



**If we know T2D
prevention works, why
do prevalence rates and
the burden associated
with T2D continue to
increase?**

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Institute for Health and Welfare
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**Professor of Nutrition, University of
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Terveystieteiden
laitos





Finland ranked world's happiest country for eighth year

WORLD / 20 MARCH 2025

INTERNATIONAL NEWS

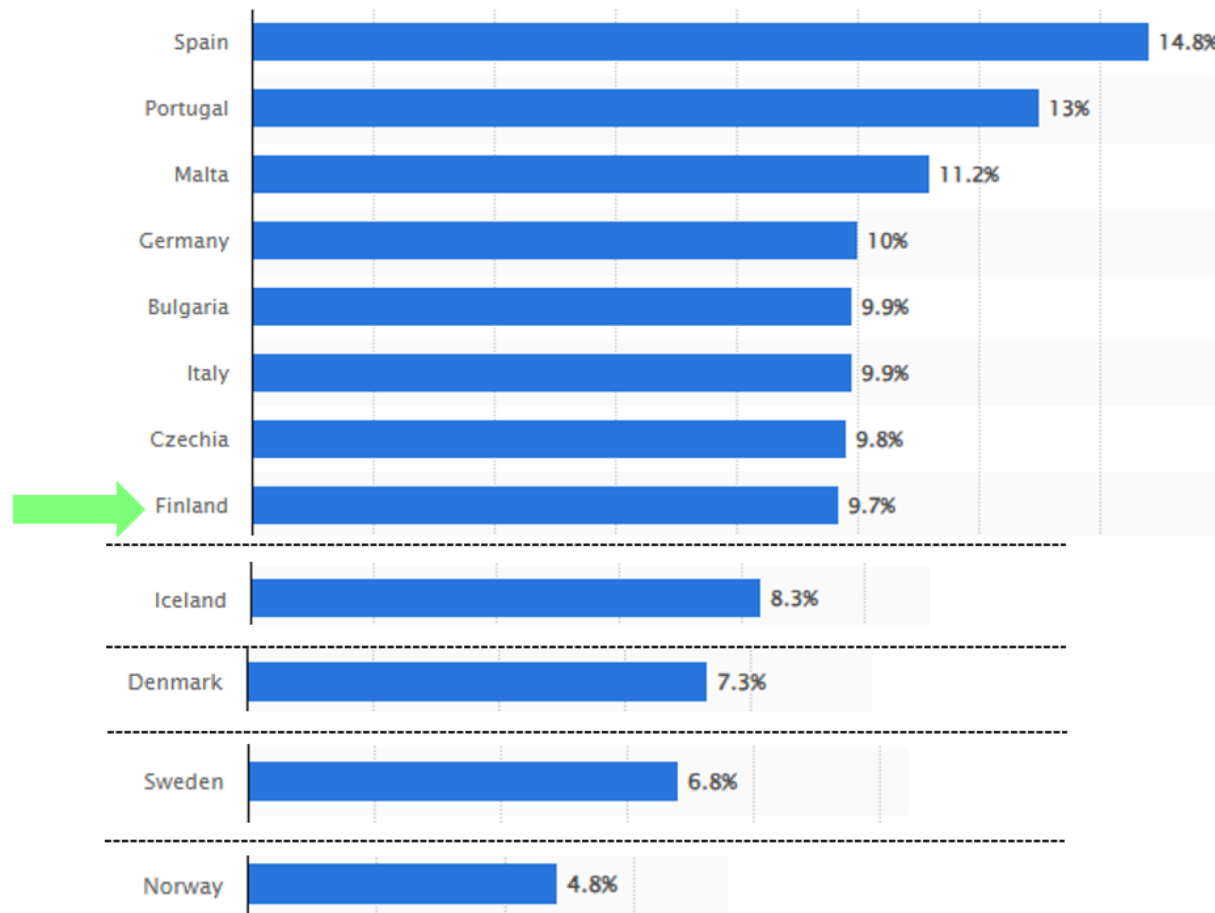


“Trust in institutions, equality, and social security contribute to life satisfaction.”

