



**Female empowerment
for breast cancer prevention:
the P.I.N.K. project by women for women**



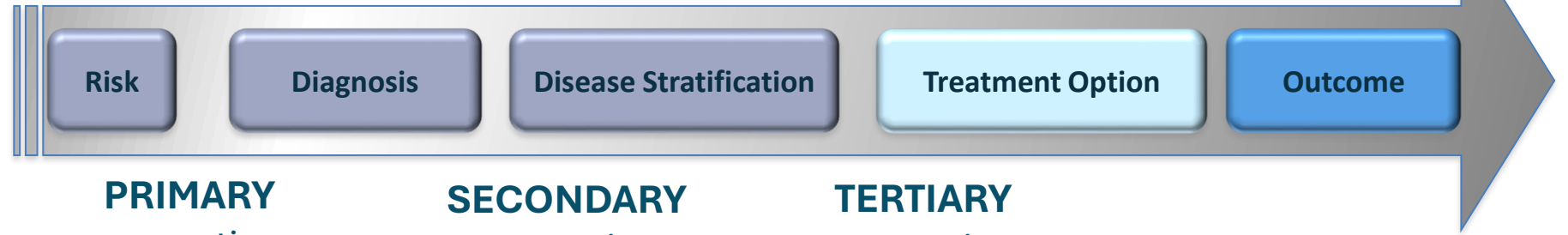
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BACKGROUND

Disease is not a STATE, but a PROCESS going from risk to outcome

Low-risk preventive strategy is the key to reduce the burden of disease



PRIMARY
prevention



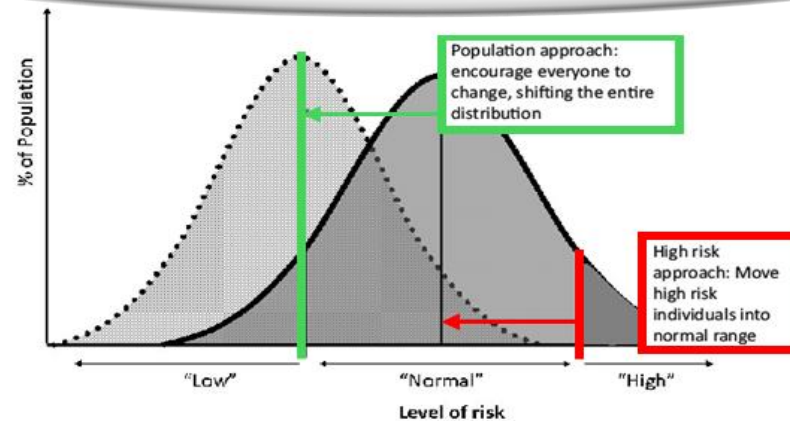
SECONDARY
prevention



TERTIARY
prevention



The «Buckets» of prevention framework



Shifting the **whole population** into a **lower risk category** benefits **more individuals** than shifting high risk individuals into a lower risk category.

[G. Rose, 1992]

CANCER INEQUALITIES

Inequalities potentially lie at every stage of the disease process

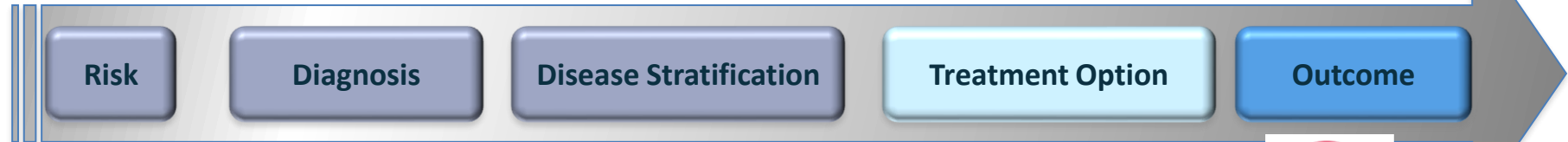
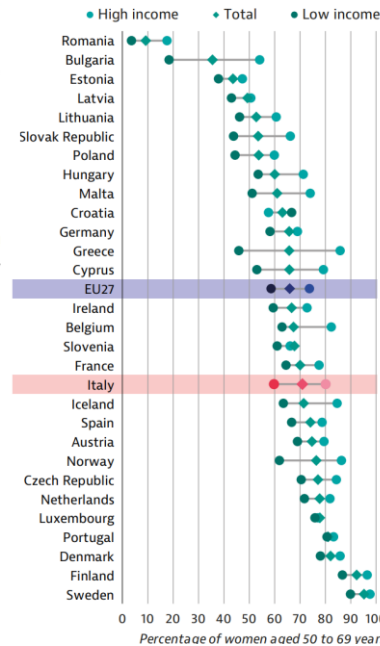


Table 1.3. Prevalence and trends for selected cancer risk factors (or associated measures) vary across EU+2 countries

	SMOKING	ALCOHOL	OVERWEIGHT AND OBESITY	DIETARY RISK	PHYSICAL INACTIVITY	LOW LEVELS OF VACCINATION	AIR POLLUTION
	Daily smokers (% population aged 15+; change 2011-21)	Litres consumed per capita (% population aged 15+; change 2011-21)	Population with BMI≥25 (% population aged 15+; change 2014-19)	Fruit and vegetable consumption < 5 portions per day (% population aged 15+; change 2014-19)	Less than 150 minutes per week (% population aged 15+; change 2014-19)	Not receiving all doses of HPV vaccine (% of girls aged 15; change 2012-22)	Mean population exposure to PM2.5 (micrograms per m3; change 2010-20)
EU27	18.8 ↓	10.0 ↓	51.3 ↑	87.6 →	67.3 ↓	36.4 ↓	11.6 ↓
Italy	19.1 ↓	7.7 ↑	44.7 ↑	89.5 ↑	80.3 ↓	39.0 ↑	14.4 ↓

