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Enlarged Partnership 8 – Consequences and Challenges of Ageing



A novel public-private alliance to generate socioeconomic, biomedical and technological solutions for an inclusive Italian ageing society

XVII Convegno

**I CENTRI PER I DISTURBI COGNITIVI E LE DEMENZE
E LA GESTIONE INTEGRATA DELLA DEMENZA**

Luca Cuffaro

The
Economist

**SPECIAL
REPORT:**

Dementia

- August 29th 2020
- 3 The memory hole
- 5 The search for a cure
- 7 Who will do the caring?
- 9 Going abroad
- 10 How to pay for it
- 12 Still human



The perils of oblivion

- Dementia - Special Reports - Aug 29TH 2020

*“Nowhere in the world is ready to cope with the global explosion of dementia”,
writes Simon Long*



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WORLDWIDE DEMENTIA CASES TO TRIPLE BY 2050 TO OVER 150 MILLION PEOPLE

The number of people with dementia would increase **from 57.4** (95% uncertainty interval 50.4–65.1) **million** cases globally **in 2019 to 152.8** (130.8–175.9) **million** cases **in 2050**

The Lancet Public Health, 2019. [https://doi.org/10.1016/S2468-2667\(21\)00249-8](https://doi.org/10.1016/S2468-2667(21)00249-8)



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Comment

The personal economic burden of dementia in Europe

Linus Jönsson

Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden



Dementia is a syndrome characterized by progressive cognitive and functional impairment, most commonly caused by Alzheimer's disease and other neurodegenerative and cerebrovascular disorders. Costs of care increase dramatically with progressing disease severity, and increasing dementia prevalence due to ageing populations is raising concerns about the sustainability of future costs of dementia care. A new study shows that social welfare systems in

balance the dataset to counter this effect. As the survey did not measure costs for dementia care beyond out-of-pocket expenditures, total costs (including costs paid by government or insurance, such as long-term care) were estimated by assuming that the proportion of total spending to out-of-pocket spending is the same for persons with dementia as the national average in each country - this may result in underestimation of the total costs of dementia care.

The Lancet Regional
Health - Europe

2022;20: 100472

Published online 25 July

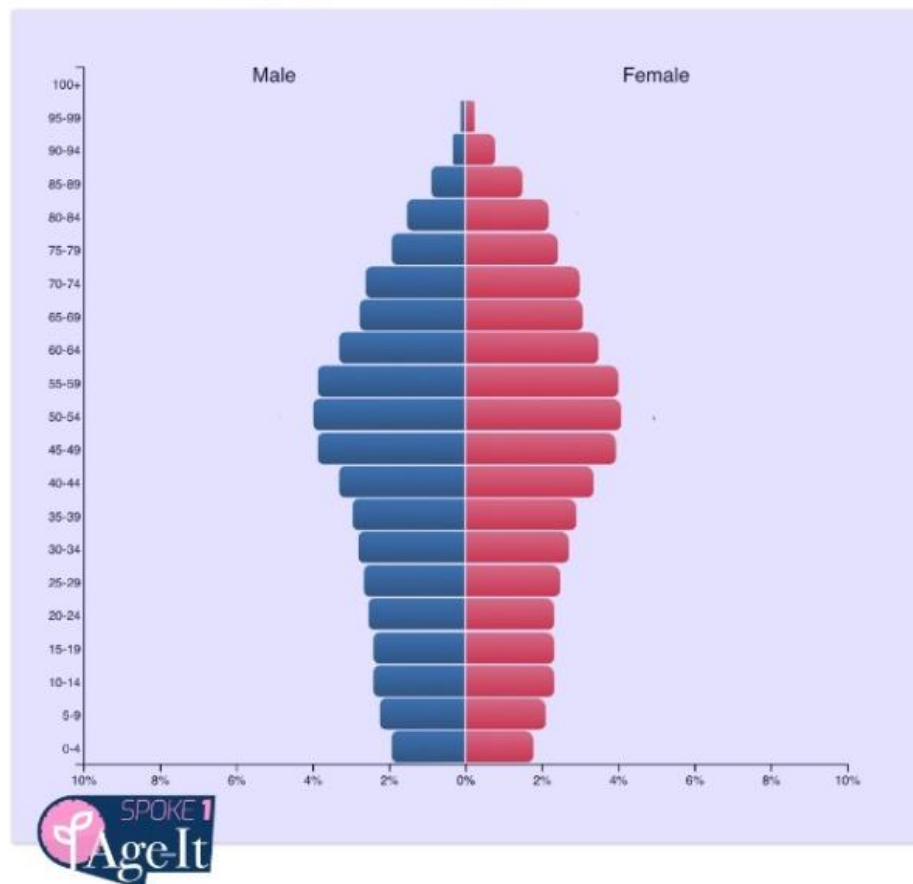
2022

<https://doi.org/10.1016/j.lanepe.2022.100472>

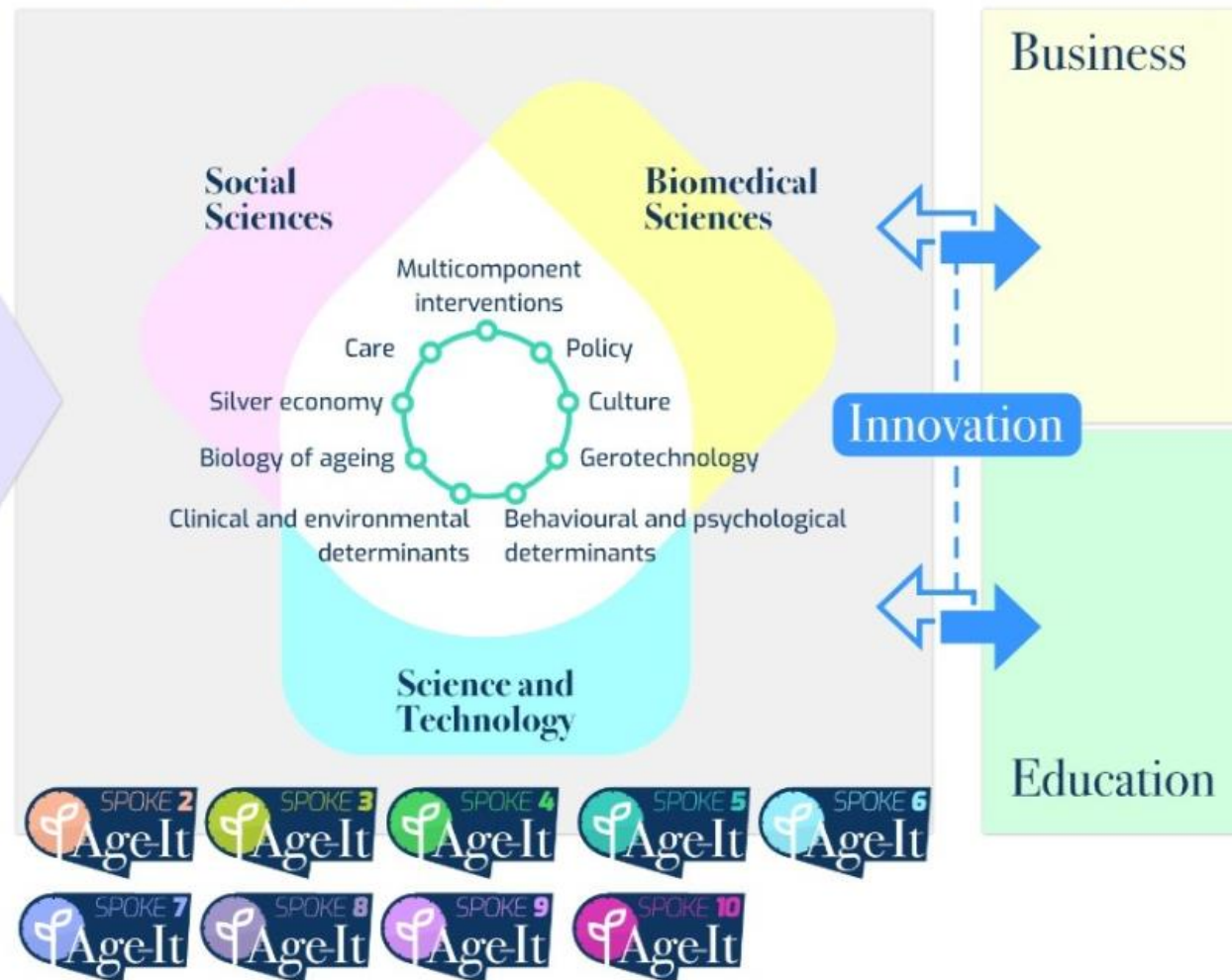
In 2019, dementia cost economies globally
1.3 trillion \$

