to base model (adjusted for base model) ach other)			
Literacy	0.68	0.55-0.84	53 (1-78)
Animal naming (per word)	0.93	0.91-0.94	61 (19-81)
Luria (Fist-Edge-Palm) – higher score worse performance	1.28	1.18-1.38	76 (54-88)

Prince et al Lancet 2012

Mean population height by year and world region, from historical records (Baten et al, 2012)

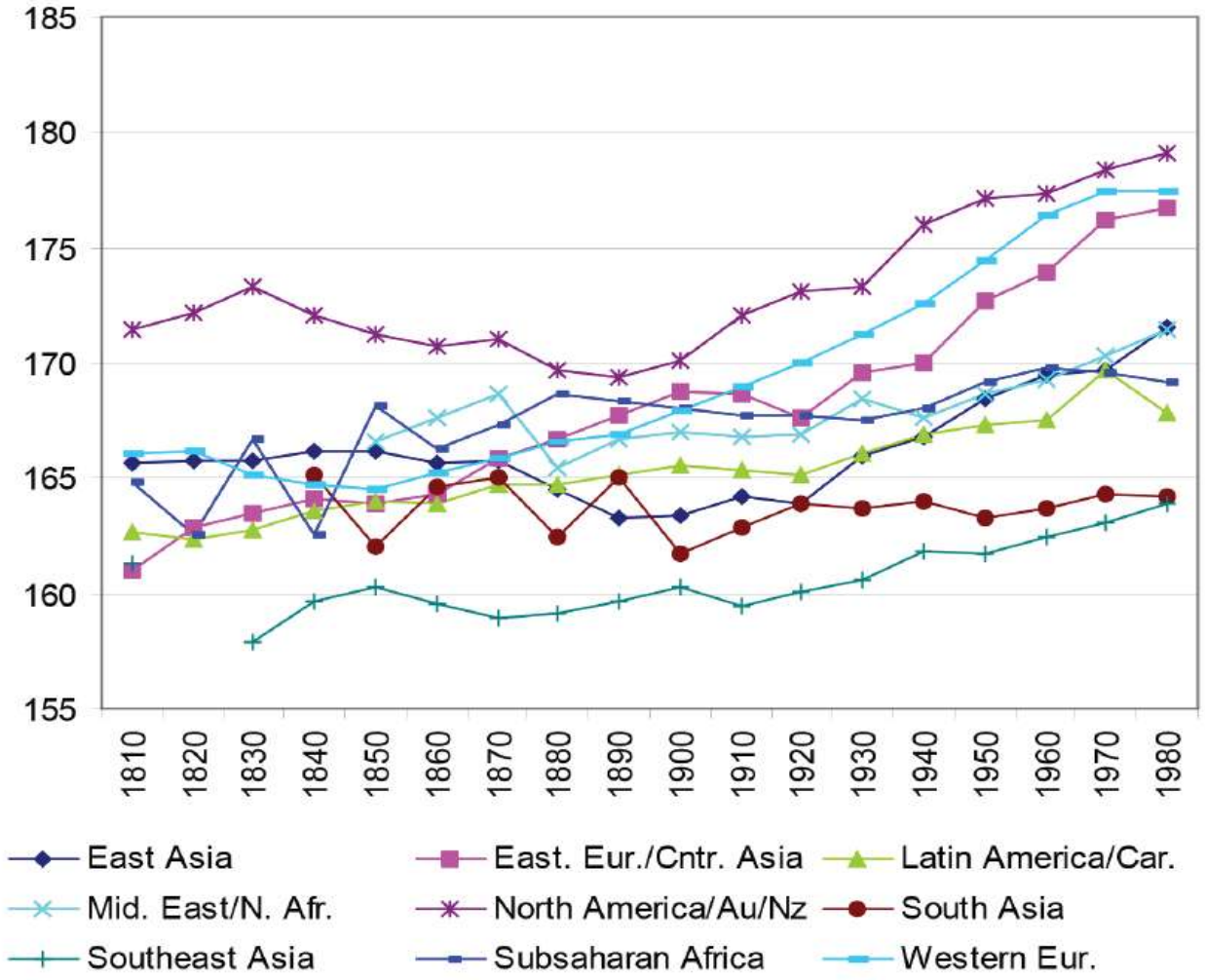
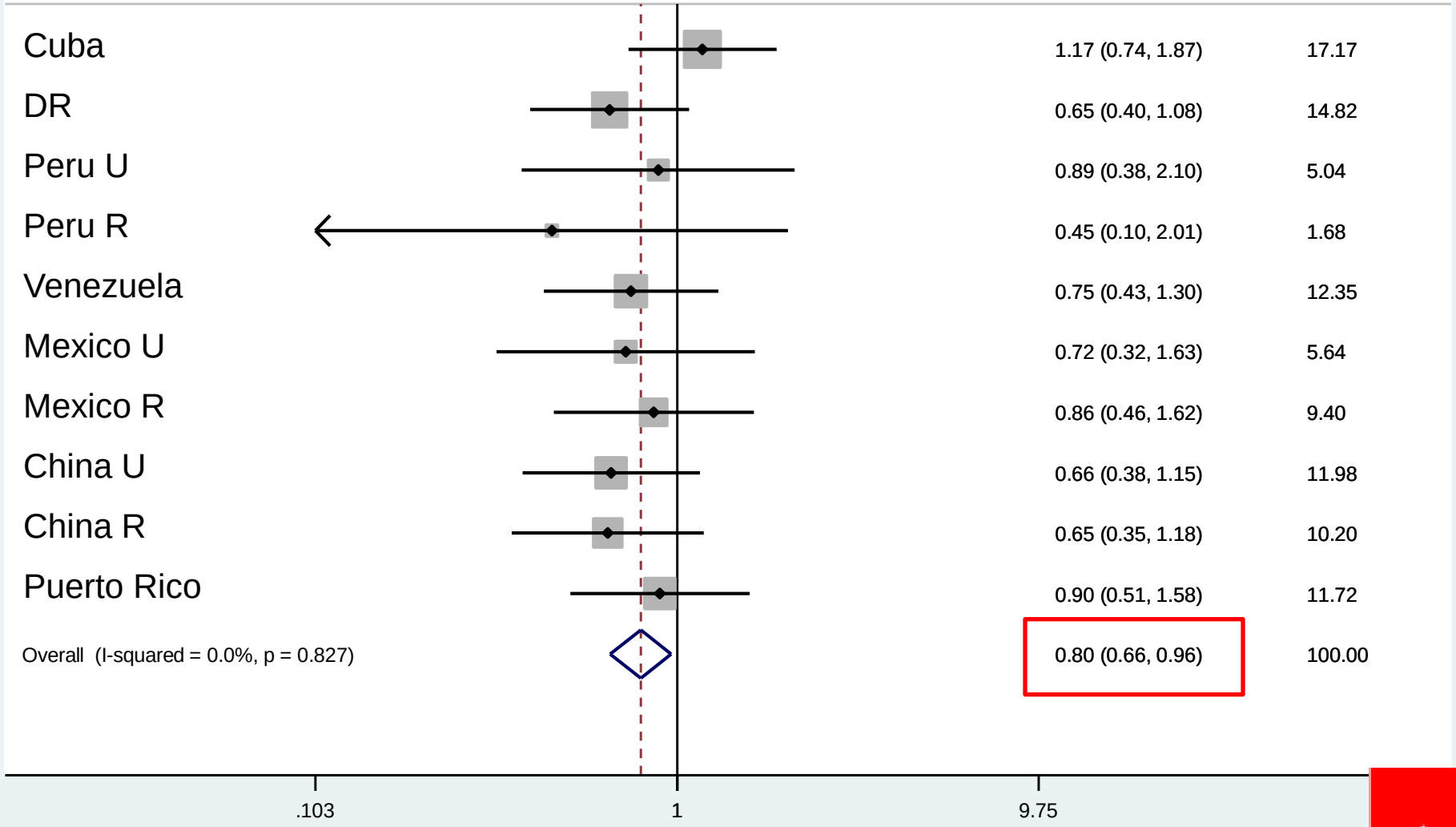