Jennifer De Paola, a researcher at the University of Helsinki



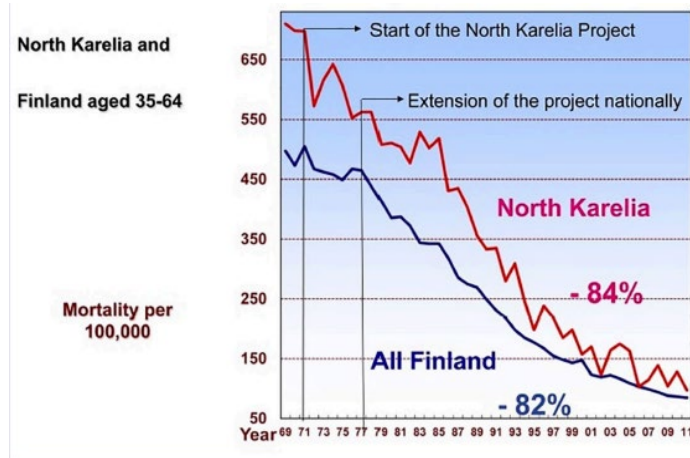
Diabetes in Europe



Source: statista.com, v. 2021

Finland is a front-runner in prevention of chronic diseases

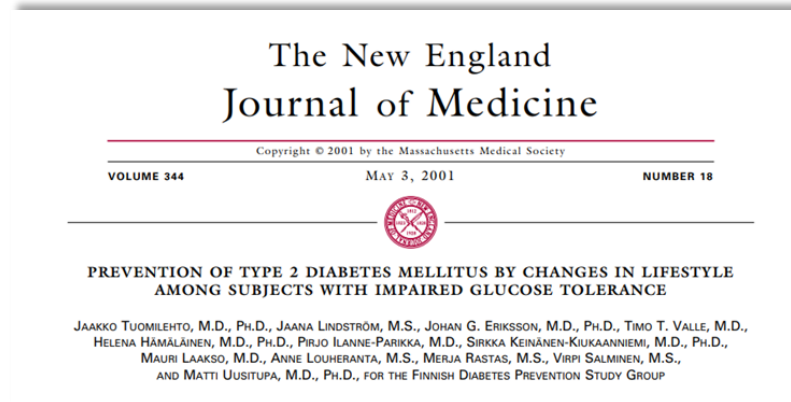
The North Karelia Project:
Prevention of cardiovascular
disease through population-based
lifestyle intervention



Jousilahti et al. 40-Year CHD Mortality Trends and the Role of Risk Factors in Mortality Decline: The North Karelia Project Experience. Glob Heart. 2016 Jun;11(2):207-12.



The Finnish Diabetes
Prevention Study: type 2
diabetes prevention in high-risk
people proven possible



Tuomilehto, Lindström et al. New England J Med 2001

The Finger multidomain
intervention improves cognitive
functioning in at-risk elderly people

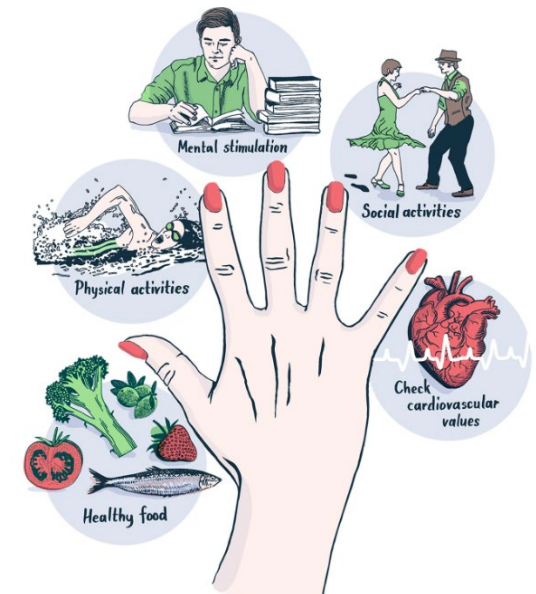
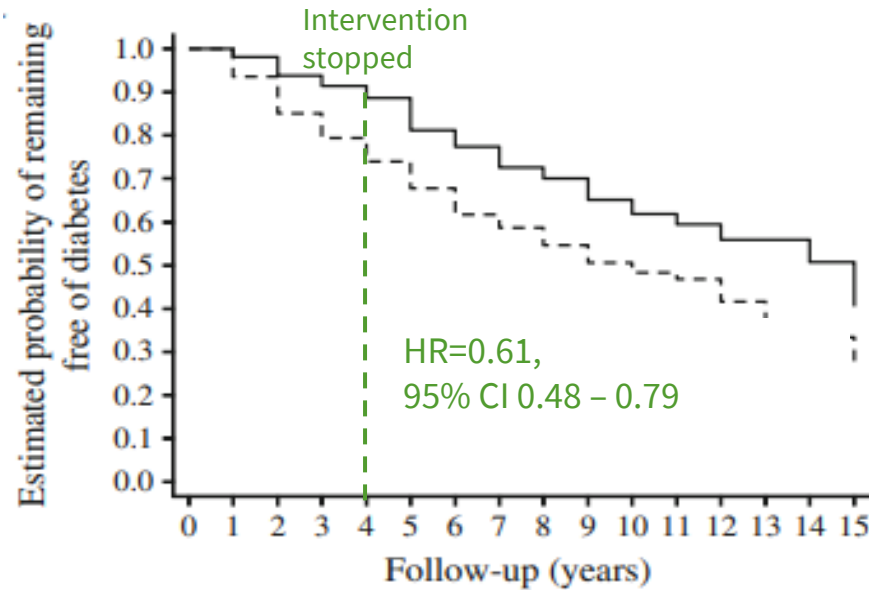


