



In-MINDD

Innovative Midlife Intervention for Dementia Deterrence

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[In-MINDD](#)

<http://in-mindd.eu/home>



Striking a balance: care, cure, prevention



- Health systems across the OECD spend less than 3% on prevention
- UK- the research impact report, Alzheimer's Society - 5% of research funding (1990 – 2012) studies of risk and preventive strategies.



Reluctance to talk about dementia prevention messages



- “I would mention heart disease yes because there are treatments. Ideally you don’t want to raise a hair on the head if you don’t have something you can do about it.... So I won’t talk about dementia prevention... unless they ask me specifically.” GP Ireland

People with risk factors



- *‘The GP asked me if I wanted to participate. Then you get such a letter and it says that you have one or more risk factors. And then I thought oh!’ (Female, Netherlands, Intervention arm, Exit interview).*
- *‘Interviewer: So was it the fact that it was specifically about dementia that was of interest to you or was it maybe the lifestyle changes?’*
- *Interviewee: Again, probably, maybe a little bit of both but more for the fact that father has got it’ (Male, Scotland, Intervention arm, Exit interview).*

Knowledge of risk factors



- Understanding of modifiable risk factors low among both health professionals and participants.
- Both groups believed that individual agency and actions were negated by non-modifiable factors particularly genetics.
- Few have considered lifestyle changes to reduce their, or others, risk.

Jeopardies of dementia prevention



1. Disenfranchising those with dementia.
2. Individual agency?
3. Dementia weighs heavily on the human psyche.
4. Prevention / delay / secondary v's primary prevention...

Fountain of Youth



Selection of risk factors



- **Literature review**

- To update the evidence base regarding major modifiable risk factors for dementia



- **Delphi expert study**

- To obtain additional insight from experts in the field of dementia prevention/epidemiology



Format: Abstract ▾

Send to ▾

Int J Geriatr Psychiatry. 2015 Mar;30(3):234-46. doi: 10.1002/gps.4245. Epub 2014 Dec 12.

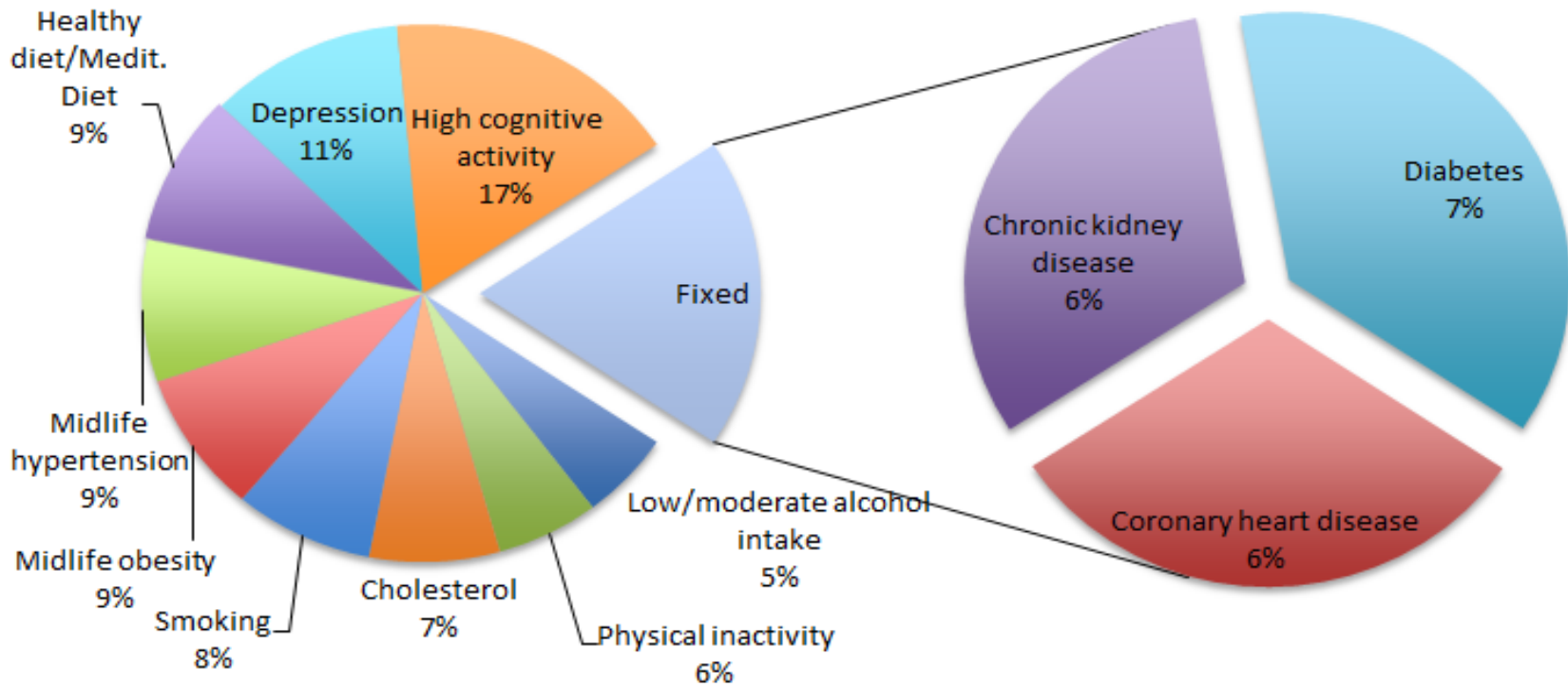
Target risk factors for dementia prevention: a systematic review and Delphi consensus study on the evidence from observational studies.