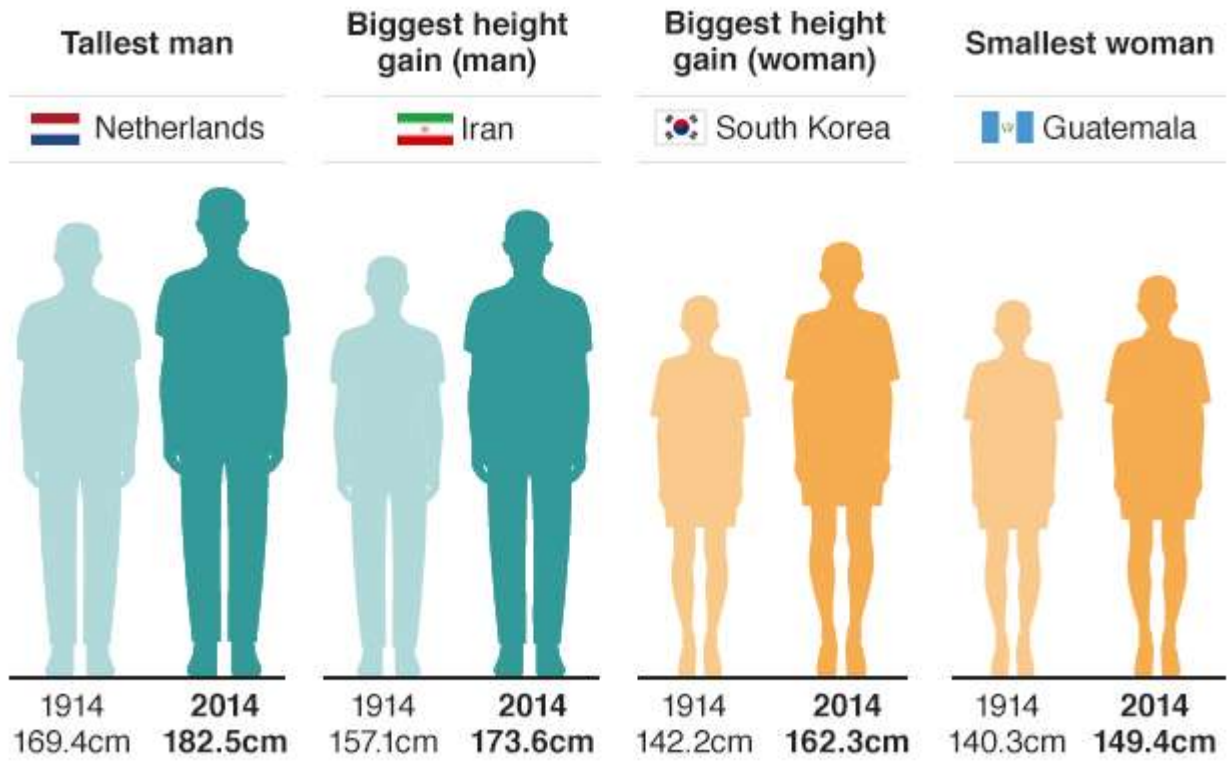
Fig. 1 - Height development by world region (no interpolations, weighted by population size).

Leg length and risk of incident 10/66 Dementia



Conclusions

- Leg length, but not skull circumference is inversely associated with the incidence of dementia
- Link to leg length suggests that early life nutrition may be important
- Could be one explanation for falling incidence rates in high income countries



Diabetes control and incident dementia – 10/66 studies

	Meta-analysed effect sizes		Heterogeneity
Exposure	*SHR*	*95% CI*	*Higgins I^2*
No Diabetes	1	Ref	
All Diabetes	1.25	(1.05-1.49)	48.6%
Controlled diabetes	1.29	(0.95-1.74)	13.3%
Uncontrolled diabetes	1.47	(1.19-1.81)	49.6%

** Adjusted for age, gender and education*

Hypertension control and dementia incidence – 10/66 studies

	Meta-analysed effect sizes		Heterogeneity
Exposure	*SHR*	*95% CI*	*Higgins I^2*
No hypertension	1	Ref	
Detected/ controlled	1.11	(0.93-1.33)	45.9%
Detected/ uncontrolled	1.08	(0.91-1.29)	0.0%
Undetected/ uncontrolled	1.31	(1.08-1.58)	11.6%

** Adjusted for age, gender and education*

The FINGER Trial (Ngandu et al Lancet 2015)

A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial

Tiia Ngandu, Jenni Lehtisalo, Alina Solomon, Esko Levälahti, Satu Ahtiluoto, Riitta Antikainen, Lars Bäckman, Tuomo Hänninen, Antti Jula, Tiina Laatikainen, Jaana Lindström, Francesca Mangialasche, Teemu Paajanen, Satu Pajala, Markku Peltonen, Rainer Rauramaa, Anna Stigsdotter-Neely, Timo Strandberg, Jaakko Tuomilehto, Hilkka Soininen, Miia Kivipelto