Illustration: Martina Krona from the book "Brain Health" (Mia Kivipelto, Mai-Lis Hellénus)

Ngandu et al. Lancet 2015

DPS: Lifestyle intervention prevents type 2 diabetes, and the effect is long-lasting

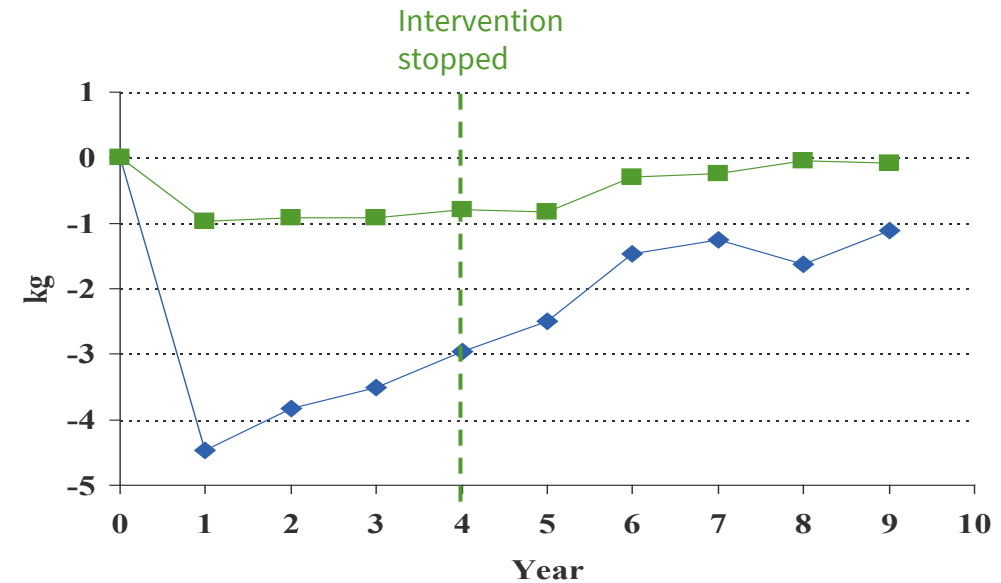
DPS: 4-year lifestyle intervention reduced type 2 diabetes (T2D) incidence among people with high risk for up to 13 years



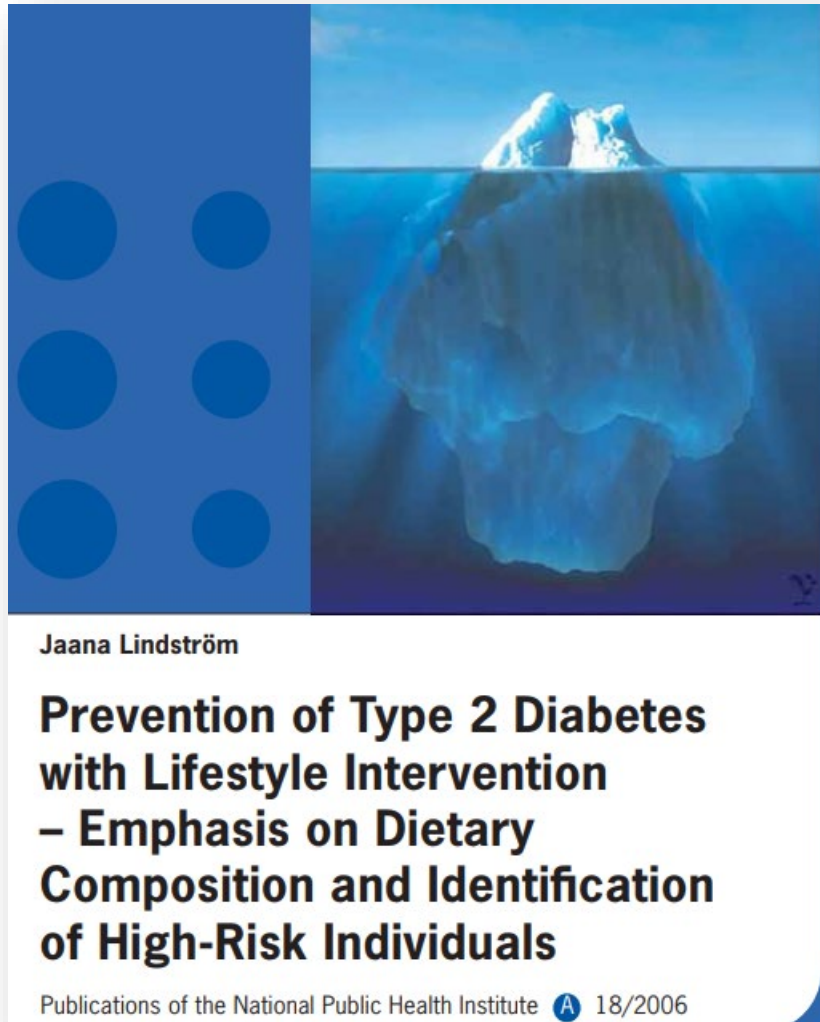
Tuomilehto et al. New Engl J Med 2001

Lindström et al. Diabetologia 2013

DPS: Weight change in the intervention and control groups during and after the intervention