Approximately **50% of these costs** are attributable to care provided by informal carers (e.g. **family members and close friends**), who provide on **average 5 hours of care and supervision per day**

Italian 2021 population pyramid



Holistic, problem-solving and interdisciplinary approach





The 10 Challenges of Ageing

The demography of ageing. A Data Science approach to decision-making
SPOKE 1

Interventions and technologies to maintain health and well-being
SPOKE 8

Gerotechnology - solutions to meet the needs of older people
SPOKE 9

Mainstreaming ageing for better and future-oriented policymaking
SPOKE 10

Cross-integration (vertical) challenges





Interventions and technologies to reduce the burden of age-related diseases, disorders and disabilities

PI: Prof. C. Ferrarese, UNIMIB

Structure (six WPs):

- both “**horizontal**” (focused on *three settings* of multicomponent interventions; WP 1 to 3)
- “**vertical**” (*data collection and analytics, technologies, and cost-effectiveness*; WP4 to 6)

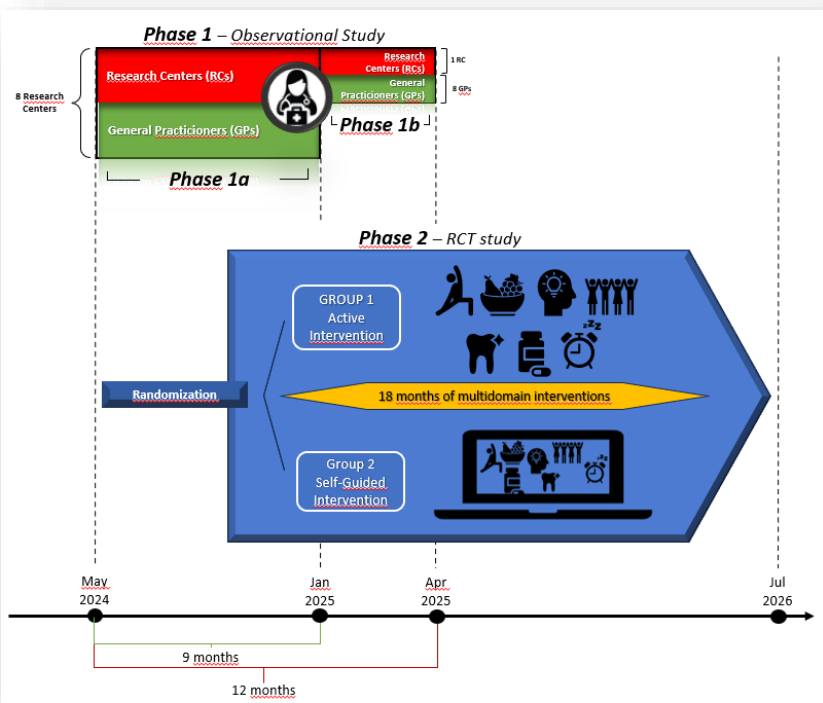
Disciplines:

- Medicine (neurology, geriatrics), neuroscience, neuropsychology, computer science, genetics, bioengineering, biostatistics, economics

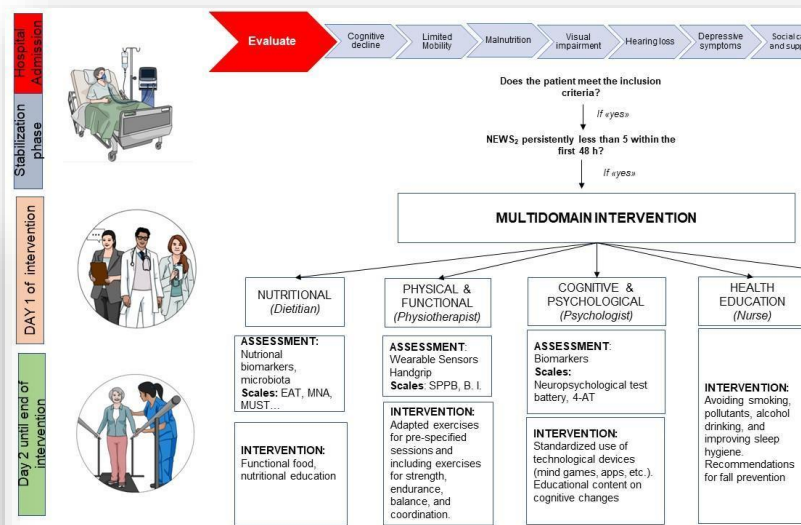


Horizontal WPs

Project (WP1) **In-TEMPO (community-dwellers)**
Phase 1 (population study): **3000 pz**
Phase 2 (efficacy study): **1340 pz**
9 research centers (2 Nord, 2 Center, 5 Sud)



Interventions and technologies to reduce the burden of age-related diseases, disorders and disabilities



Project (WP3) **I-COUNT (nursing-home)**
Sample size: **120 pz**
3 research centers

Project (WP2) **OPTIMAge-IT (hospitalised)**
Efficacy and feasibility study: **240 pz**
Hospital phase, then home-based treatments
8 research centers (3 Nord, 2 Center, 3 Sud)

ENDPOINTS: functional, cognitive, biomarkers, hospitalisation rates
OUTPUTS: new protocol of health care system organization for elderly



Vertical WPs

Interventions and technologies to reduce the burden of age-related diseases, disorders and disabilities



WP4: Informatic resources and artificial intelligence tools to collect, analyse and share data



WP5: Advanced and innovative technologies able to adapt in several settings (app-web, wearable devices)



WP6: Cost-effective and sustainability analysis to optimise and rethink the assistance to elderly people