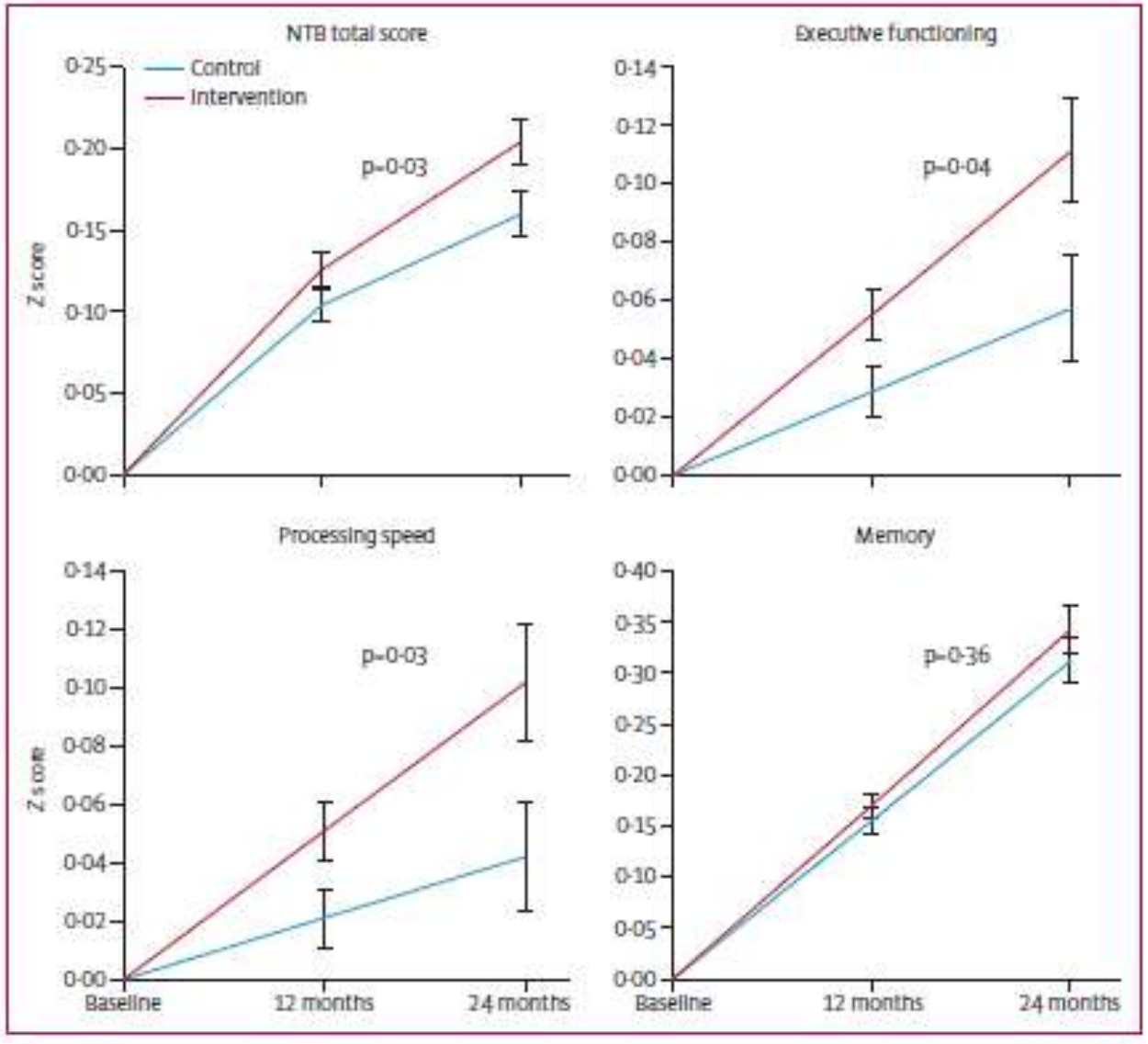


Figure 2: Change in cognitive performance during the 2 year intervention

European Dementia Prevention Initiative

FINGER	Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability
preDIVA	Prevention of Dementia by Intensive Vascular Care
MAPT	MAPT Multidomain Alzheimer Preventive Trial

http://www.edpi.org/

Karolinska Institutet

Miia Kivipelto, MD, PhD, Professor

An index of the quality of public healthcare – detection and control of hypertension

Extent of control	Population prevalence	Detected	Controlled	Detected & controlled
Good				
Peru (rural)	41%	97%	93%	90%
Peru (urban)	52%	93%	78%	73%
Puerto Rico	80%	91%	65%	58%
Moderate				
Mexico (urban)	67%	80%	55%	44%
Venezuela	79%	83%	50%	42%
DR	76%	82%	48%	39%
Mexico (rural)	55%	73%	52%	38%
China (urban)	63%	79%	45%	36%
Poor				
SA -Mangaung	90%	82%	32%	24%
Cuba	73%	70%	34%	24%
India (rural)	29%	43%	43%	18%
India (urban)	60%	44%	37%	16%
China (rural)	50%	51%	5%	3%

Prince et al - Journal of Hypertension 2012

Messaging the message

- **Dementia is a preventable condition**
- **Myth-busting**
  - It's an inevitable, normal part of ageing
  - There is nothing that we can do
- **Dementia is everybody's business**
  - never too early… (brain health promotion)
  - never too late… (dementia prevention)
- **This may slow, but will not stop the epidemic**

Late-life depression in EURODEP, SHARE, 10/66 DRG studies and beyond

Does depression change with age?
EURO-D in the EURODEP and SHARE studies

Affective suffering	Low Motivation
Depression	Interest
Tearfulness	Enjoyment
Wishing death	Concentration

- **Affective suffering** is associated with female gender
- **Low Motivation** is associated with older age, and cognitive impairment
- Suggests a link with brain ageing, and/ or restricted social opportunities

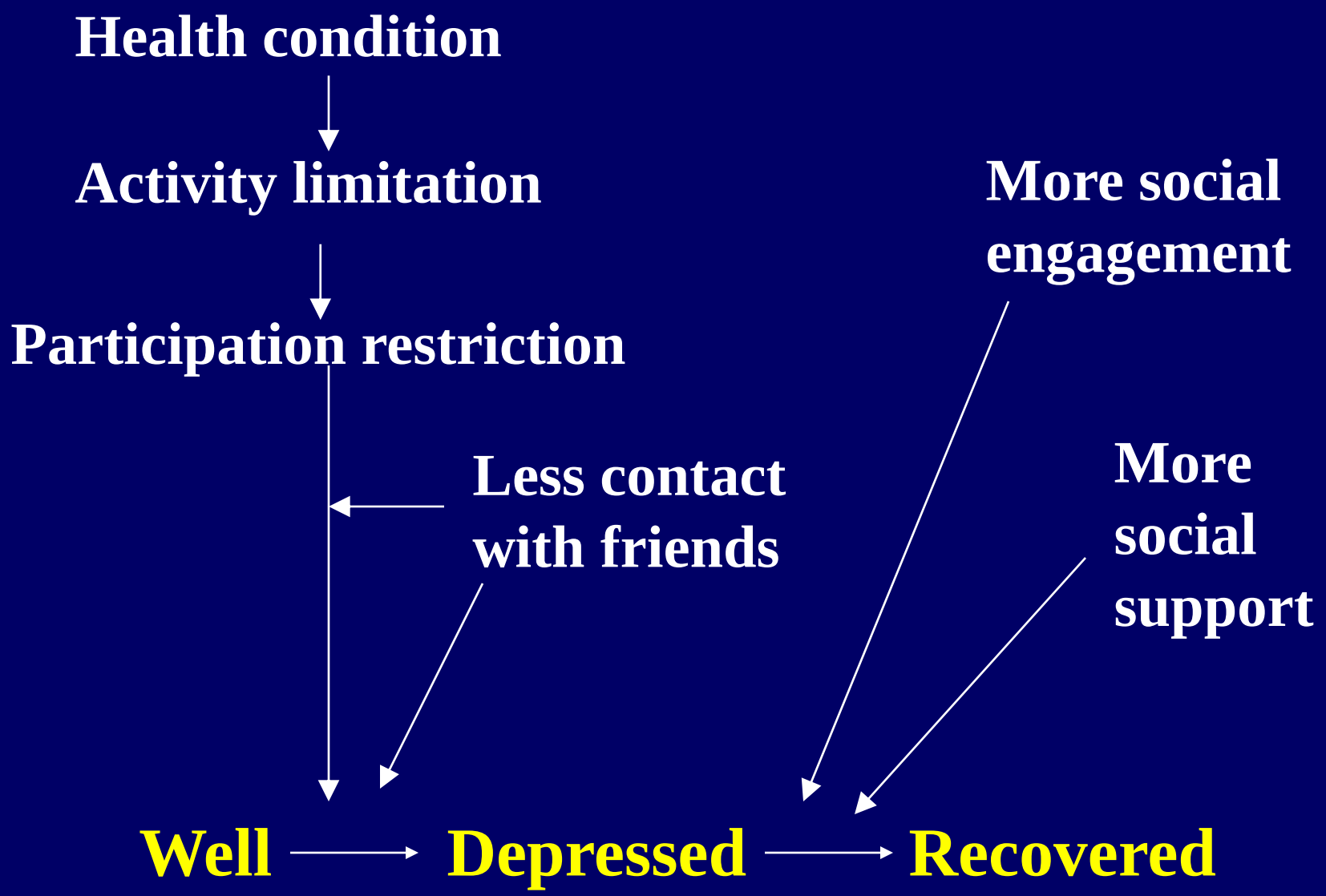
Prince et al, BJ Psych, 1999;
Castro-Costa et al , BJPsych 2007