Intervention Control

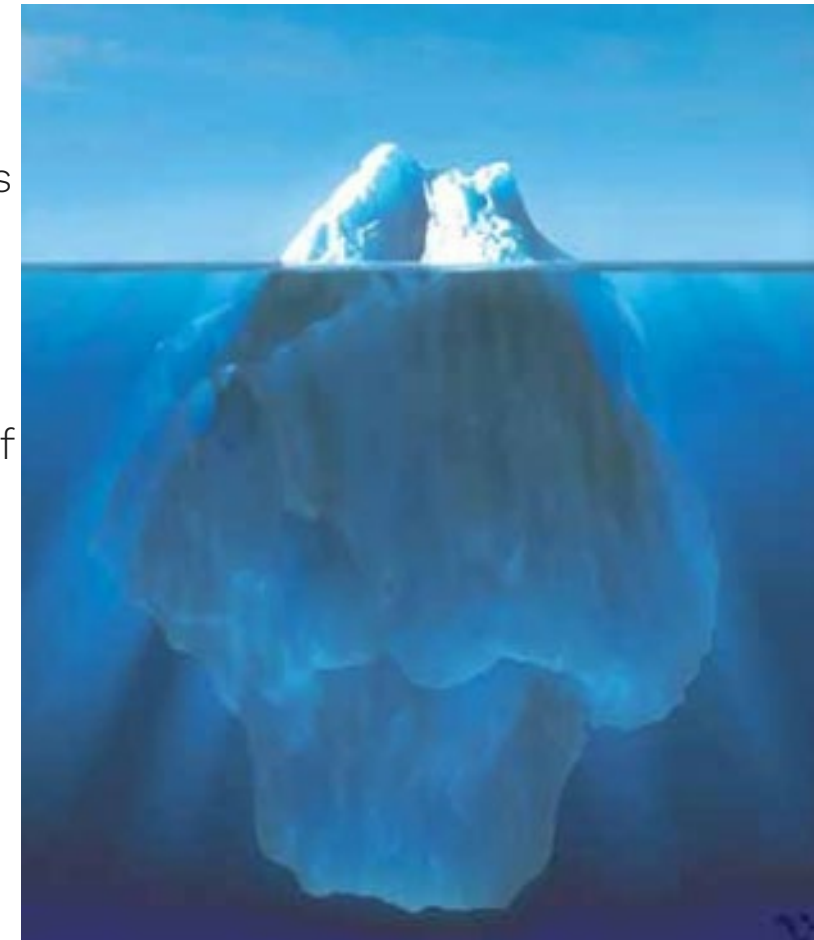


Diabetes

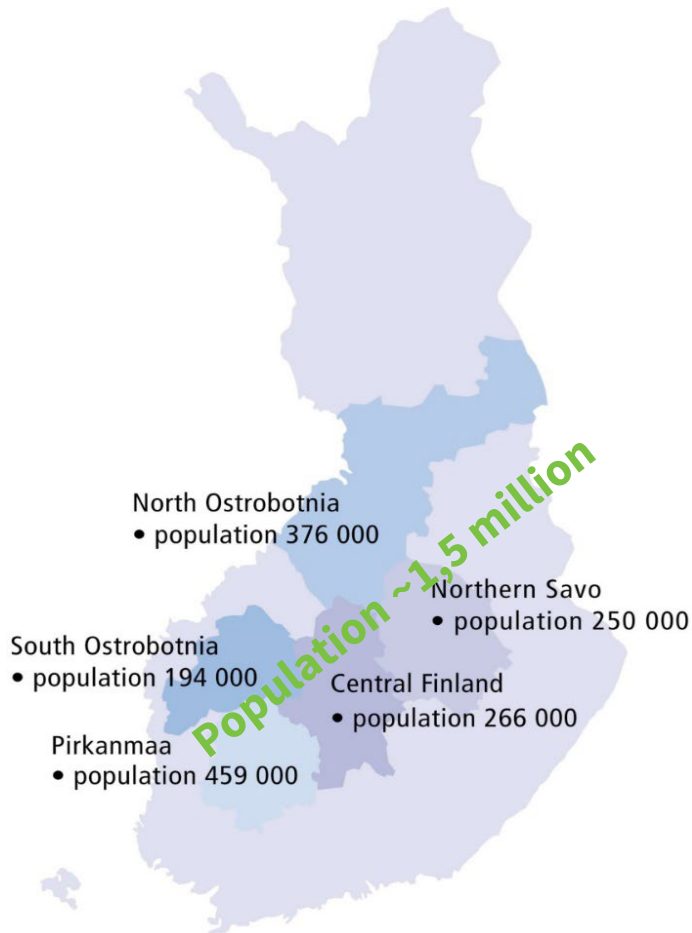
Pathophysiology
and underlying
determinants