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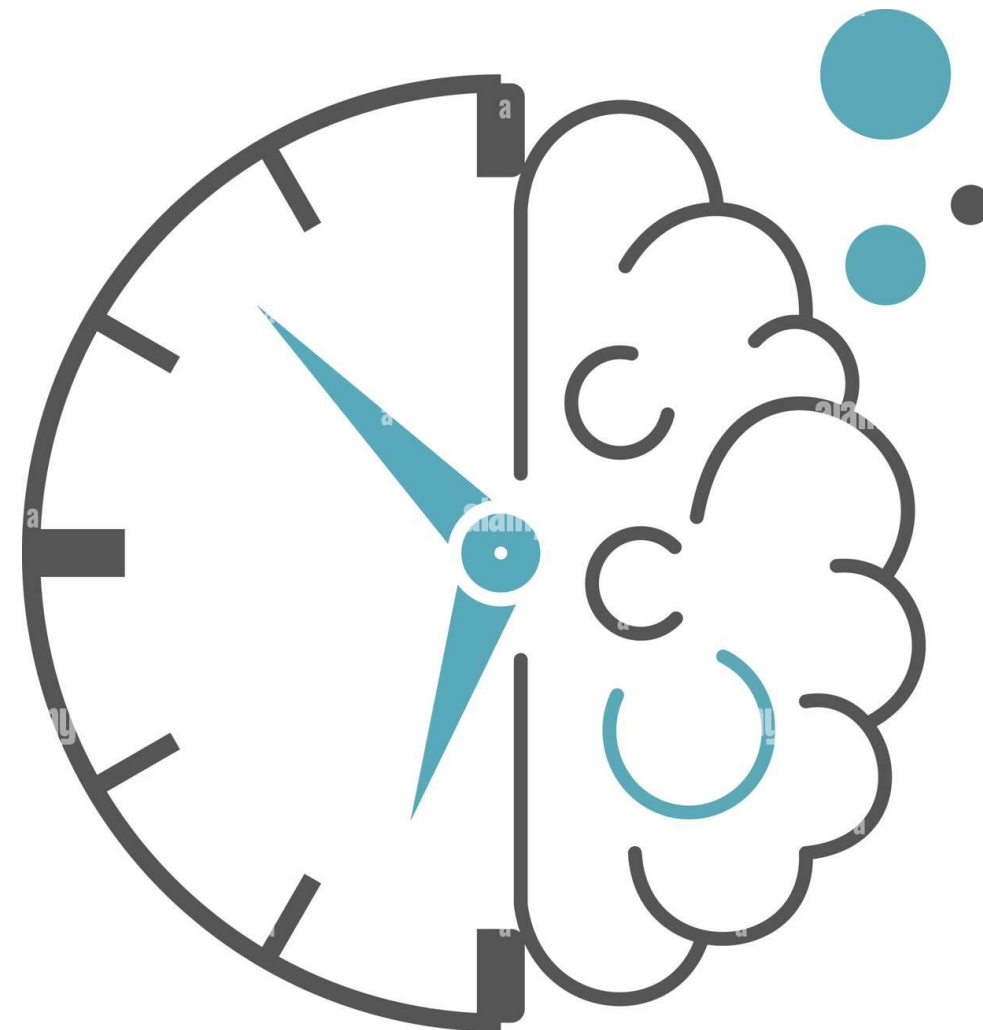
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IN-TeMPO study

ItaliaN study with **Tailored
Multidomain** interventions to **Prevent**
functional and cognitive decline in
community-dwelling **Older** adults

www.clinicaltrials.gov: NCT06248723





ELSEVIER

Alzheimer's & Dementia 9 (2013) 657–665

Alzheimer's & Dementia

The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER): Study design and progress

Miia Kivipelto^{a,b,c,d,*}, Alina Solomon^{a,c,d}, Satu Ahtiluoto^b, Tiia Ngandu^{b,d}, Jenni Lehtisalo^b, Riitta Antikainen^{e,f}, Lars Bäckman^c, Tuomo Hänninen^g, Antti Jula^b, Tiina Laatikainen^b

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 Levälähti, 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, Hilikka Soininen, Miia Kivipelto

Findings Between Sept 7, 2009, and Nov 24, 2011, we screened 2654 individuals and randomly assigned 1260 to the intervention group (n=631) or control group (n=629). 591 (94%) participants in the intervention group and 599 (95%) in the control group had at least one post-baseline assessment and were included in the modified intention-to-treat analysis. 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. Between-group difference in the change of NTB total score per year was 0·022 (95% CI 0·002–0·042, p=0·030). 153 (12%) individuals dropped out overall. Adverse events occurred in 46 (7%) participants in the intervention group compared with six (1%) participants in the control group; the most common adverse event was musculoskeletal pain (32 [5%] individuals for intervention vs no individuals for control).

Interpretation 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.