The Gospel Oak Study
Participation Restriction
- the cause of late-life depression?

Handicap (quarter)	Onset rate	OR (crude)	OR (adj.)
1	3.6%	1.0 (ref)	1.0 (ref)
2	14.3%	3.9 (1.4-11.4)	3.6 (1.1-11.9)
3	14.6%	4.0 (1.4-11.8)	3.6 (1.1-12.6)
4	18.0%	5.0 (1.7-14.9)	4.7 (1.3-17.7)

PAF = 0.69 !

Prince et al Psychol Med, 1998



Prince et al Psychol Med, 1998

A goal for community prevention

To target mechanisms by which the physical and social fabric of the community as a whole limits social participation

age-friendly cities and communities in practice

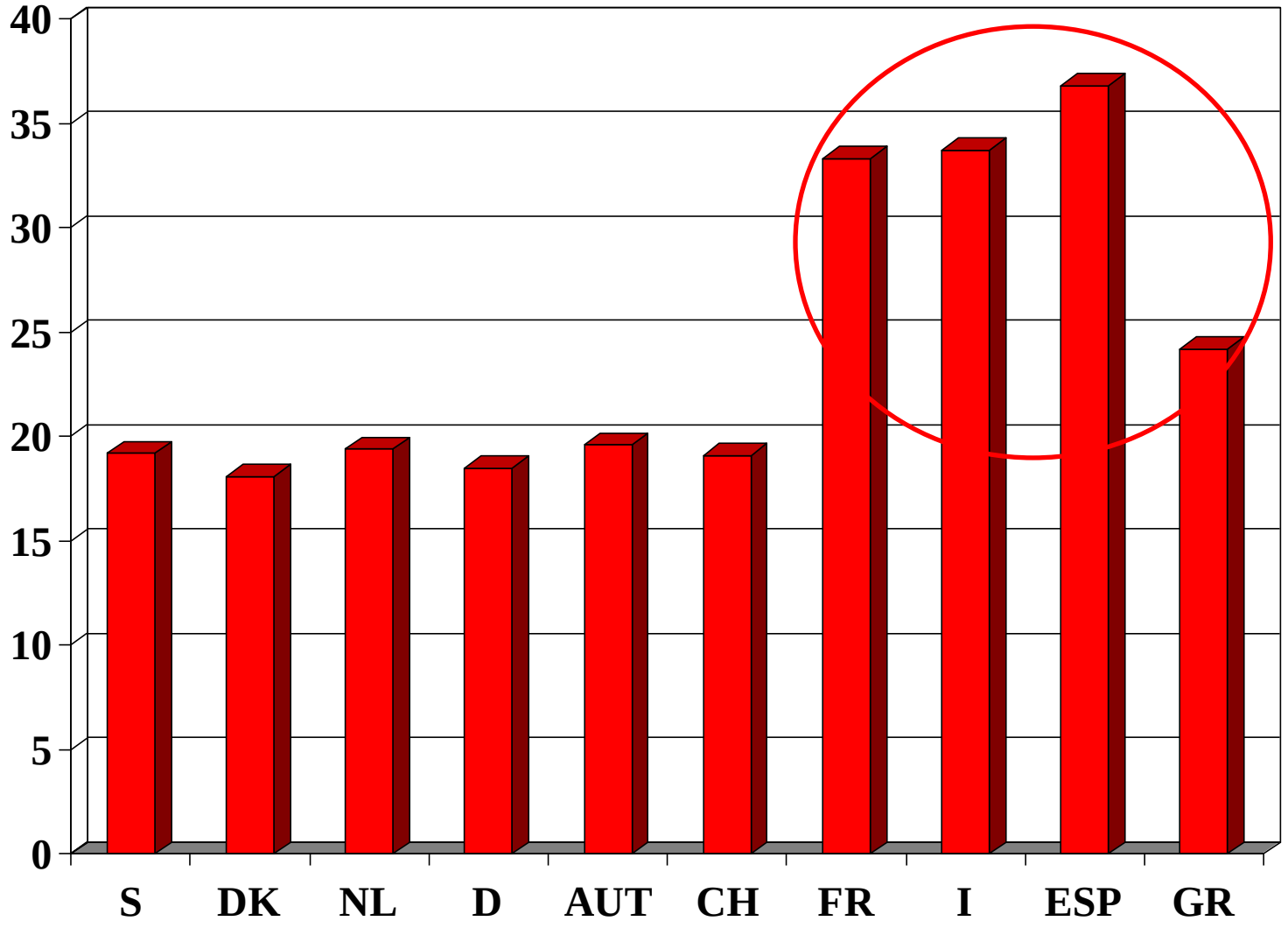
By local communities, for local communities

WHO Age-Friendly Communities

'Design for Diversity'

Social Protection for older people

SHARE STUDY - European cross-national variation in EURO-D depression prevalence - The 'Latin Effect'