Prevention of diabetes
in clinical setting

Large-scale
implementation of
prevention



FIN-D2D: Implementation of type 2 diabetes prevention in health-care setting 2003-2008



- Among the ~2800 who were included in the evaluation data collection
 - Mean 1-year weight reduction was 1,2 kg
 - 17% of participants lost $\geq 5\%$ of baseline body weight
- Mean number of counselling visits was 3 (mostly individual)
- New ways of collaboration
 - Multi-professional team-work within practices
 - Collaboration with other actors: municipalities, NGOs, pharmacies, research organizations
- Tool for risk identification: the FINDRISC
- Models of risk screening and lifestyle intervention were proven feasible in primary health care

Finnish Diabetes Association

Type 2 diabetes risk assessment form

1. Age
☐ Under 45 years (0 p.)
☐ 45-54 years (2 p.)
☐ 55-64 years (3 p.)
☐ Over 64 years (4 p.)

2. Body-mass index (See reverse of form)
☐ Lower than 25 kg/m² (0 p.)
☐ 25-30 kg/m² (1 p.)
☐ Higher than 30 kg/m² (3 p.)

3. Waist circumference measured below the ribs (usually at the level of the navel)
 MEN
☐ Less than 94 cm
☐ 94-102 cm
☐ More than 102 cm
 WOMEN
☐ Less than 80 cm (0 p.)
☐ 80-88 cm (3 p.)
☐ More than 88 cm (4 p.)

4. Do you usually have daily at least 30 minutes of physical activity at work and/or during leisure time (including normal daily activity)?
☐ Yes (0 p.)
☐ No (2 p.)

5. How often do you eat vegetables, fruit or berries?
☐ Every day (2 p.)
☐ Not every day (1 p.)

6. Have you ever taken medication for high blood pressure on regular basis?
☐ No (0 p.)
☐ Yes (2 p.)

7. Have you ever been found to have high blood glucose (eg in a health examination, during an illness, during pregnancy)?
☐ No (0 p.)
☐ Yes (5 p.)

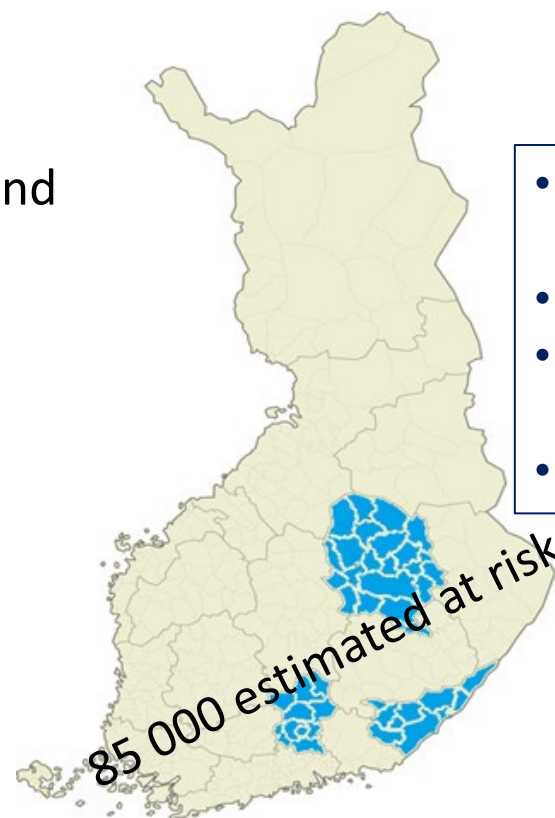
8. Have any of the members of your immediate family or other relatives been diagnosed with diabetes (type 1 or type 2)?
☐ No (0 p.)
☐ Yes: grandparent, aunt, uncle or first cousin (but no own parent, brother, sister or child) (3 p.)
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Total Risk Score
 The risk of developing type 2 diabetes within 10 years is
 Lower than 7 Low: estimated 1 in 100 will develop disease
 7-11 Slightly elevated: estimated 1 in 25 will develop disease
 12-14 Moderate: estimated 1 in 6 will develop disease
 15-20 High: estimated 1 in 3 will develop disease
 Higher than 20 Very high: estimated 1 in 2 will develop disease



