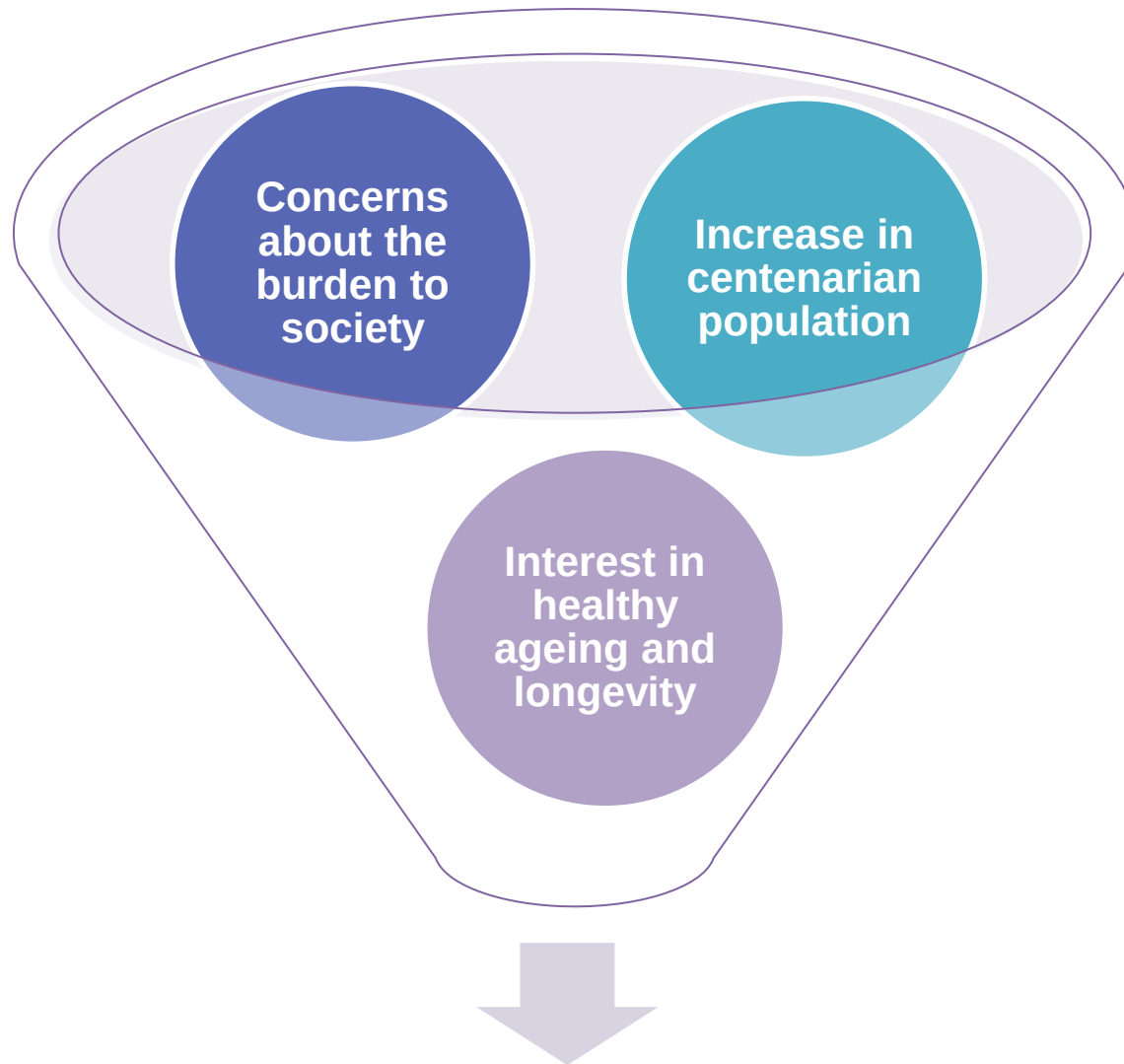




International Prevalence of Dementia, Cognitive Impairment and Functional Dependence in Centenarians.

Catriona (Keenie) Daly, Perminder Sachdev, Henry Brodaty



Centenarian Research!

What We Know...

Risk Factors for Dementia in Centenarians



- African American race
- Low education
- Smoking
- Poor Physical Health
- The apolipoprotein E ϵ -4 allele is rare amongst centenarians.