Deckers K¹, van Boxtel MP, Schiepers OJ, de Vugt M, Muñoz Sánchez JL, Anstey KJ, Brayne C, Dartigues JF, Engedal K, Kivipelto M, Ritchie K, Starr JM, Yaffe K, Irving K, Verhey FR, Köhler S.

LIBRA- lifestyle for brain health: Model creation



- Breakdown of LIBRA factors in:
 - More dynamic factors → amendable to lifestyle changes
 - Factors that need to be managed or controlled → continuing medical attention



Risk factor criteria/cut-off values and weights



RISK/PREVENTION FACTOR	Question/Measure	Cut-off value	Weight	Ireland	Scotland	The Netherlands	France
Cholesterol	Do you know your total cholesterol levels?	>=5mmol/l or >=6.5 mmol/l	+7.5	>=5mmol/l	>=5mmol/l	>=6.5 mmol/l	>=5mmol/l
		<5mmol/l or <6.5 mmol/l	0	<5mmol/l	<5mmol/l	<6.5 mmol/l	<5mmol/l
		Not known	0	Not known	Not known	Not known	Not known

RISK/PREVENTION FACTOR	Question/Measure	Cut-off value	Weight
Midlife hypertension	Evaluated clinically by GP to have high blood pressure	Yes	+8.6
		No	0
		Not known	0

RISK/PREVENTION FACTOR	Question/Measure	Cut-off value	Weight	
Physical inactivity	EPIC Physical activity questionnaire (original)	Low activity	+5.9	Based on Cambridge Index
		Moderate to High activity	0	

All cut-off values are dichotomous

Model Validation



- Aim: find confirmative evidence for the predictive value of the LIBRA score
- **MAastricht Aging Study (MAAS)**
 - Population-based dataset
 - N = 955, age 50+, 62 dementia cases, 143 cognitive impairment cases
 - 16 years of follow-up
 - Outcome: dementia, cognitive impairment
 - Available data for 11 out of 12 risk factors
- **DESCRIPA**
 - Population-based dataset (multi-center)
 - N = 8143, age ≥ 55 , 993 incident dementia cases
 - Up to 16 years of follow-up (average 7 years)
 - Outcome: dementia
 - Available data for 9 out of 12 risk factors



Model Validation



- **MAAS**
 - LIBRA score significantly predicted future risk of dementia, as well as risk of cognitive impairment
 - Effects were independent of age, gender and education
- **DESCRIPA**
 - In midlife (<70): significant association between LIBRA score and dementia risk (remained similar after inclusion of demographics)
 - In late life (≥ 70): no significant association between LIBRA score and dementia risk (significant association when all demographics were added to the model)
- In the future, further validation in different datasets (CC75C, ELSA, Doetinchem cohort) are planned

Main Objectives



- Convert the LIBRA model into an online system that:
 - accepts information about 12 factors from people
 - generates an individualised score
- Deliver supportive online environments:
 - with a personalised risk reduction strategy
- **Involve stakeholders in design and validation tasks to ensure that the system can be used by health professionals in a clinical setting**