STOP DIABETES - knowledge-based solutions 2016-2019

- RCT **within primary health care** in 3 areas in Finland
- AIM: a sustainable model for type 2 diabetes prevention in health care
- Digital tools for recruitment, intervention, and evaluation
- **1-year lifestyle intervention**
 - group vs. group+digital vs. standard care
- Strong theory-base for lifestyle change
 - self-determination theory
 - habit-based approach



- 26 000 risk estimations → 16 000 at risk identified
- 2907 participated in RCT
- Modest improvement in diet and waist circumference achieved
- Register follow-up planned



Differences in the design and setting may explain why the findings from implementation have been modest compared with clinical trials



DPS

4-year intervention + x-year follow-up

Primary outcome: type 2 diabetes (clear improvements were seen in risk factors also)

High-risk participants (IGT in two OGTTs + BMI>25, age 40-65)

Clinic-based implementation

- High intensity (17 intervention visits)
- Individual intervention provided by study dietitians
- Some organized physical activity provided

StopDia

1-year intervention and follow-up

Primary outcomes: changes in body weight, glycaemia, diet, and physical activity

Moderate-risk participants (FINDRISC $\geq$ 12, GDM or IGT/IFG, age 20-80)

Health care implementation

- Moderate intensity (6 group sessions offered)
- Group intervention provided by (trained) nurses as part of their normal work
- No organized physical activity provided

Future?

Intensive phase + maintenance phase

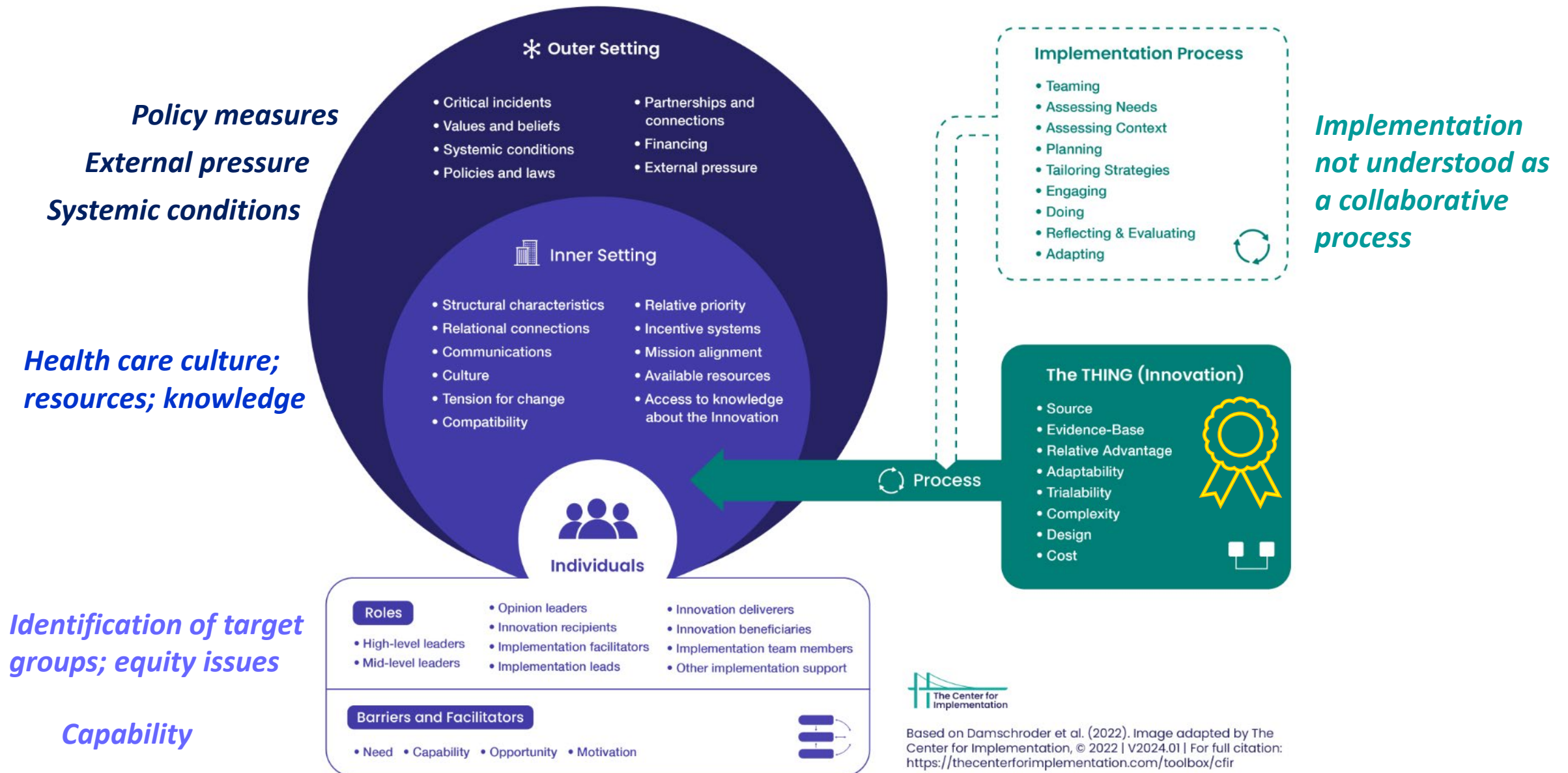
Primary outcomes: changes in lifestyles, quality of life, changes in body weight, diabetes incidence, CVD and other NCDs