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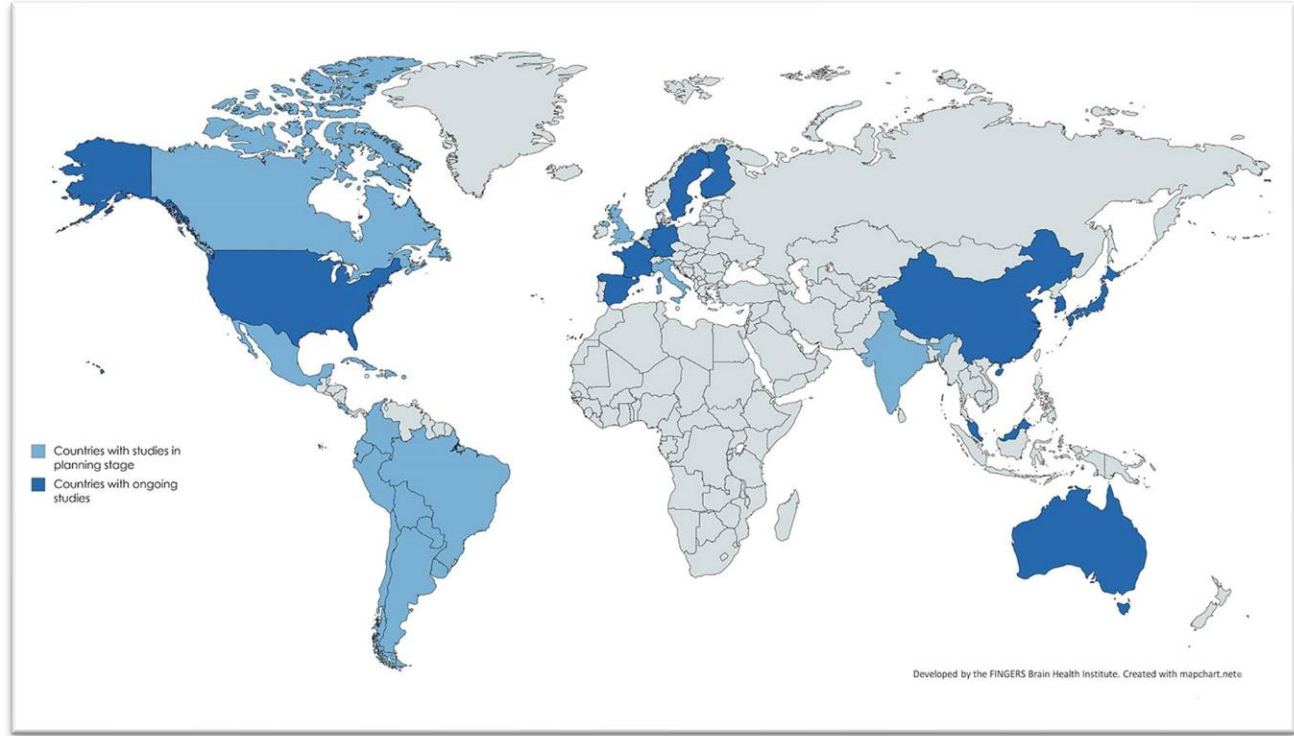
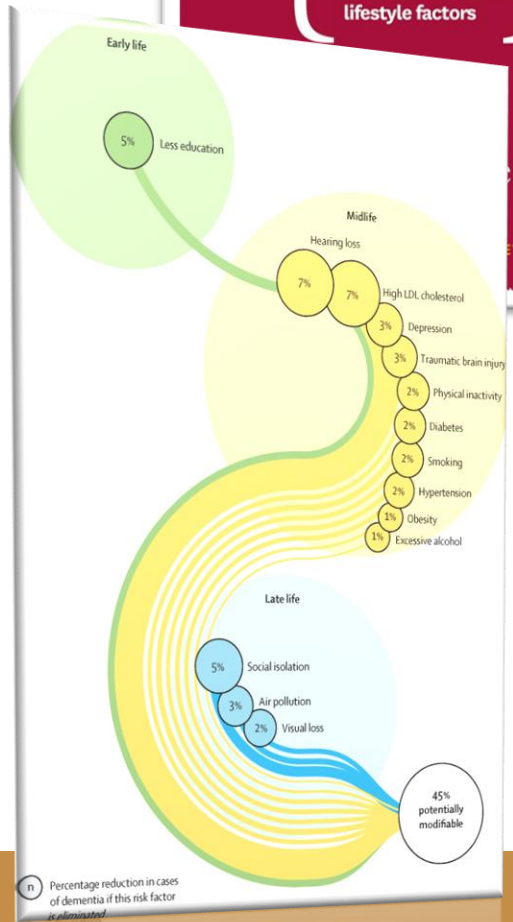


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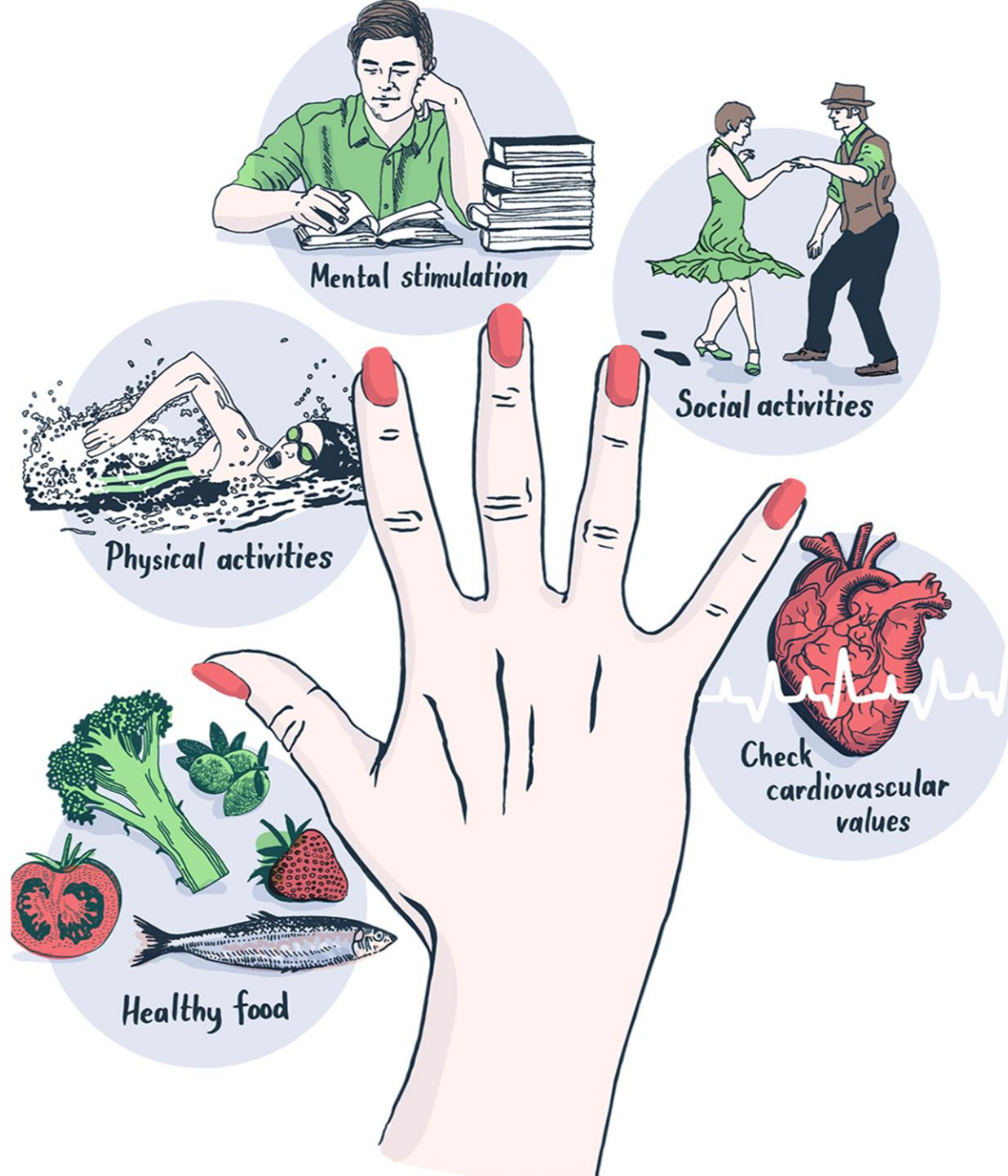
40% of dementia cases could be prevented by addressing these lifestyle factors

INCREASE	DECREASE
Education	Hearing Loss
Physical Activity	Hypertension
Social Contact	Obesity
	Smoking
	Depression
	Diabetes
	Excessive Alcohol Intake
	Head Injury
	Air Pollution





MULTIDOMAINS INTERVENTIONS





OBJECTIVES

□ Primary Objective

- Evaluate the **18-month effect** of multidimensional interventions **on cognitive performance** through a battery of neuropsychological tests (**mNTB**)

□ Secondary Explorative Objectives:

- Assess the effect of multidimensional interventions on **functional efficiency**.
- Assess the effect of multidimensional interventions on the **degree of multidimensional impairment**.
- Evaluate the effect of multidimensional interventions on scales of **physical performance**.
- Assess the impact of multidimensional interventions on the level of **independence in activities of daily living**.
- ...