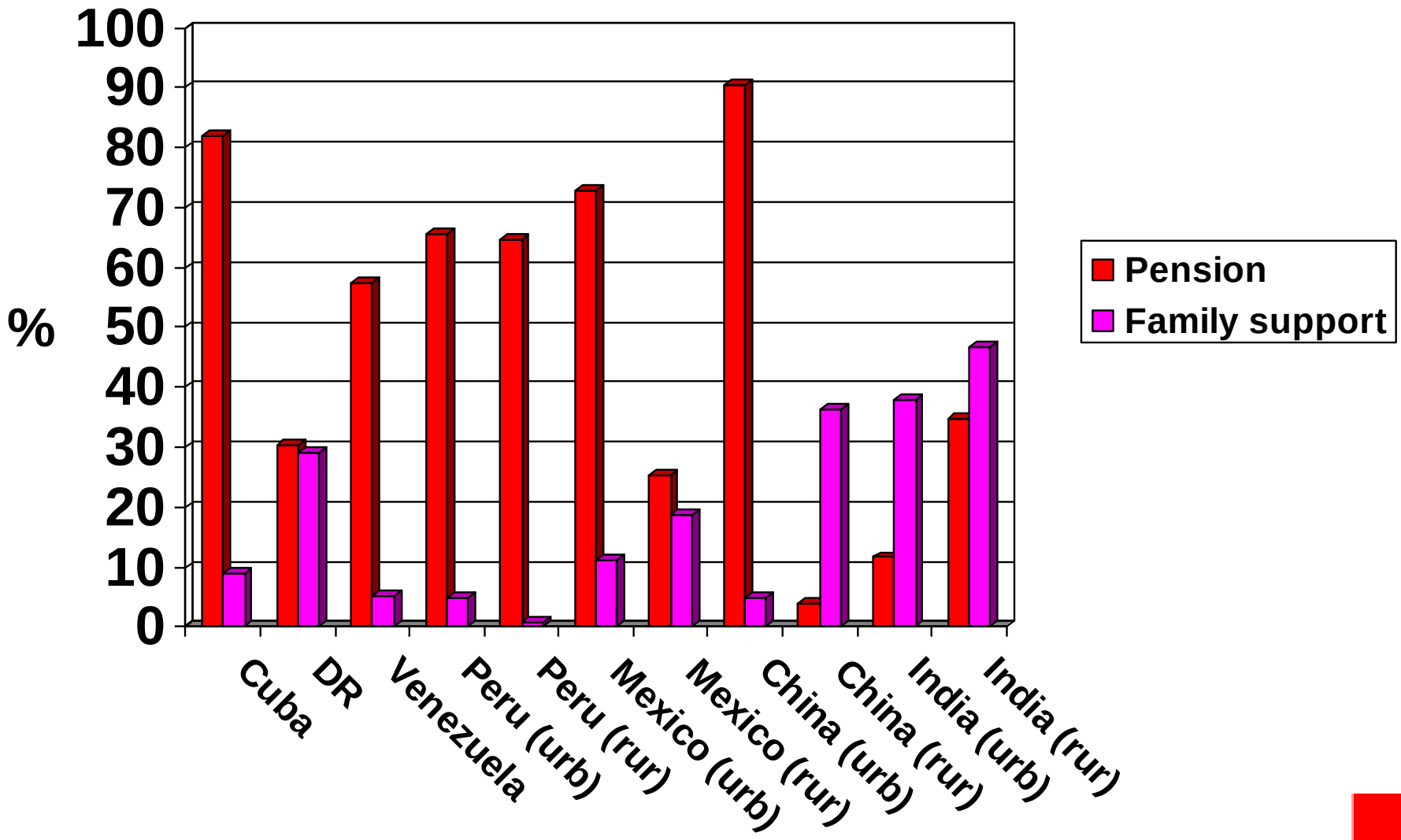


- 10 countries, >22,000 participants
- It's not measurement artefact
- It's not age, gender, education, cognition

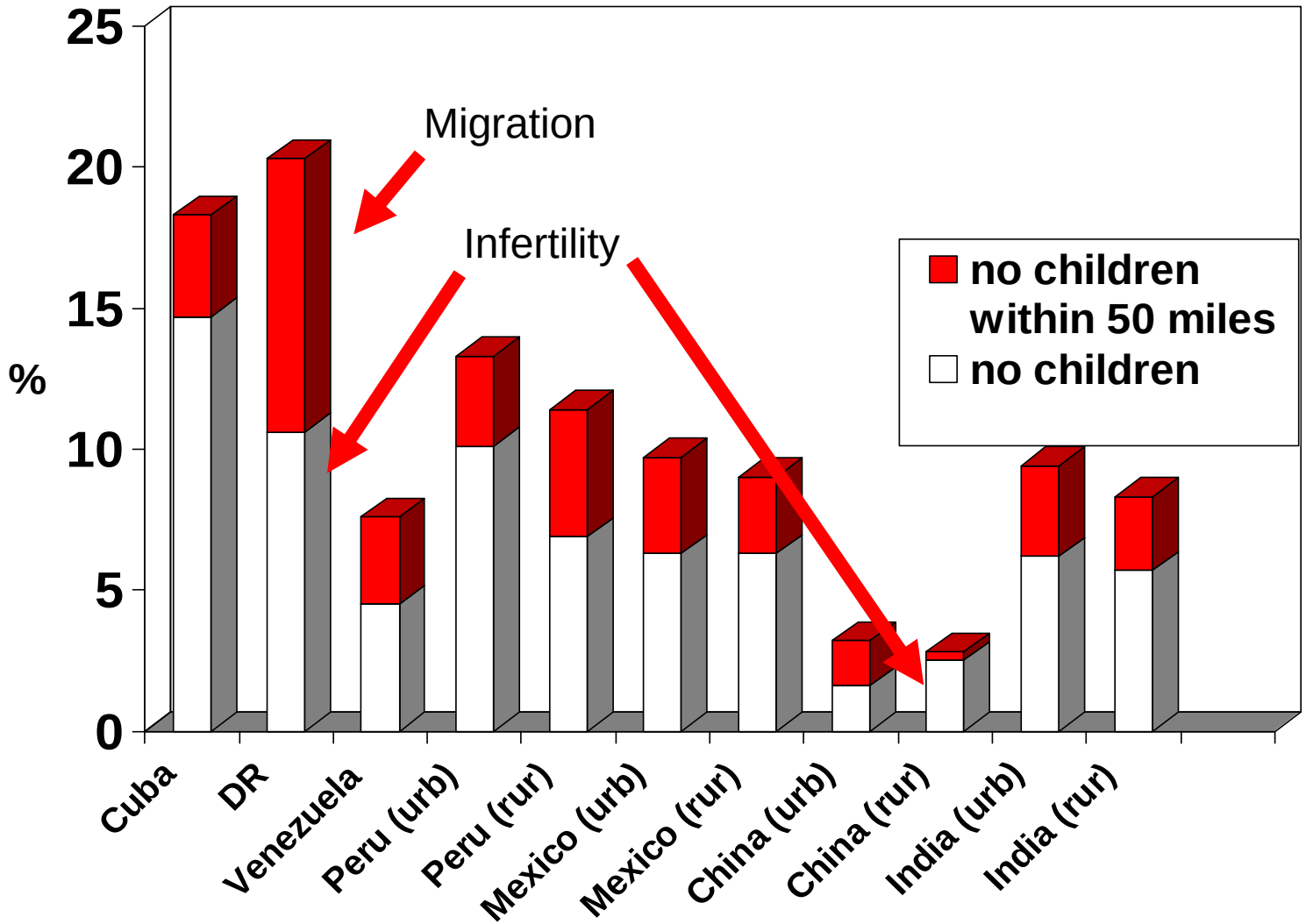
- Is it culture?
- Is it social protection?