Stratification according to risk
(questionnaire, clinical)

Collaborative implementation

- Needs-based, tailored intervention (individual, group, online, digital)
- Training and tools
- Collaboration with local service providers (e.g. physical activity)
- Follow-up and benchmarking

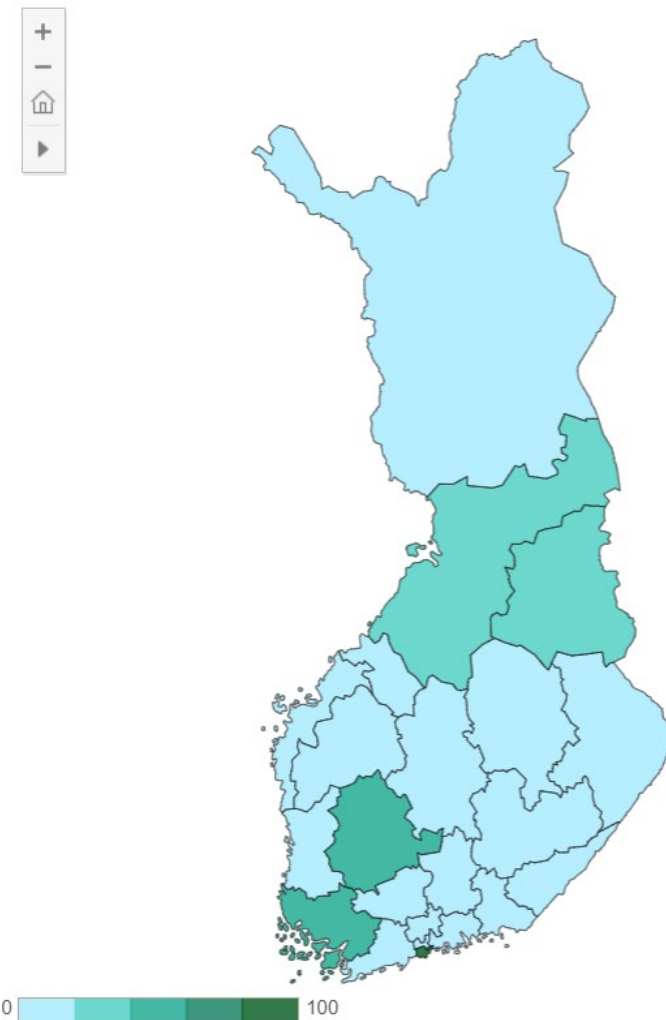
Consolidated Framework for Implementation Research (CFIR) 2.0



An incentive for promotion and prevention activities for wellbeing services counties from 2026 onwards

“Promotion factor”

- 1% of the governmental health care budget
- 5 outcome indicators
- 8 process indicator
 - “Implementation of lifestyle counselling for people at risk of type 2 diabetes in accordance with the Current Care guideline”



Messy counter →
sale increase 30%

Hannu Aaltonen
@AaltonenHannu · Seuraa

Oletko koskaan asiakkaana huomannut, että joissakin kaupoissa tuotteet "kaadetaan" sekaisin tiskiin? Olemme mitanneet myyntejä ja vasemman puoleinen esittely voi myydä jopa 30% enemmän, vaikka hinta olisi sama.



12.50 ip. · 28. huhtik. 2025



Dessert
counter moved
from left to
right-hand side
– sale increase
40%

Hannu Aaltonen
@AaltonenHannu · Seuraa

Minulle on aina ollut selvää, että kaupassa pitää olla "oikean käden kierto". Asiakkaista yli 90% on oikeakätisiä. Siirsimme tämän jälkkärien myyntitiskin käytävän vasemmalta puolelta oikealle puolelle ja myynti kasvoi 40%. Kauppa on mielenkiintoinen laboratorio.



8.21 ap. · 23. lokak. 2022



Digital screening vs. medical devices regulation

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Not a medical device

Medical device, if meant for prediction, prognosis, prevention...

Etusivu > Diabetestietoa > Tee riskitesti

Tyypin 2 diabeteksen riskitesti



Ikäsi?

☐ Alle 45 v.

☐ 45–54 v.

☐ 55–64 v.

☐ Yli 64 v.

Riski sairastua tyypin 2 diabetekseen kasvaa selvästi iän mukana. Riski lähtee nousemaan noin kolmikymppisenä, 60 ikävuoden tienoilla jo hyvin selvästi.