INCLUSION CRITERIA:

- Age => 60 years
- Mild/moderate vulnerability (**Primary Care Frailty Index** score between **0.07 and 0.21**)
- Cardiovascular Risk Factors, Aging, and Dementia Risk Score (**CAIDE**) => **6**
- Clinical Dementia Rating scale (**CDR**) <= **0.5**
- Presence of an increased risk of developing dementia due to **family history** (≥ 1 family member with dementia) and/or at least one modifiable risk factor, with a **Lifestyle Index** ≥ 2 (each yes = 1 point):
 - **Physical activity** less than 2.5 hours per week (defined as physical activity intense enough to lead to sweating and breathlessness)*
 - **Diet**: less than 5 servings of fruits and vegetables per day
 - **Diet**: less than 2 servings of fish per week
 - **Hypertension**: diagnosed by a doctor or on pharmacological therapy, or SBP > 140 mmHg, or DBP > 90 mmHg)
 - **Diabetes**: type 1 or type 2 diagnosed by a doctor, or on pharmacological treatment, or HbA1C $\geq 7\%$ in the previous 6 months
 - Sleep disorders, depressive symptoms, or psychophysical stress symptoms for at least one month, judged by the doctor as disabling in daily life
 - **BMI** ≥ 25 kg/m²
 - **Alcohol** consumption > 21 units per week



2 North:

- UNIMIB, UNIPO

2 Center:

- UNIFI, UNI Roma La Sapienza

3 South:

- UNIBA, UNIMO, UNINA

2 satellite South centers

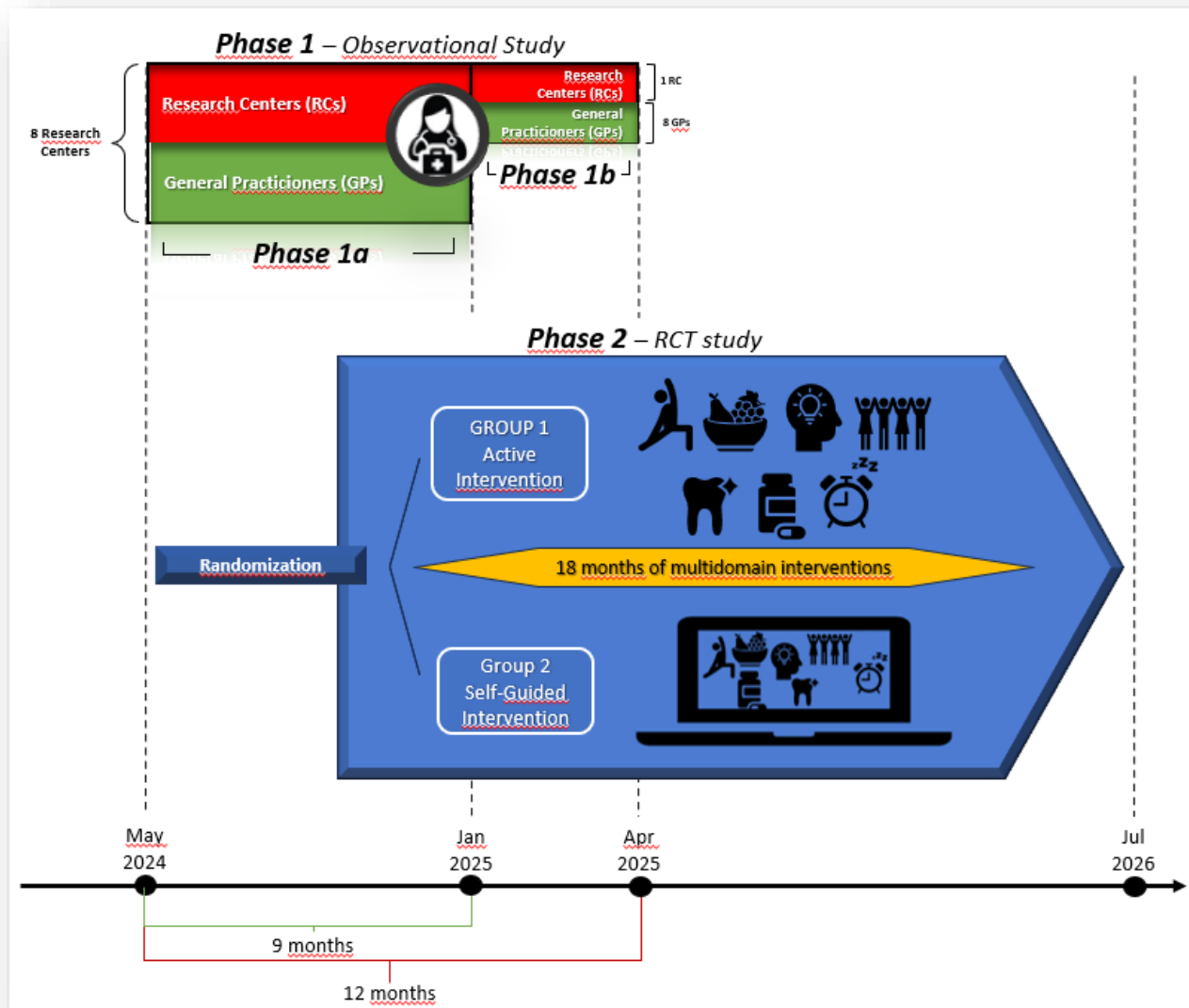
- UNIPA, UNICT





Phase 1 (screening)

- **observational** study
- population-based
- total **12 months**
- first six months to enrol subjects
- last six months just for screening