Castro-Costa et al, BJPsych 2007

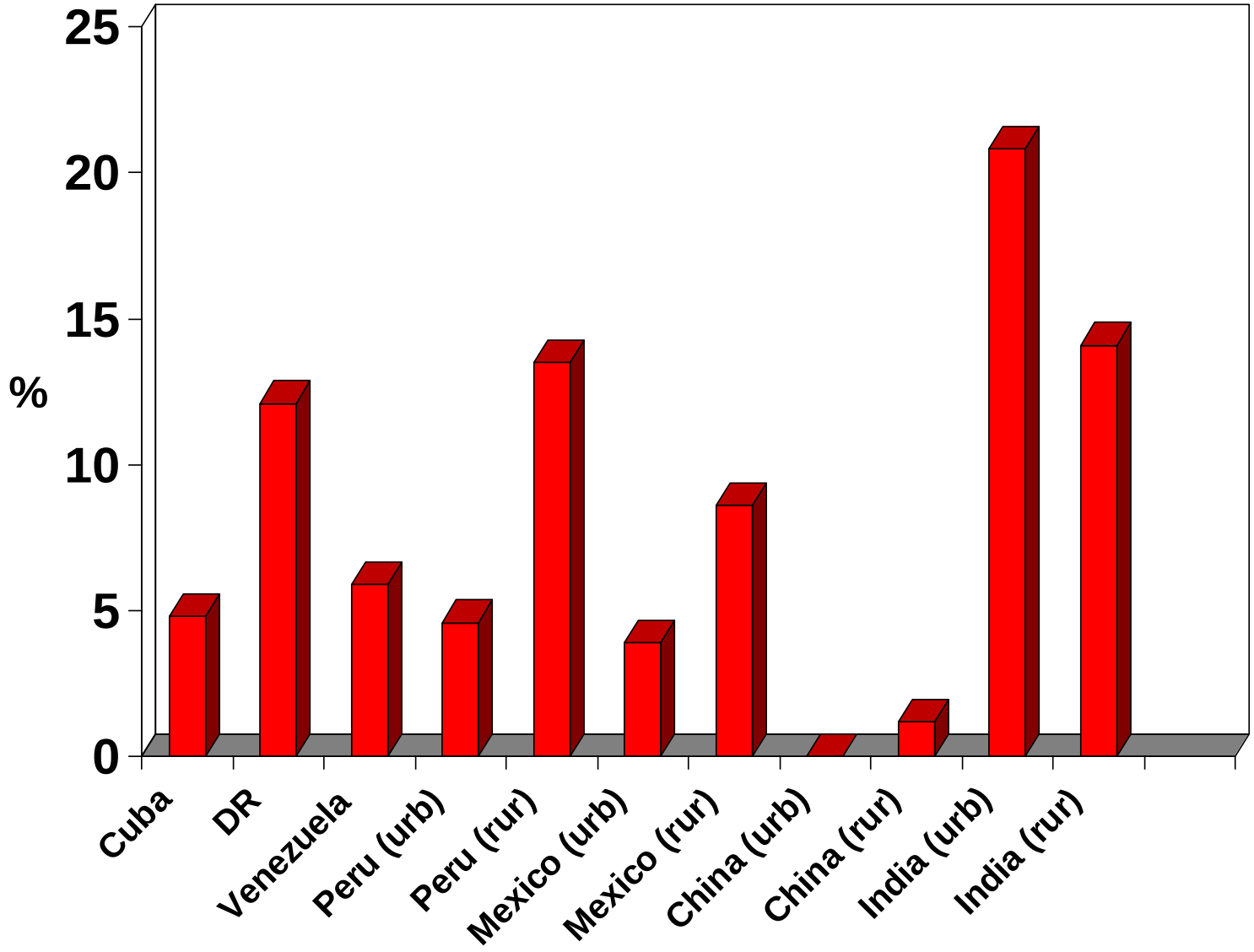
Income support from family, and government or occupational pension (% in receipt of income from those sources)