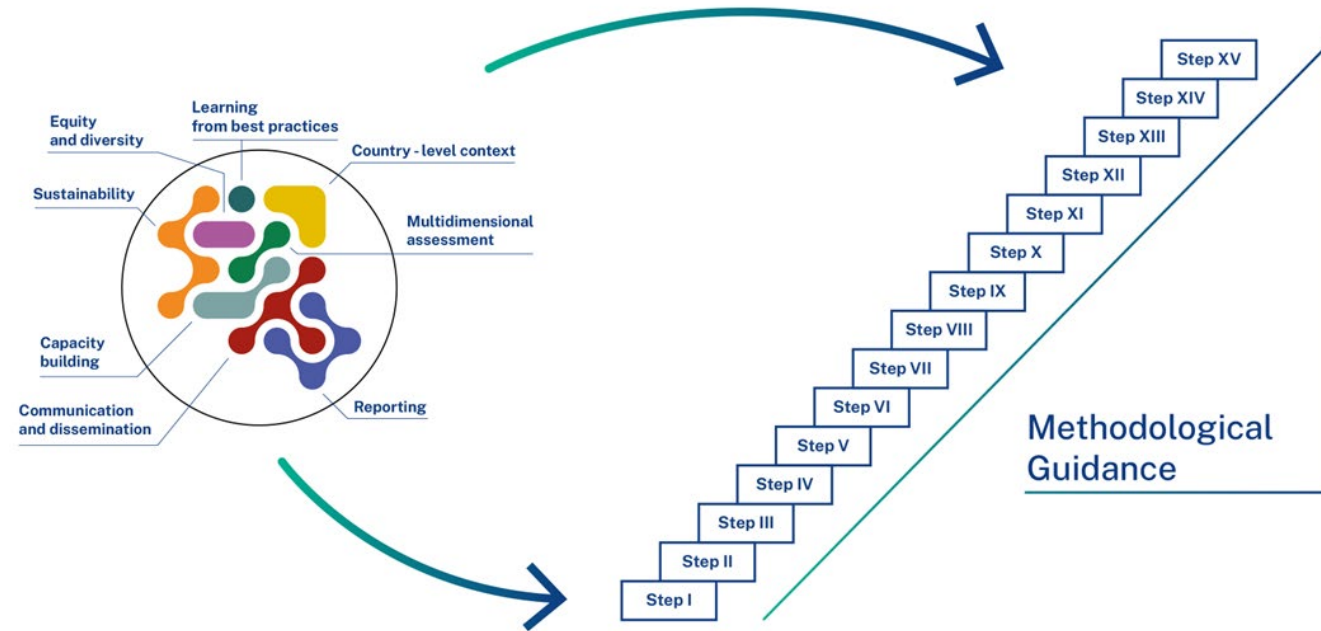




JACARDI 1.11.2023 – 31.10.2027

Implementation process

- Objective:
 - Reduce CVD and diabetes burden in EU
 - health literacy and awareness
 - screening and prevention
 - care pathways
 - self management
 - labour participation
 - Address health inequalities
- Total budget 66,25 M€
- 22 countries → 76 partners → 142 pilot projects
- All pilots follow the harmonized JACARDI-implementation methodology



28.5.2025



Co-funded by
the European Union

Examples of ongoing JACARDI pilot projects in Finland

PROBLEM

SOLUTION

IMPACT

Many people are not aware of their risks of developing common NCDs

Online risk screening site (type 2 diabetes, CVDs, dementia) with individualized guidance to decrease the risk, empowering people to act on their risk factors (lifestyle changes; direction to services)

Number of people with unidentified risk factors and diseases decreases. Management of risk factors and prevention of NCDs improves.

Lifestyle is a key of the prevention and treatment of NCDs, but low-threshold lifestyle change support is not available

Digital self-operated lifestyle coaching platform providing reliable information and support based on behavioral theories

Improved management of risk factors and slowing down the development of diseases. The method is easily scalable to the needs of large populations.

Dietary knowledge and counseling skills among health care professionals vary, resources are scarce, and effectiveness is not measured

The validated Healthy Diet Index (HDI) used as a tool to support counseling and structured recording in health care

The assessment of diet quality as a basis for dietary counseling is harmonized. Structural recording of diet facilitates evaluation of the effectiveness of dietary counseling.

Immigrants have more NCD risk factors but less access to preventive services

Peer-led, culturally adjusted healthy lifestyle tutoring model

The participants' knowledge and skills, and diet, exercise, and sleep habits improve. The activities will continue after the project period as the work of the NGOs

Thank you!

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Finnish institute for health and welfare (THL)

University of Eastern Finland (UEF)



28.5.2025

- Sustained implementation of the research findings has proven to be challenging
- We need
 - policy measures
 - systematic approach to implementation
 - consideration of health inequities
 - change of culture: prevention as an investment rather than an expense