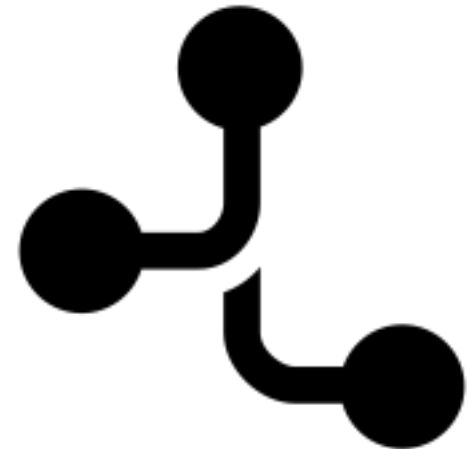
What We Know...(2)

Changes in Neurocognition

↓ **Episodic Memory** (esp. attention & processing speed)

→ **Language**

→ **Executive Function**



What we (kind of) know...

Dementia Prevalence ???

- **27%** (or **42%** once drop-outs were accounted for) – He & Muenchrath (2011)
- **76%** - Silver, Newell, Brady, Hedley-White & Perls (2002)
- **85%** - Ebly, Parhad, Hogan & Fung (1994)

Limitations

Small sample sizes

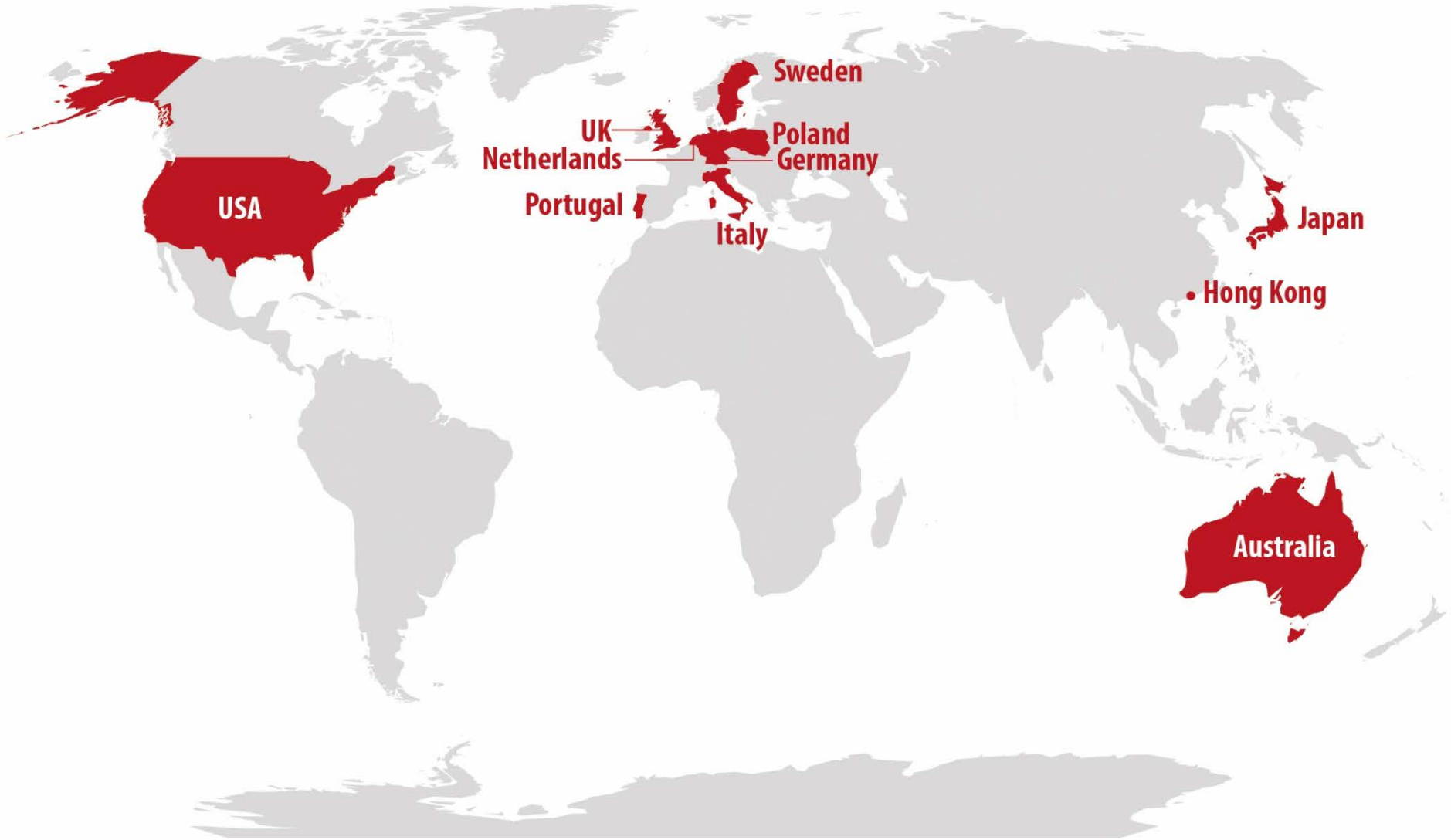
Healthy volunteer effect

Non-ascertainment of all centenarians within a selected region

Refusal of proxy-consent by 'protective' family members

Frequent shift in residence

Selective Attrition



ICC Dementia

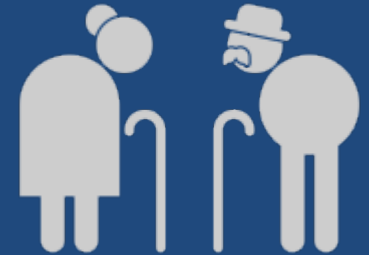
Risk &
Protective
Factors

Prevalence &
Incidence



Cognitive
function &
decline

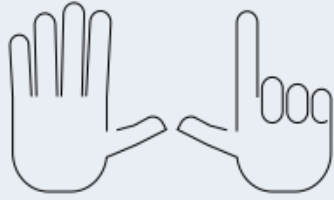
Contextual
factors



CURRENT STUDY

Prevalence of Dementia in Centenarians & Near-Centenarians from 11 population-based studies.