Social protection – (un)availability of children for support



Prevalence of food insecurity

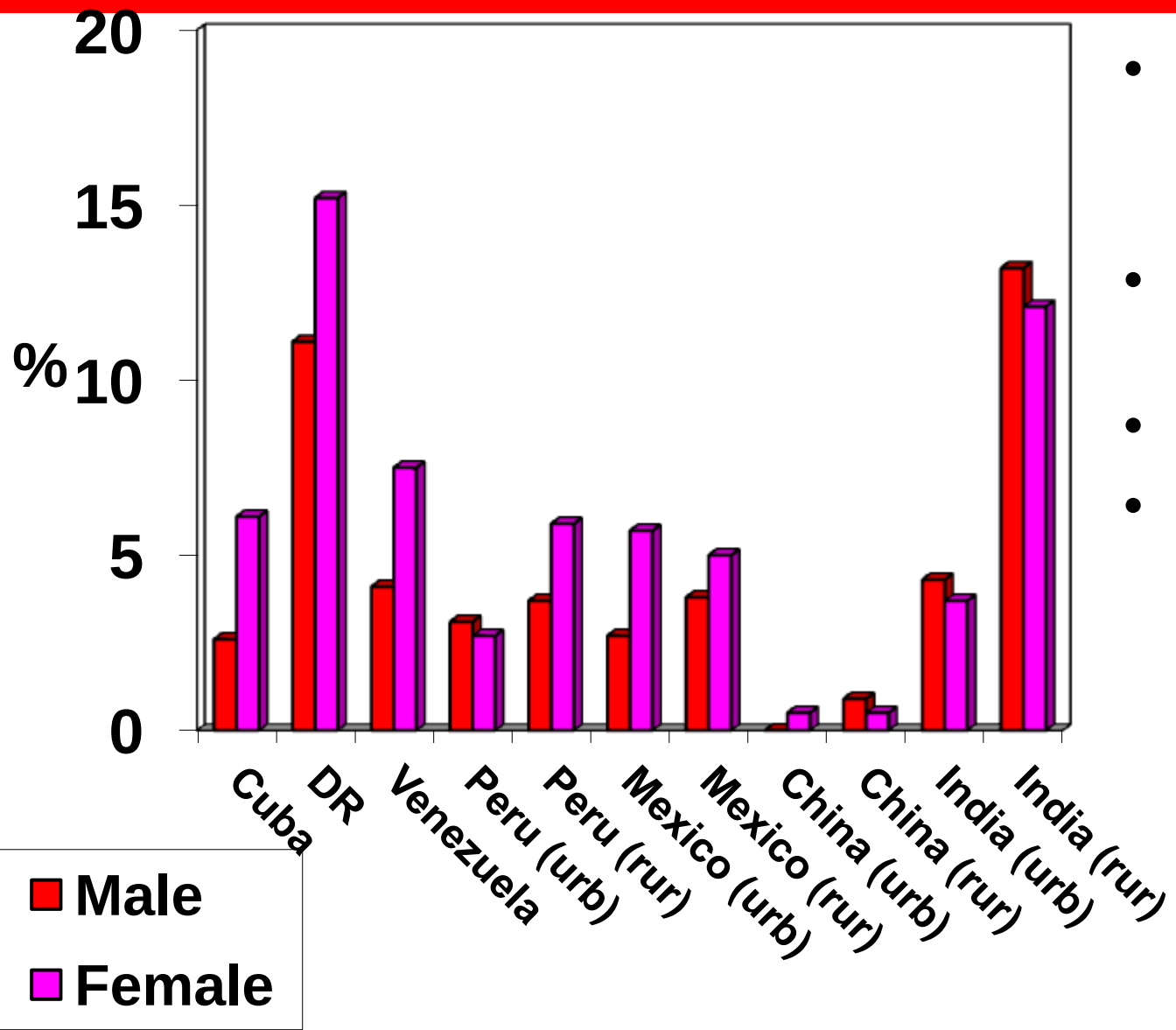


Risk factors for late-life depression in the 10/66 studies

	Meta-analysed effect sizes	
Exposure	*RR*	*95% CI*
Gender ↔	0.95	(0.82-1.10)
Older age ↔	1.00	(0.95-1.06)
More education ↓	0.85	(0.78-0.91)
More wealth (assets) ↓	0.87	(0.81-0.94)
Food insecurity ↑	1.49	(1.26-1.77)
Physical impairments ↑	2.34	(2.01-2.71)

* Controlling for age, gender, pension, food security, past history of depression, physical illness, stroke and dementia

Prevalence of ICD depressive episode – 10/66 studies



- **DOMINICAN REPUBLIC** – weak on pensions, family support and food insecurity
- **INDIA** – weak on pensions and food insecurity
- Other sites show a mixed picture.
- Social protection is complex
  - family support can compensate in traditional societies
  - social pensions provide a safety net

Integrated care for older people

Principles (public health model)

- Integration
  - into primary care roles and functions
  - between health and social care
- Task-shifting/ task-sharing
  - most services provided at primary care level by non-specialists
  - trained and supported by specialist services
- Reduce barriers to access
  - outreach (essential)
  - financing mechanisms
- Attention to structural/ societal issues
  - awareness
  - long-term care
  - social protection/ equity

Integrated Care for Older People (WHO ICOPE)

VERTICAL

(HEALTH CONDITIONS)

- Dementia
- Stroke
- Parkinson’s disease
- CHD
- COPD
- Depression
- Arthritis
- Anaemia

HORIZONTAL

(IMPAIRMENTS)

- Confusion and behaviour disturbance
- Mood
- Immobility/ Falls
- Incontinence
- Undernutrition/ hydration
- Sensory impairment
- Carer knowledge and strain

HOME-BASED/ TASK-SHARING/ OUTREACH/ LOW COST

AT et al. BMC Geriatrics (2015) 15:123
DOI 10.1186/s12877-015-0121-1

BMC Geriatrics

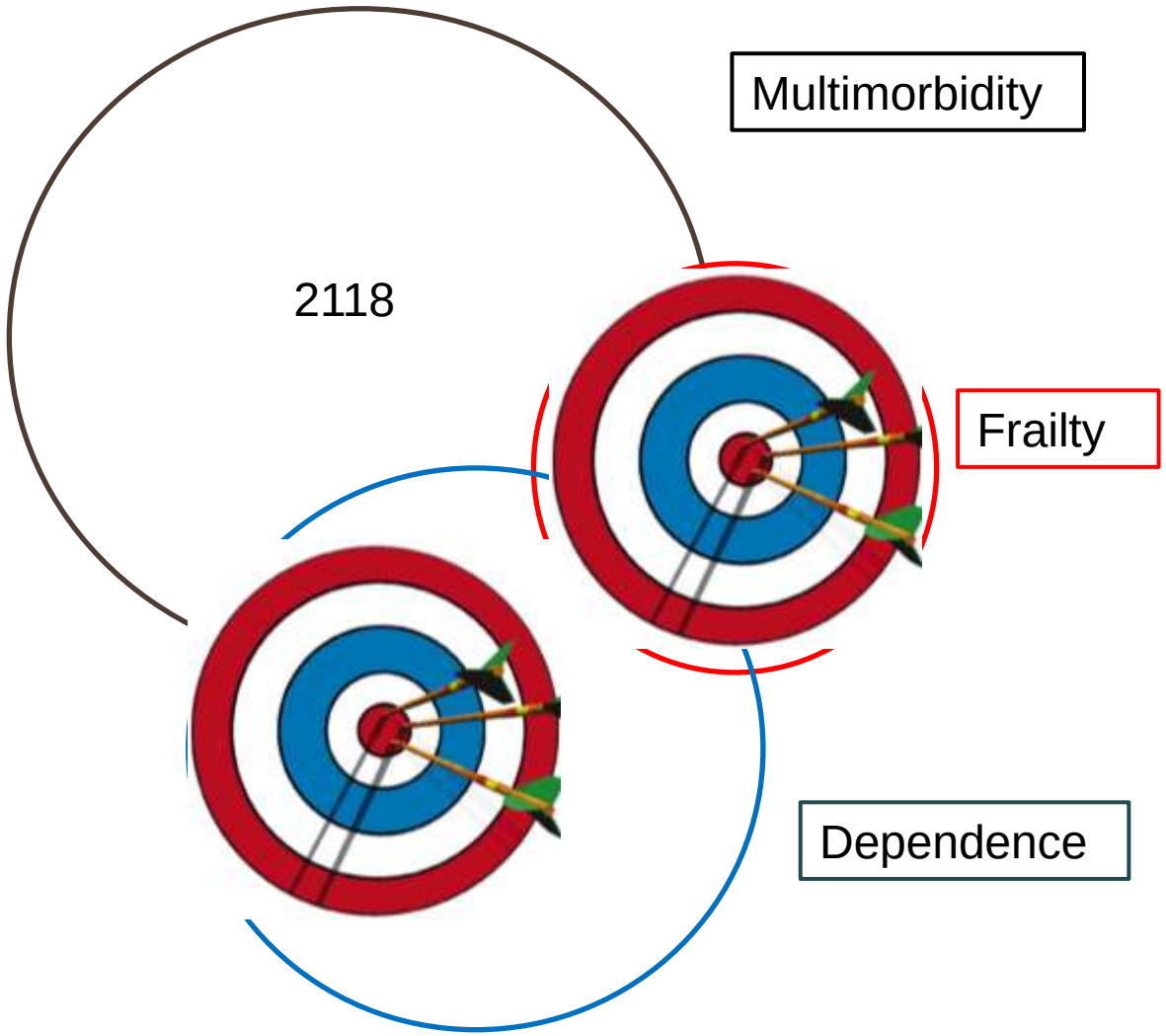
RESEARCH ARTICLE Open Access

Identifying common impairments in frail and dependent older people: validation of the COPE assessment for non-specialised health workers in low resource primary health care settings