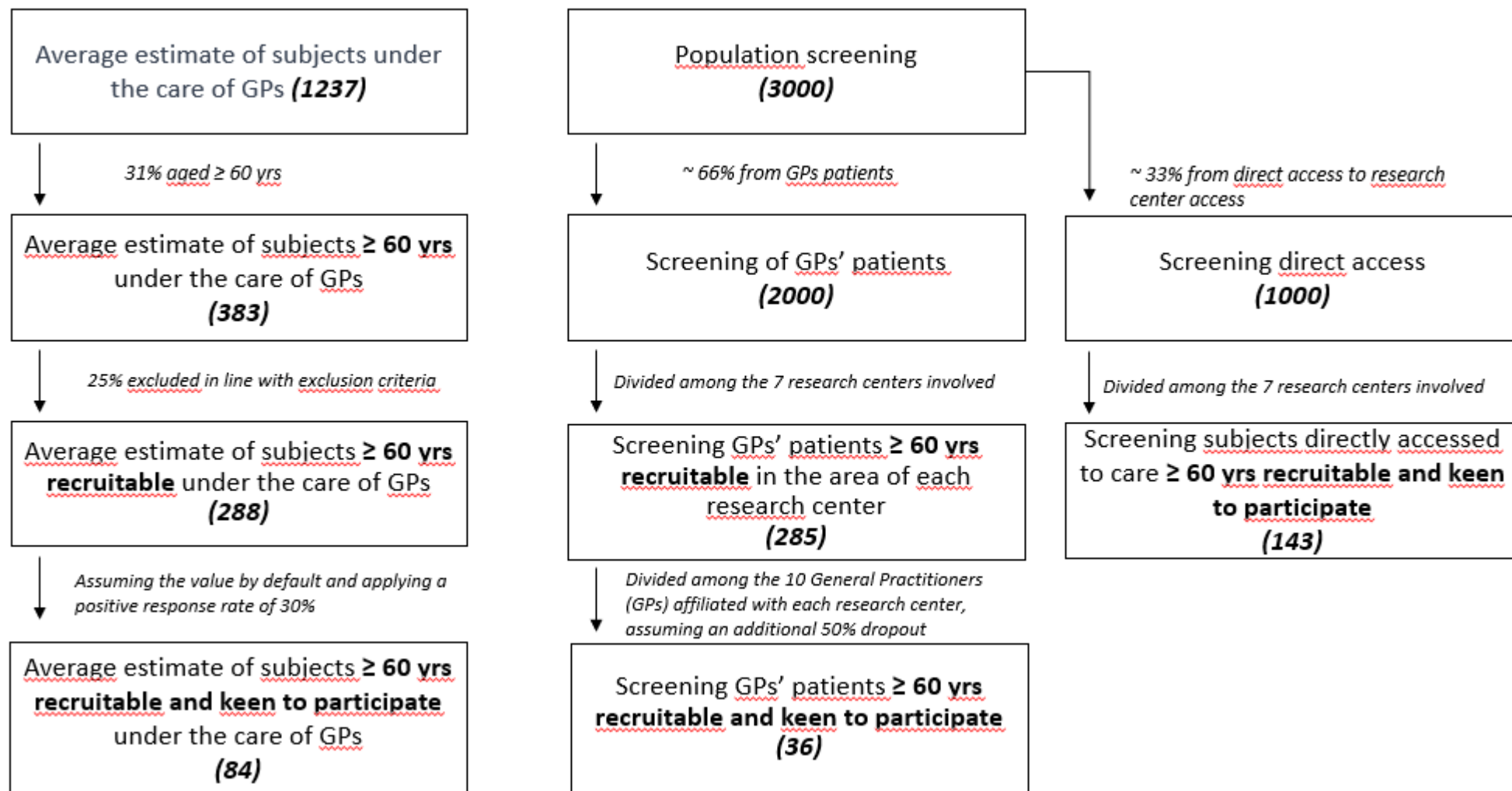


Phase 2 (efficacy)

- longitudinal randomised controlled trial (**RCT**)
- total **18 months**



Phase 1 (screening)





Screening visit with GPs



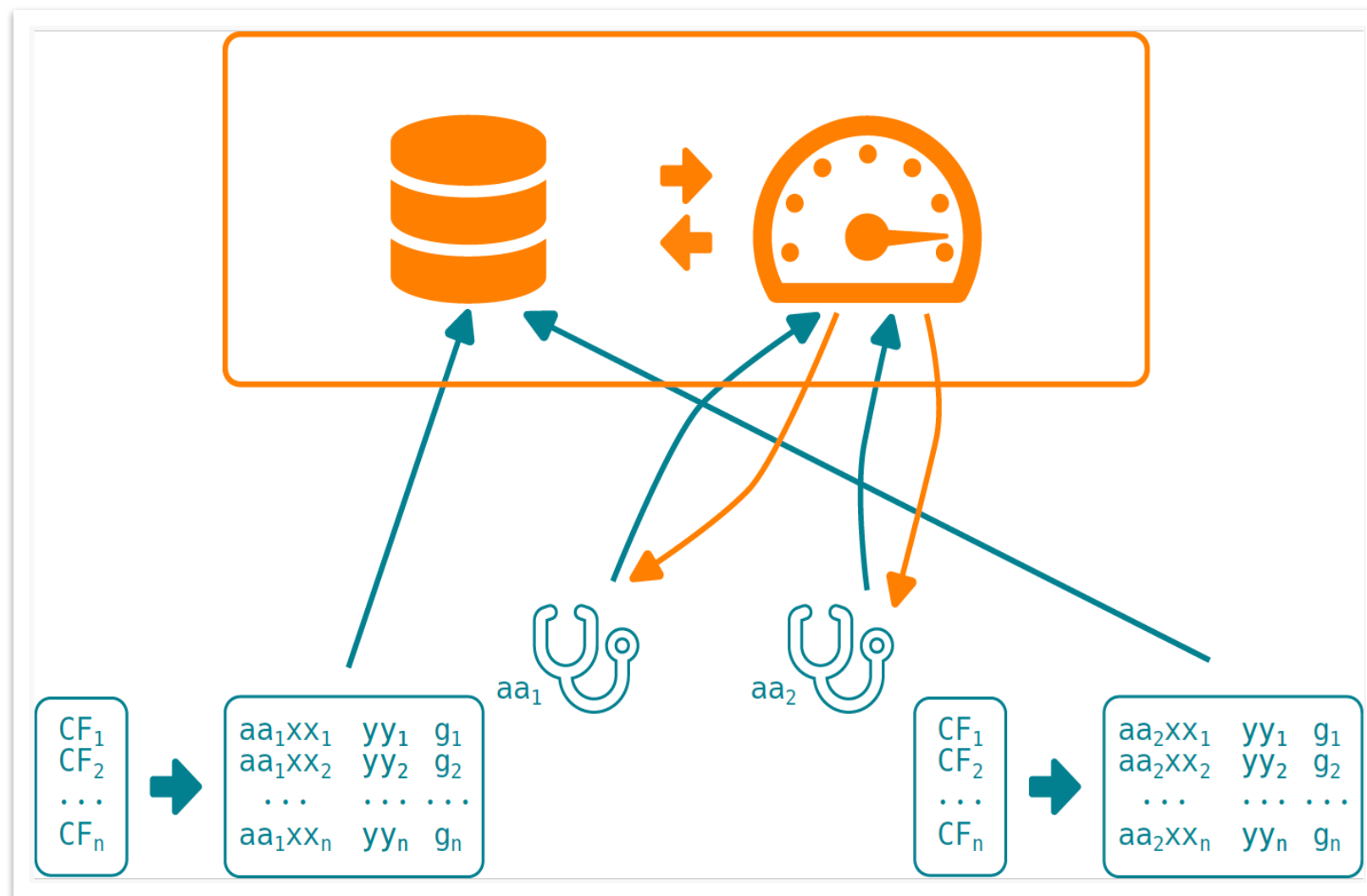
Phase 1 (screening)

Phase of screening	Time
Signing of the informed consent, and subsequent general medical examination and inclusion/exclusion criteria	10 min
Fragility via PC-FI	3 min
Risk of Dementia via CAIDE	2 min
Cognitive performance via RAVL-I	10 min
Functional status via (SPPB)	10 min
Cognitive performance via RAVL-D	2 min
Collection of self-administered scales for cognitive performance (TYM-I)	1 min
Total	38 min