Harmonisation



Age



Education



**Functional
Dependence**



**Cognitive
Impairment**

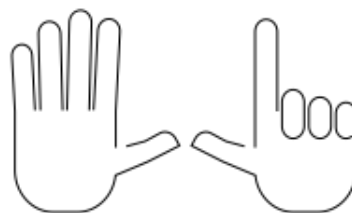
Sample Characteristics



N = 3491



F = 78%



98.2 years
(SD = 2.56)



56.8% < HS



MMSE
Score ≤ 22



ADL Score
impaired
 ≥ 2 items

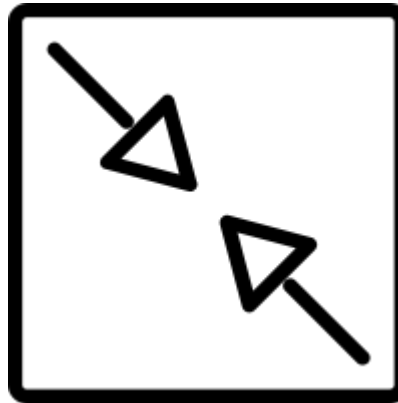


Dementia
Diagnosis

Algorithm Agreement

Study	Methodology	Kappa Coefficient	Standard Error
90 + Study	Multidisciplinary consensus	0.722*	.035
Go95+	Psychiatric Examination and informant reports	0.821*	.032
HKCS	Self-report hospital diagnosis	-0.053	.018
PT100	Binary groups based on Global Deterioration Scale (GDS)	0.028	.012
SCS	Multidisciplinary Consensus	0.708*	.043

* $p < 0.05$

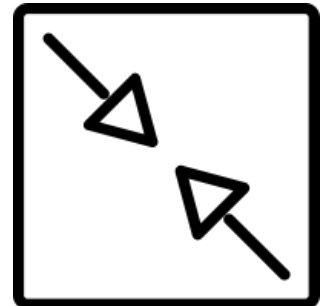


Algorithm Agreement

Kappa 0.722 -0.821 in three studies against consensus diagnosis or psychiatric examination

Study	Methodology	Kappa Coefficient	Standard Error
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Results