Jotheeswaran AT[1,7*], Amit Dias[4,5], Ian Philp[3], John Beard[7], Vikram Patel[2,5,6] and Martin Prince[7]

Impairment	Assessment
Nutrition	MNA – MiniNutritional Assessment
Mobility	Walking speed, chair stand
Vision	Snellen chart – tumbling E's
Hearing	Whisper voice test
Continence	Self-report
Cognition	Brief Community Screening Test for Dementia
Mood	GDS-8 – Geriatric Depression Scale
Behaviour	NPI-Q – Neuropsychiatric Inventory

Frailty, multimorbidity and dependence



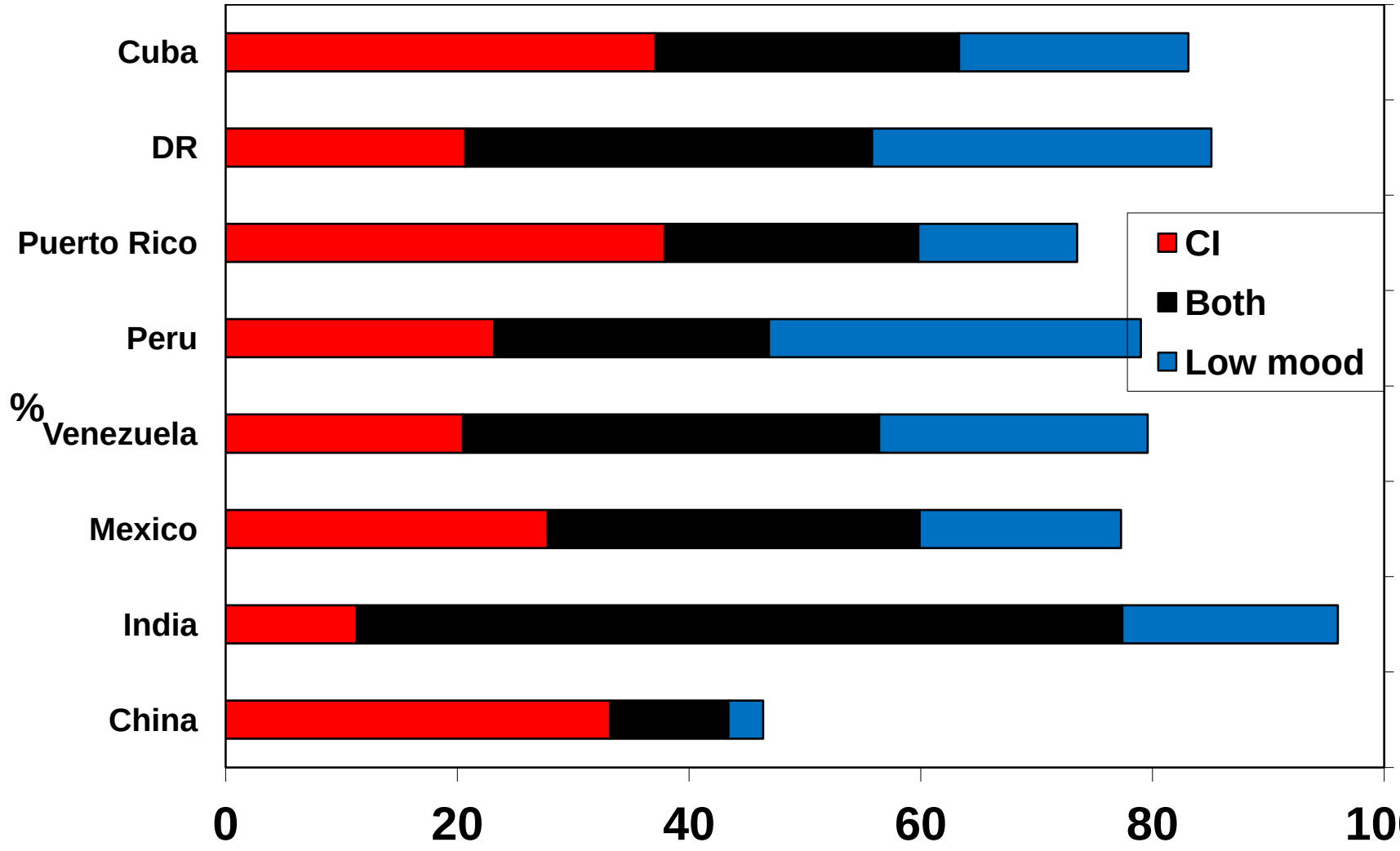
10/66 data (Latin America, India and China) - pooled across sites

I-COPE impairments, by country, in the target population

Country (%)	Mood	Cognition	Hearing	Vision	Continence	Mobility	Nutrition
Cuba	46.0	67.7	18.6	44.9	28.4	82.1	26.6
DR	64.4	57.7	22.5	52.7	25.3	89.6	14.2
Puerto Rico	35.6	71.9	33.3	48.1	27.5	46.5	7.7
Peru	55.8	56.7	30.3	46.8	29.6	83.6	18.4
Venezuela	59.1	59.3	24.8	50.3	21.6	53.2	13.0
Mexico	49.5	62.2	29.3	42.7	17.3	19.9	28.2
China	13.3	53.6	24.3	20.5	32.6	69.3	1.7
India	84.7	80.3	18.2	24.1	22.7	43.3	60.0
Total (%)	**51.4**	**63.6**	**25.0**	**42.5**	**25.9**	**66.5**	**20.4**

10/66 data (Latin America, India and China)

Comorbidity between cognitive impairment and low mood in the target population



Managing low mood and cognitive impairment

- Behavioural activation
  - Scheduling of pleasurable activities – implicit ‘social’ element
  - Based on values and preferences
  - Potential overlap with the effective elements of cognitive stimulation – language and social communication
  - Intuitive, simple, and feasible to be delivered by non-specialists

Condition / Treatment				ition in ntia
Antidepressants				NO
Psychological therapies				NO
Cognitive stimulation				RHAPS
Behavioural activation	YES	YES	YES	PERHAPS

Kralj and Prince, WHO GDG Systematic Review. Submitted to GRC 2016

My thanks to

- Alzheimer's Disease International
- The 10/66 Dementia Research Group in 12 countries:
  - Juan Llibre Rodriguez, Daisy Acosta, Yueqin Huang, Aquiles Salas, Ana Luisa Sosa, Mariella Guerra, Ivonne Jimenez, JD Williams, KS Jacob, Richard Uwakwe, Malan Heyns
- Our funders
  - The European Research Council
  - The Wellcome Trust
  - US Alzheimer's Association
  - World Health Organisation
- The London team
  - Maelenn Guerchet, Matthew Prina, Rosie Mayston, Cleusa Ferri, Renata Sousa, Emiliano Albanese, Michael Dewey, Rob Stewart

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