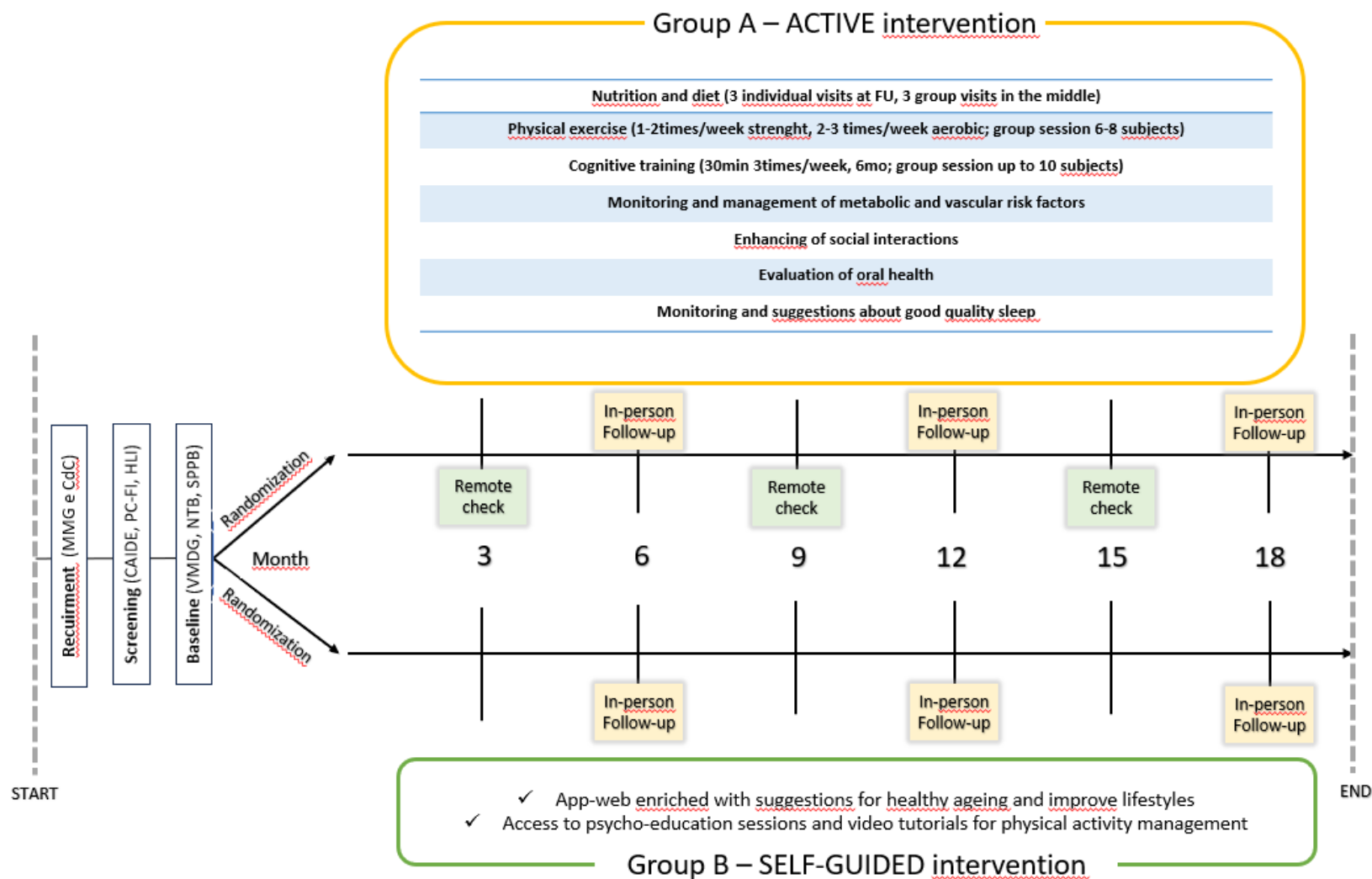
Phase 1 (screening)

- Software for **balanced stratification** of GP patients
- MMG local server that decodes the CFs:
 - aa= identification code
 - xx= sex
 - yy= age
 - g= group by age/sex group





Phase 2 Efficacy





HOME

- Breve spiegazione sul progetto che rimanda all>About tramite bottone.
- Sezione sui 3 WPs con bottone che rimanda alla pagina dei WPs.
- Sezione per operatori che rimanda al login, per accedere ai contenuti visibili solo a loro

About

- Spiegazione del progetto Age-it
- Rimando ai vari WPs

WPs

- Pagina con spiegazione generale dei 3 WPs.
- Sezioni dedicate ad argomenti comuni ai vari WPs
- Rimando ai tre WPs

Eventi

- Visione di eventi e incontri
- Se vanno divisi per WPs, si potrebbe pensare una suddivisione per colori
- Vanno regolarmente aggiornati
- (questa pagina è da valutare se farla o meno a seconda della quantità di eventi; nel caso in cui fossero pochi, potrebbe essere inserita come sezione in WPs o nei singoli WP)

Approfondimenti

Sezione che presenta articoli e approfondimenti esterni sulle varie attività che i partecipanti andranno a svolgere/visionare (es. le diete, gli esercizi fisici)

Contatti

Rimandi alle persone che i partecipanti possono contattare in caso di bisogno (dobbiamo capire chi inserire e come suddividere)

Operatori

Bottone nel menu per il login degli operatori. Da qui accedono a tutti i contenuti di cui hanno bisogno

WP1

- Spiegazione
- Sezioni in base alle attività che svolgono (es. esercizi fisici, mentali ecc...)

WP2

- Spiegazione
- Sezioni in base alle attività che svolgono (es. esercizi fisici, mentali ecc...)

WP3

- Spiegazione
- Sezioni in base alle attività che svolgono (es. esercizi fisici, mentali ecc...)

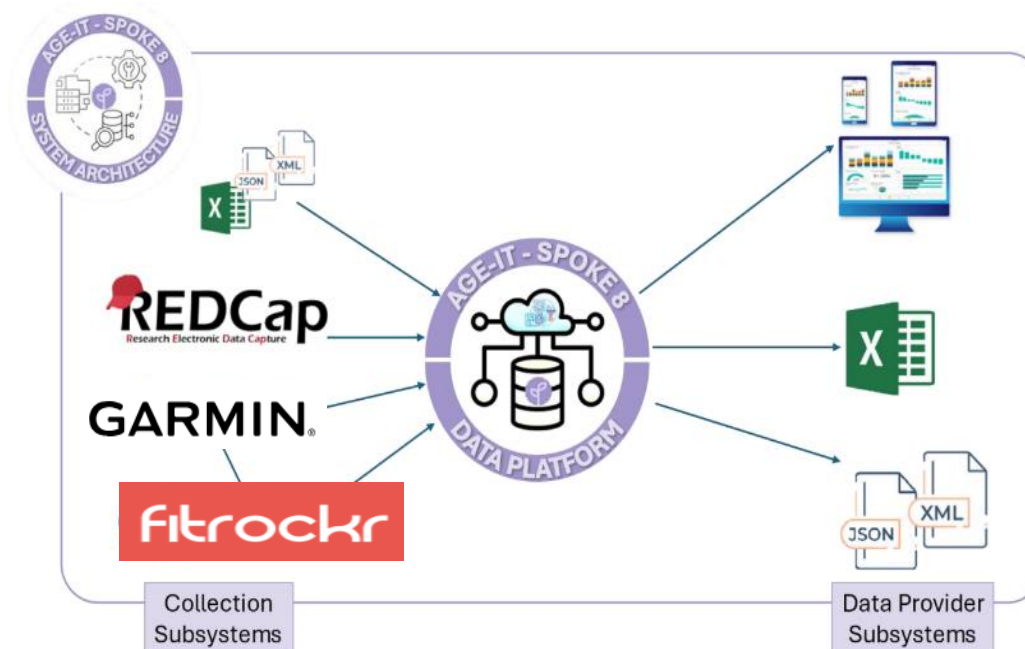
LISA

Longevi, In Salute e Attivi!