51.4%
cognitively
impaired



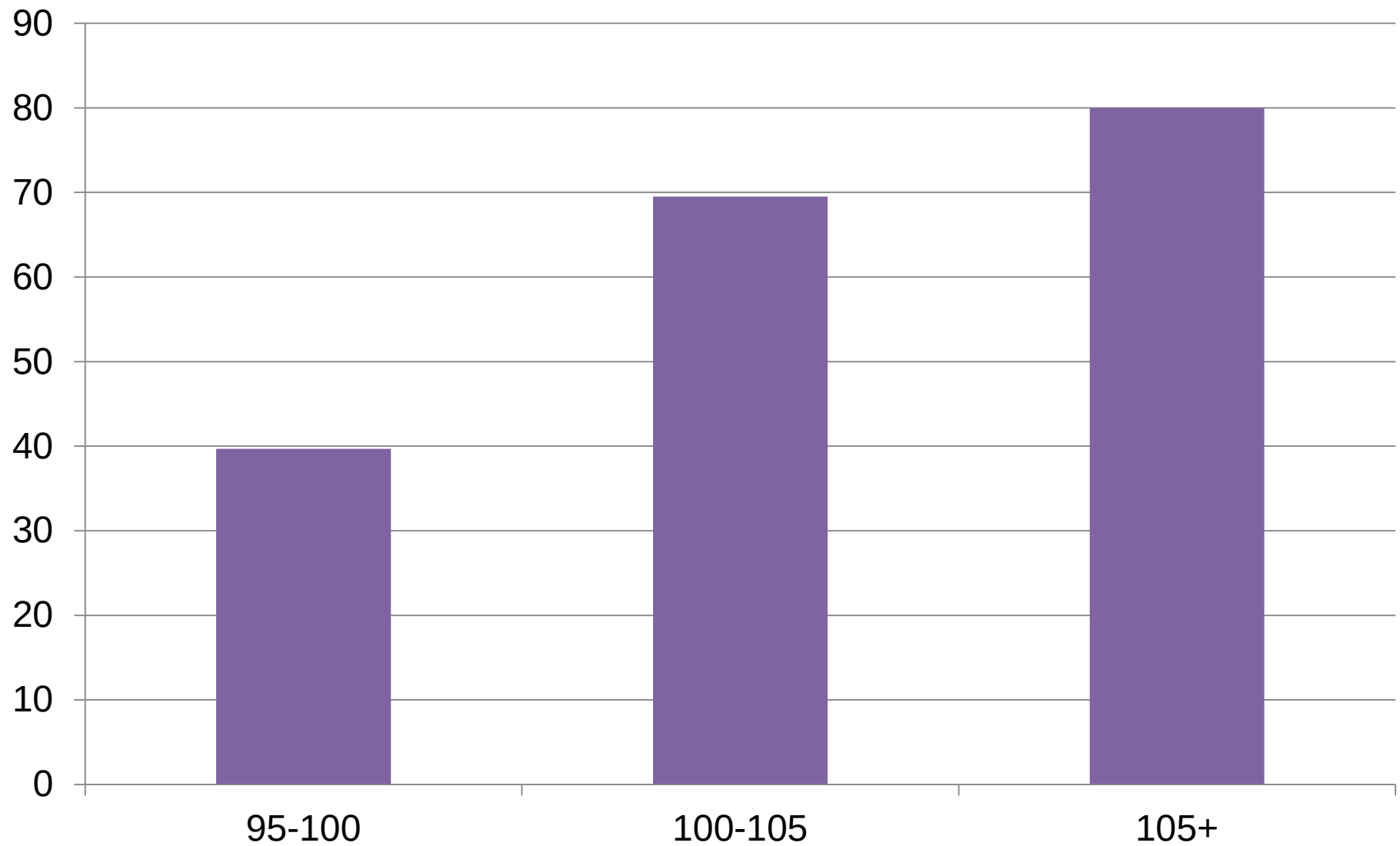
62.9%
functionally
dependent



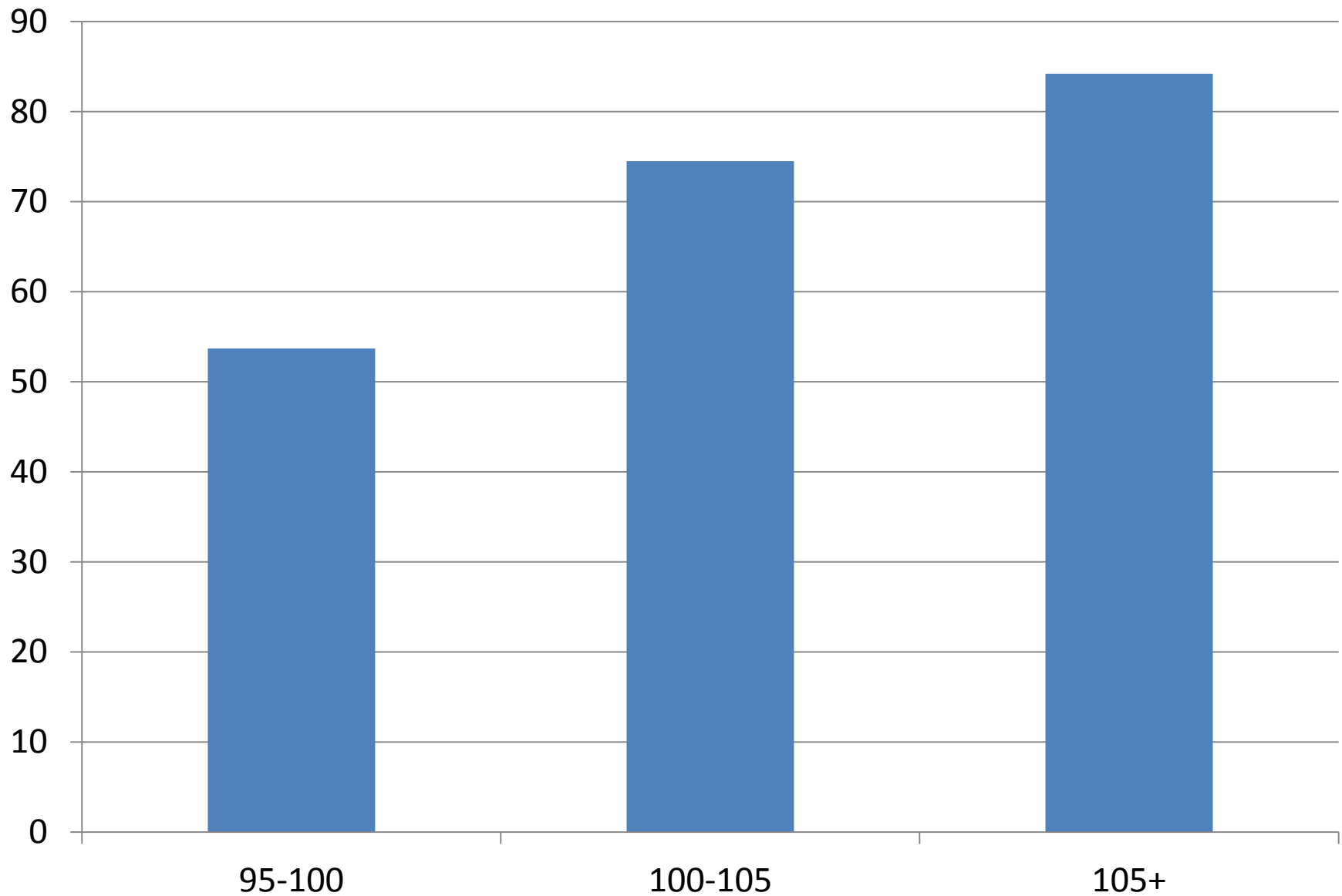
46.7%
had
dementia



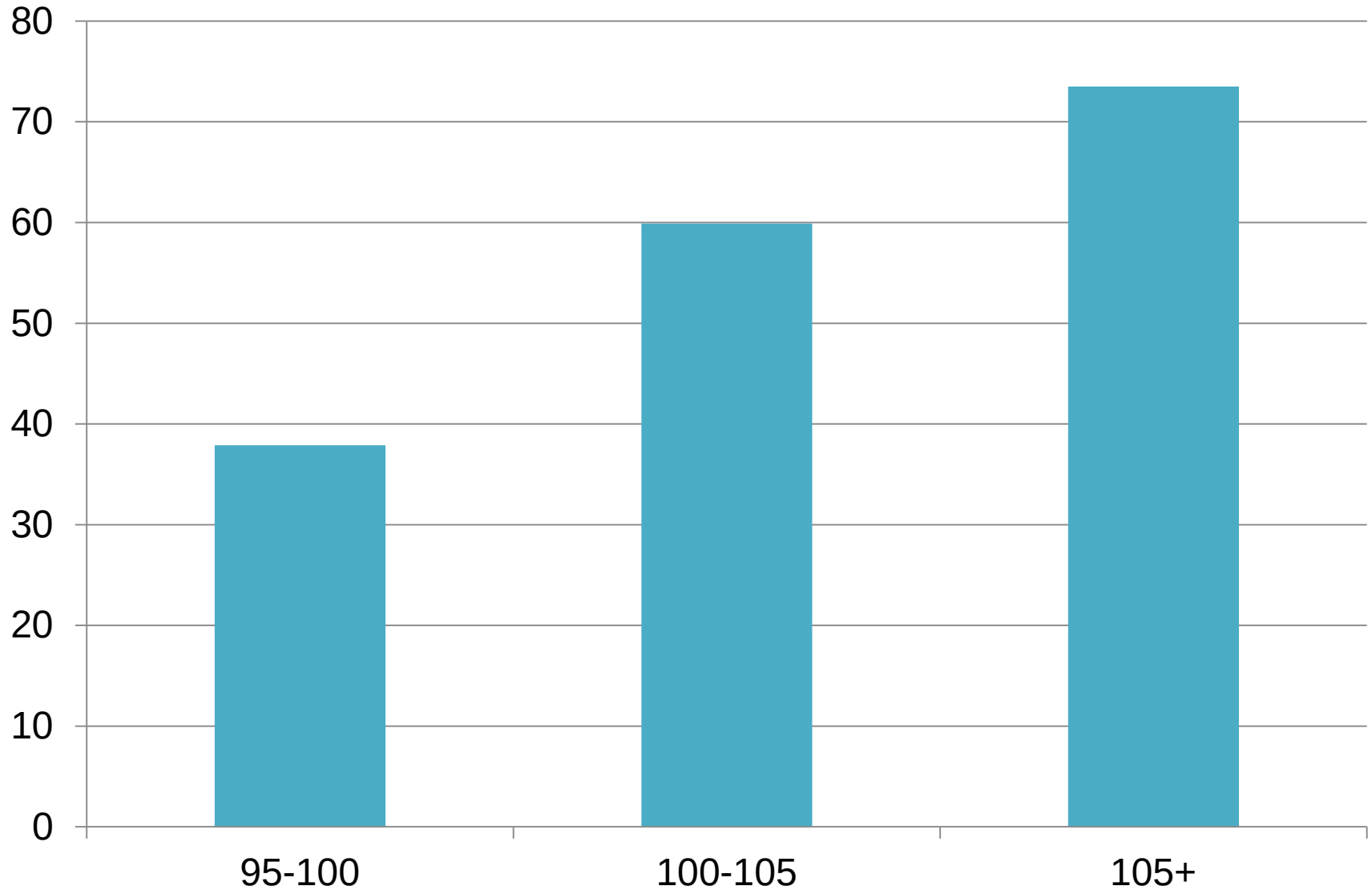
Cognitive Impairment by Age Group



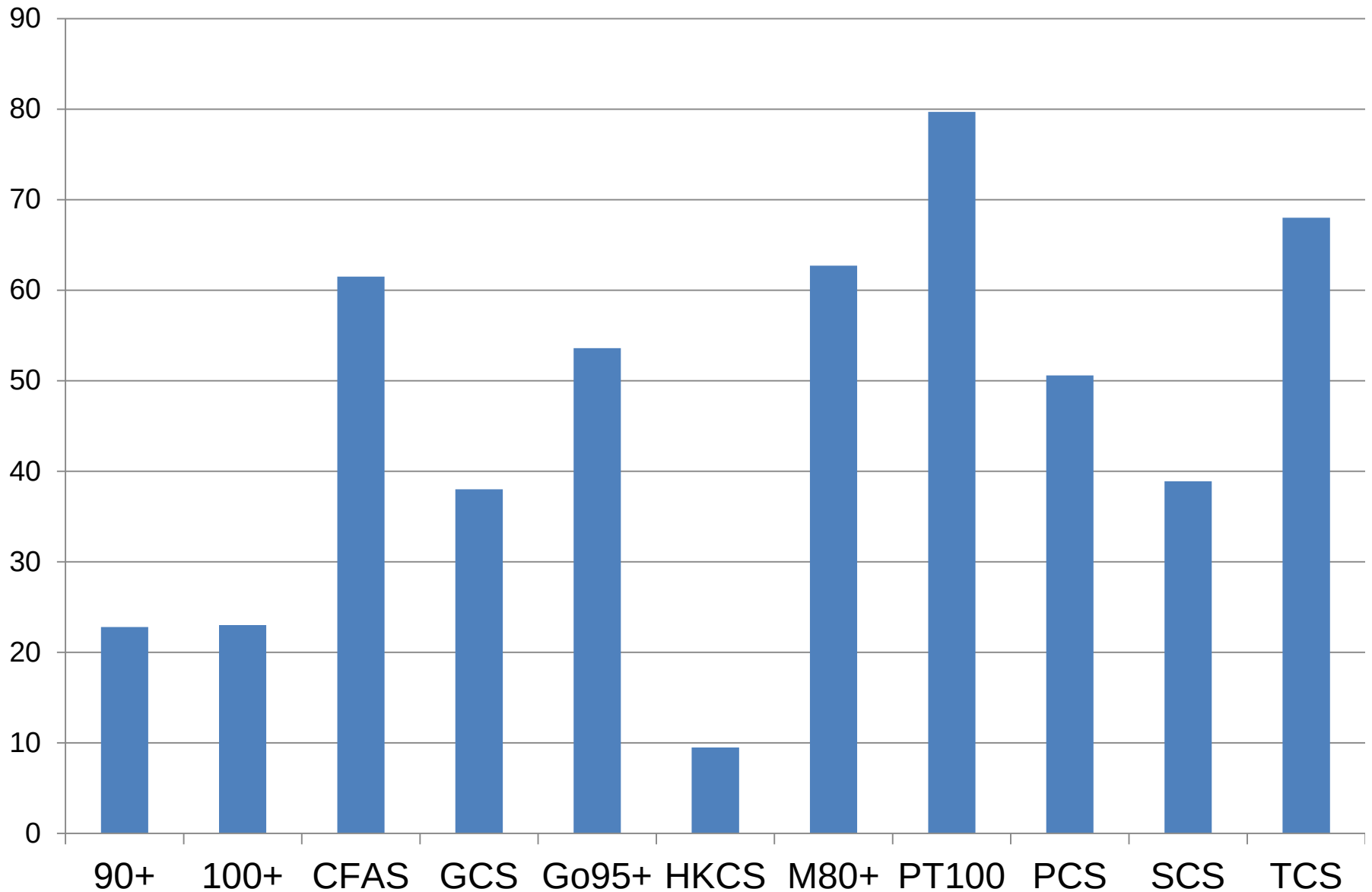
Functional Impairment by Age Group



Dementia Prevalence by Age Group



Prevalence of Dementia by Study*



Limitations



- **Dementia Diagnosis**