Online questionnaire covering 12 risk/protective factors



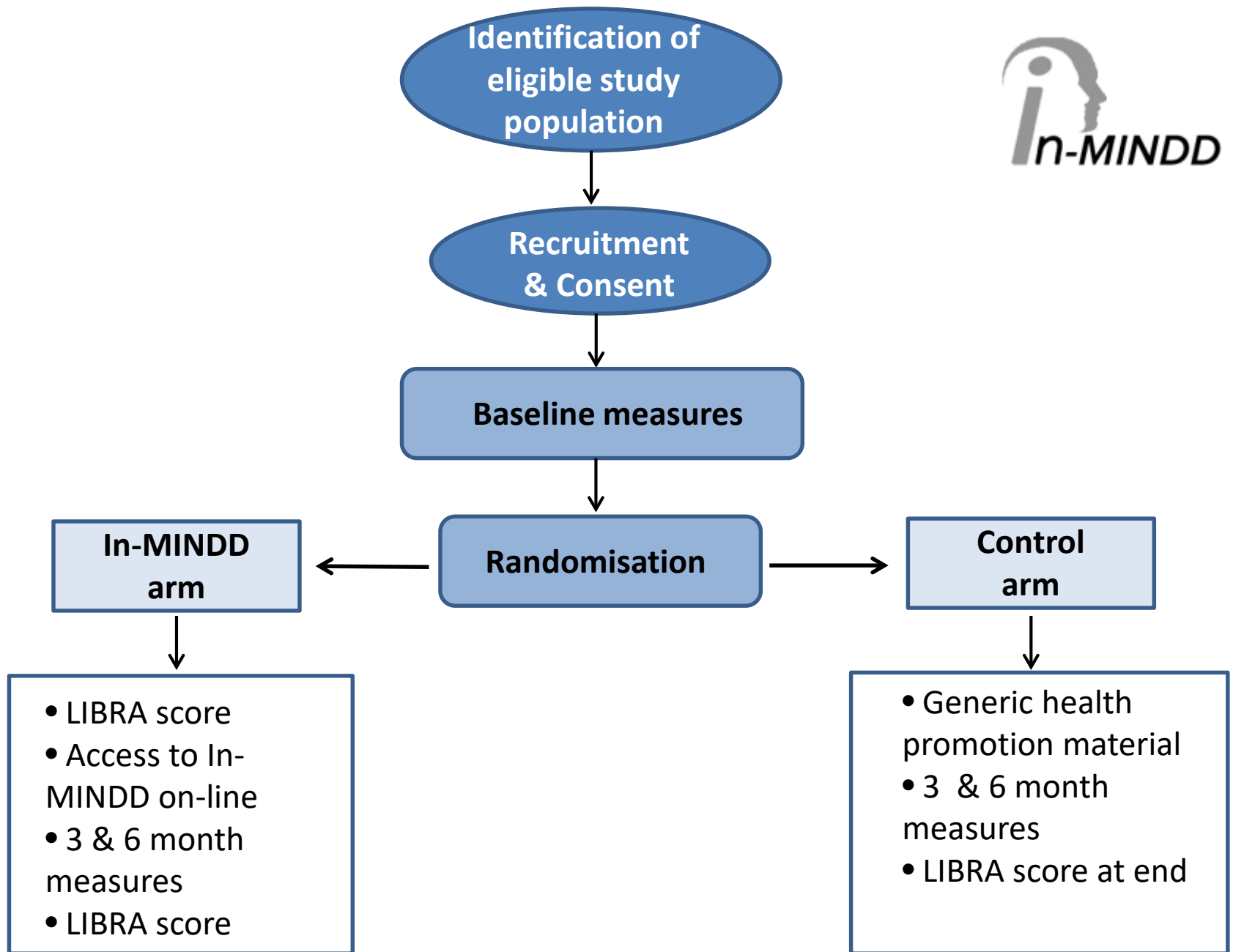
- Socio-demographic information
- Family medical history
- Medical health information (based on GP records) → obesity, cholesterol, hypertension, diabetes, chronic kidney disease and cardiovascular disease
- Smoking habits and alcohol consumption
- 4 existing, validated instruments:
 - Mood - CES-D (Radloff, 1977)
 - Physical Activity - EPIC-PAQ (Wareham et al., 2003)
 - Cognitive Activity - CRIq (Nucci et al., 2012) - adapted (with permission) for self-administration and online use
 - Diet – Mediterranean Diet Adherence Screener (MEDAS) – slightly adapted (Martinez-Gonzalez et al., 2012)

Two key questions



Does the In-MINDD intervention (profiler and on-line support environment) improve people's brain health?