Benvenuti su LISA!
"Longevi, in salute e attivi"

Partecipi al progetto?
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed vitae erat scelerisque, ultricies ante et, eleifend odio.

- WP1**: Interventi multidimensionali per promuovere l'invecchiamento in salute e prevenire il declino funzionale e cognitivo in anziani residenti nel territorio
- WP2**: Interventi multidimensionali per prevenire il declino funzionale e cognitivo associato all'ipertensione nei pazienti anziani
- WP3**: Interventi multidimensionali per migliorare il benessere funzionale e cognitivo in anziani in strutture di lungo degenza



Data collection flux and platforms



Apps dedicate

Dashboard for IN-TeMPO

Birthdate (YYYY-MM-DD)
2024-11-17

Sex
M

Center
[Dropdown menu]

Dashboard code: es. HUTZGE-184, MMG code = HUTZGE, Dashboard identifier = 184

MMG or CDCD code
[Dropdown menu]

Subject without dashboard identifier, assign one (use for center)

Dashboard identifier (number after the code)
[Text input]

Lost dashboard identifier

Phase 1 outcome
[Text input]

Randomization Table Summary Table Screening Table MMG Table Codes Istruzioni

group	M (%)	Bari	Bicocca	Catania	Firenze	Molise	Napoli	Novara	Palermo	Roma	Mean age ± SD
active	5 (55.56%)	0 (0.00%)	9 (100.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	75.82 ± 6.51
control	6 (66.67%)	0 (0.00%)	9 (100.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	79.33 ± 6.39

Scale

Planning per partecipante

Nome partecipante:

Data baseline:

Data igiene:

Orario igiene:

- 14:00
- 14:30
- 15:00
- 15:30

Orario NPS:

- 9:00

Espandi Baseline

CDR: 0
Lifestyle index: 0
PC-FI: 0
PC-FI totale (somma): 0
ADL: 6
IADL: 8
SPPB: 12
PSQI totale: NA
MNA-SF: 14
Barthel Index: 100
Tinetti: Equilibrio: 16 Andatura: 12 Totale: 28
CAS: 6
MDS: 16
Criteri STOPP/START:

Prevenzione cardiovascolare
- STOP fumo
- START dieta sana e supplementazioni adeguate
- START attività fisica, almeno 2.5 ore di attività moderata-ir
- STOP alcol (meno di 14 unità/settimana)
- DISCUSS fattori psicosociali: counseling di gruppo, terapia

Gastro-intestinale:



IN-TEMPO

	Soggetto				Extra (recuperi)							
	1	2	3	4	7	8	9	10	11	12		
09:00	NPS	NPS										
10:30			NPS	NPS								
13:00	Prelievo	Prelievo	Prelievo	Prelievo								
14:00	Visita		Igiene		Igiene		Nutrizione					
14:30		Visita		Igiene		Igiene		Nutrizione				
15:00	Igiene		Visita		Nutrizione		Igiene					
15:30		Igiene		Visita		Nutrizione		Igiene				
16:00									Nutrizione			
16:30											Nutrizione	

WORKFLOW & SUBJECT JOURNEY Sede Milano-Bicocca

Giorno	Orario	711	n	712	N	709	n	711	n	Igienisti	n	Carate	n
Lunedì	9:00-12:00	NPS	2	NPS	2	Study C							
	14:00-16:00	Visite	4	NPS		Nutrizione	6	Prelievo 13:00	6			Visita	6
Martedì	9:00-12:00	NPS	2	NPS	2	Study C							
	14:00-16:00	Visite	4	NPS		Nutrizione	6	Prelievo 13:00	6	Igiene	8	Visita	6
Mercoledì	9:00-12:00	NPS	2	NPS	2	Study C							
	14:00-16:00	Visite	4	NPS		Nutrizione	6	Prelievo 13:00	6	Igiene	8	Visita	6
Giovedì	9:00-12:00	NPS	2	NPS	2	Study C							
	14:00-16:00	Visite	4	NPS		Nutrizione	6	Prelievo *	6			Visita	6
Venerdì	9:00-12:00	NPS	2	NPS	2	BHS							
	14:00-16:00	Visite	4	NPS				Prelievo 13:00	6			Visita	6
										Igiene		Motorio	
n/mese													
			80				48					64	120



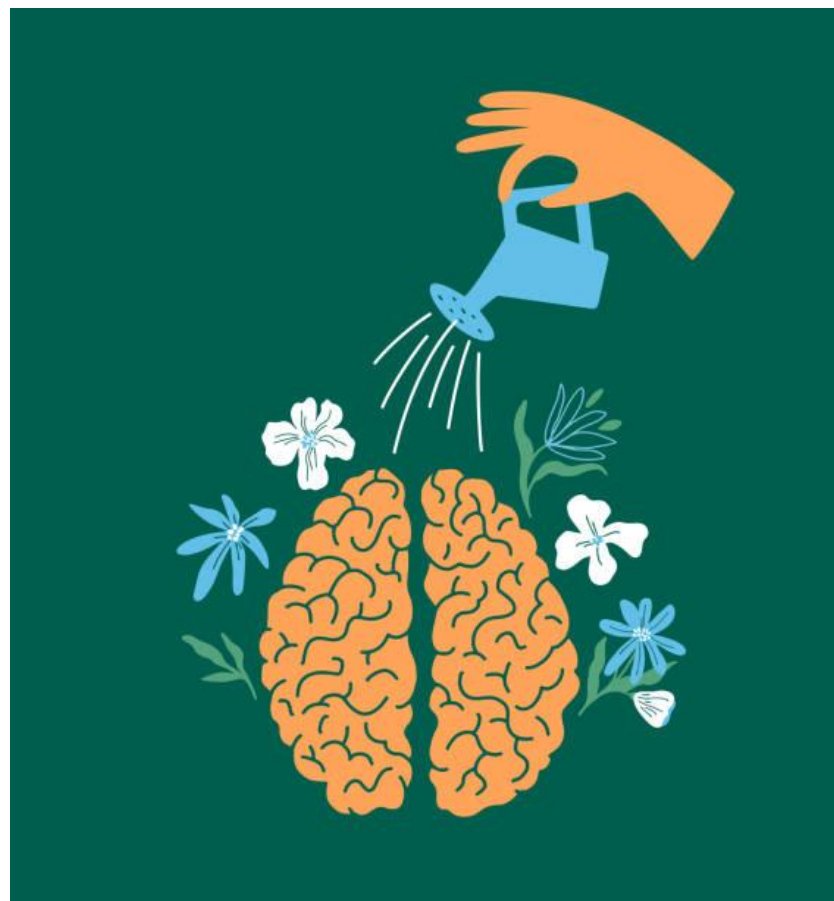
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