 - **Based on limited assessment**
 - **Conservative estimates**
 - **Type of dementia?**
- **Low numbers in highest age group**

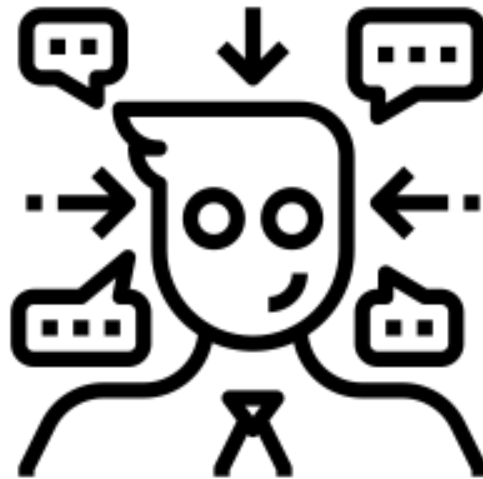
Limitations



Common pitfalls of centenarian research

- Low numbers in highest age group
- Healthy volunteer effect +
- Selective Attrition
- Non-ascertainment of all centenarians within a selected region
- Refusal of proxy-consent by 'protective' family members

Better understanding
of individual study
distributions



Effects of
sensorimotor
impairment?

Assess variability
within and
between studies
Role of meta-factors

Alternative methods of
determining
dementia/impairment?

MMSE

- Language
- Administration
- Scoring procedures
- Measure equivalence

Next Steps (immediate)

- Individual study distributions
 - Forest plots
 - Kernel density plots?
- MMSE
 - Sensorimotor impairment
 - Administration & scoring procedures
 - Measure equivalence (item level analysis)
- Alternative dementia classifications
 - Delta (δ) latent dementia phenotype
 - Continuous levels of impairment



Next Steps (Longer term)

- Incidence of dementia & rates of decline
- Risk & Protective factors
- Further investigate ethno-racial differences & possible cohort effects
- Further collaboration



Thank you!



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