What do users think about the intervention and prevention for dementia?



Randomisation numbers



Country	In-MINDD Arm	Control Arm	Total
France	43	45	88
Ireland	49	46	95
Netherlands	72	72	144
Scotland	60	60	120
Total:	224	223	447

Baseline characteristics.



Age	Mean (SD)	52.7 (5.2)
	Median (IQR)	54.0 (49.0 – 57.0)
Gender	Male	200 (44.4%)
	Female	250 (55.6%)
Marital Status	Single	68 (15.1%)
	Married/Partnership/Co-habiting	316 (70.2%)
	Divorced/Separated	53 (11.8%)
	Widowed	13 (2.9%)
Living	Alone	78 (17.5%)
	With family	358 (80.3%)
	Other	10 (2.2%)

Why did people join In-MINDD?



- Proximity to someone with dementia e.g. a parent, other family member.
- Worried about own memory.
- Thinking of making lifestyle changes anyway

Online support environment



Collection of online resources:

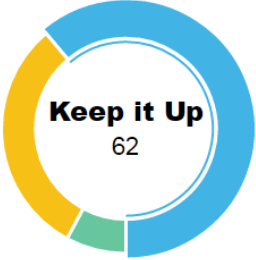
- Presentation of LIBRA profile and score
- Personalised (evidence based) information on 12 risk/protective factors
- Signposting to further existing supports
- Goal setting
- FAQs, Ask the Experts, Blog (Interactive)
- Apps page
- Newsflashes – Closed Twitter feeds (localised)

Localised to 4 countries, 3 languages

Support Environment



Presentation of LIBRA profile and score



Keep it Up
62

What does my Libra profile and score tell me?

Your LIBRA profile and score have been calculated to give you an overview of your Lifestyle for Brain Health. We have devised your personalised plan based on the information you provided when completing the In-MINDD profiler.


You will find your personalised plan by clicking on any of the icons below. Here you will receive information on why this factor is important for your brain health. The information includes advice and tips on making lifestyle changes. Alongside this advice we will also support and encourage you by giving you a number of goals from which you can choose under each Room for Improvement factor

Category	Your Score	Action
Keep it Up	62%	
Room for Improvement	31%	Open ▶
Remember to manage well	7%	Open ▶

Keep it Up

Your Keep This Up Score is: 62%

This score is based on a sum of all those factors where you are doing well. These factors are presented below.

-  Cognitive Activity ▶

Support Environment



Presentation of supportive information for each factor

A screenshot of a web application interface. At the top, there is a navigation menu with three items: 'Obesity' (with a person icon), 'Smoking' (with a cigarette icon), and 'Cholesterol' (with a pill icon). The 'Cholesterol' item is highlighted with a blue background. Below the menu, there is a large circular icon for 'Cholesterol' showing a stylized brain with a red and blue pattern. To the right of the icon, the text 'Cholesterol' is displayed. Below this, the heading 'Keep this up!' is shown in blue. A paragraph follows: 'Your profile tells us that you do not have high cholesterol.' Below this, another heading 'Keep this up!' is shown. A bulleted list follows: 'Evidence tells us that a healthy cholesterol level can improve your long term brain health', 'If you have reported that you do not know your cholesterol levels the information below is a good start to understanding the importance of keeping your cholesterol at a healthy level', and 'You can also talk to your GP about getting your cholesterol tested'. Below the list, a paragraph reads: 'Below you will find information on maintaining your cholesterol at a healthy level.' At the bottom, the heading 'What causes high cholesterol?' is shown. A final bulleted list follows: 'Eating a diet that is high in saturated fats' and 'Lack of physical exercise'.

Take homes messages



- Knowledge of modifiable risk factors for dementia low in both the public and practitioners.
- The In-MINDD profiler is an evidence-based system to assess the presence/absence of 12 risk/protective factors for dementia for people in midlife
- Telling people their “brain health” score seems to be feasible and acceptable and doesn’t add to primary care workload.
- Recruitment a challenge; may promote inequalities.
- Appears harder to recruit participants in areas of deprivation.
- Participants did not avail themselves of contact with GP/PN.

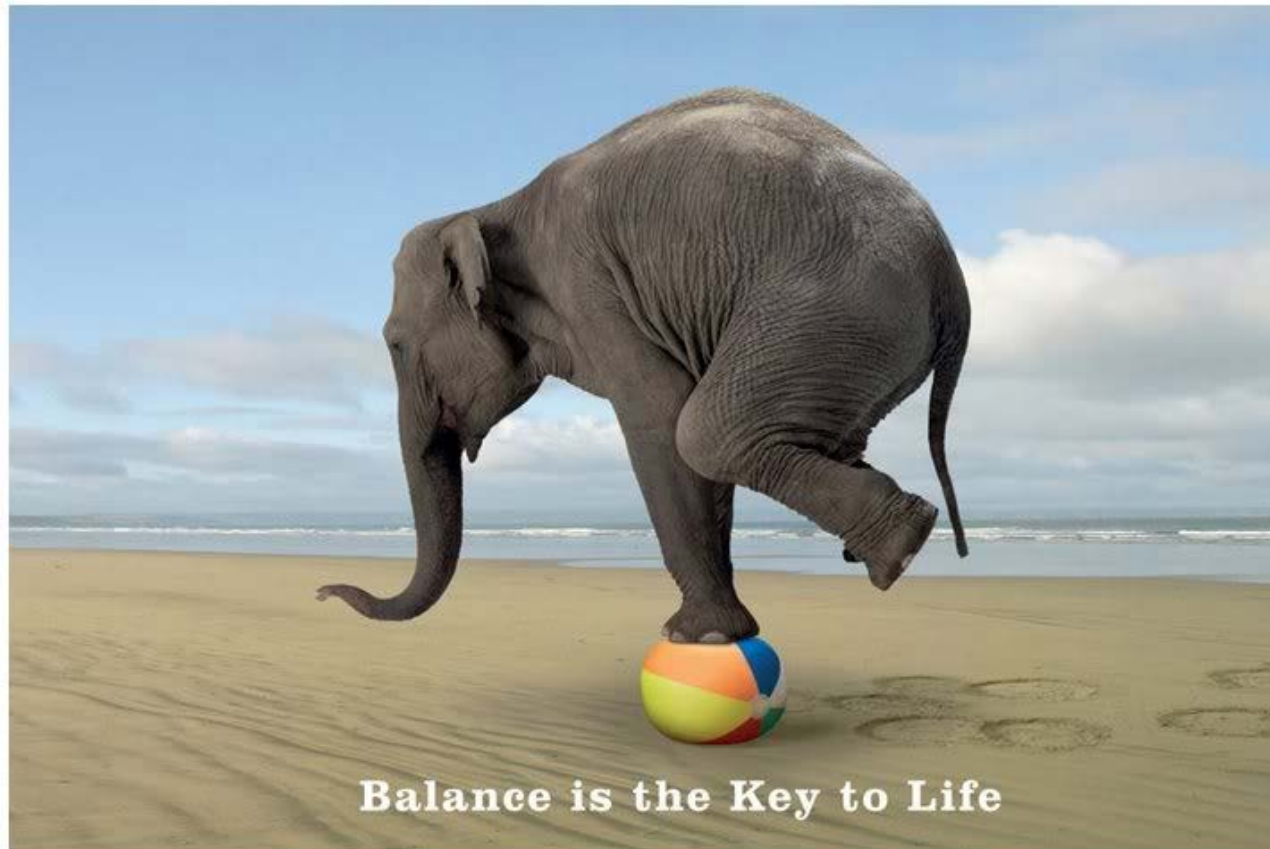
A path forward...



- Recommendations for prevention are currently undermined by a lack of well-designed properly scaled clinical and population based trials. There is a compelling need for robust research evidence.

We call on the World Health Organisation and the World Dementia Council to support large scale research investment into these urgently needed population orientated trials and to work with national governments and research funding bodies to encourage collaborations towards a concerted objective.

<http://in-mindd.eu/home>



In-MINDD has received funding from the European Union's Seventh Framework Programme under grant agreement no 304979

<http://in-mindd.eu/home>



 Profiler Login

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[Profiler](#)

[Support Environment](#)

[In-MINDD Project](#)

[Useful Apps](#)

[FAQs](#)

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Welcome to **In-MINDD**

Did you know that lifestyle (e.g. diet, exercise and cognitive activity) all have a part to play in sustaining long term brain health? The In-MINDD system offers you the opportunity to assess your lifestyle for brain health using the In-MINDD profiler. In-MINDD will produce a lifestyle for brain health score and offer personalised strategies for individuals to support a brain healthy lifestyle, which may potentially help reduce your chances of developing dementia.

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