Source: OECD (2024), *Beating Cancer Inequalities in the EU: Spotlight on Cancer Prevention and Early Detection*

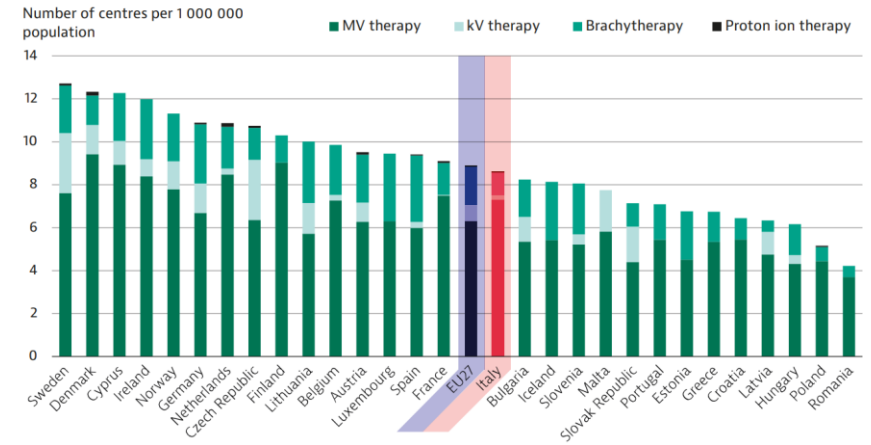
Self-reported mammograms rates, by education and income levels



Breast cancer survival

Italy: 86%
EU24: 83%

Figure 9. Availability of cancer care centres in Italy is close to the EU average



Prevention, Imaging, Network & Knowledge: THE PINK STUDY

P.i.n.k. is an ongoing longitudinal multicenter study focused on:

primary prevention
early detection

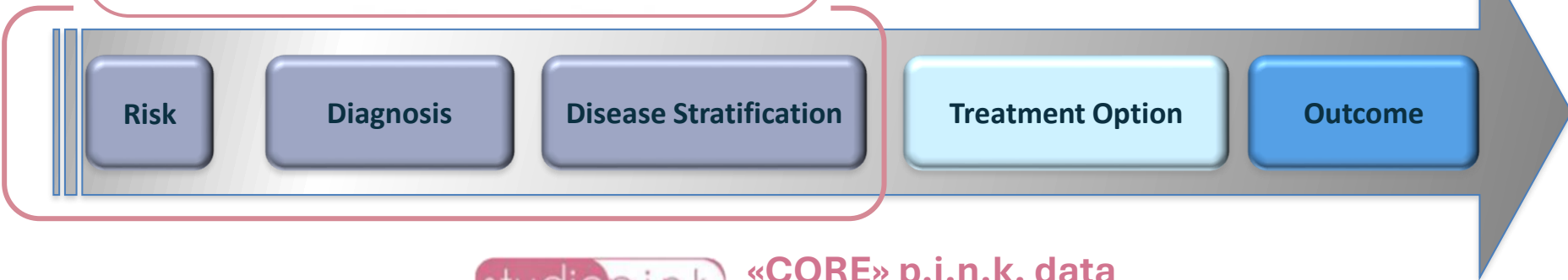
of breast cancer
in women

Franchini M et al, 2021. doi: 10.3390/ijerph18052456

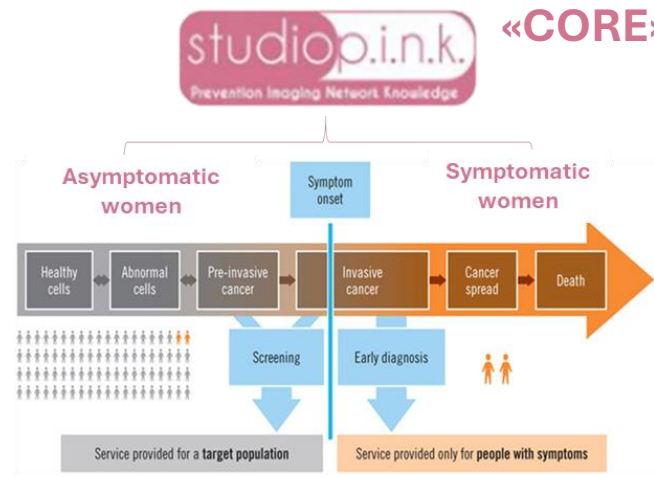
International Journal of Environmental Research and Public Health MDPI

Article
The P.I.N.K. Study Approach for Supporting Personalized Risk Assessment and Early Diagnosis of Breast Cancer

Michela Franchini ¹, Stefania Pieroni ¹, Edgardo Montrucchio ², Jacopo Nori Cucchiari ³, Cosimo Di Maggio ⁴, Enrico Cassano ⁵, Brunella Di Nubila ⁵, Gian Marco Giuseppetti ⁶, Alberto Nicolucci ⁷, Gianfranco Scaperrotta ⁸, Paolo Belli ⁹, Sonia Santicchia ¹⁰, Sabrina Molinaro ^{1,*} and on behalf of the PINK Consortium [†]



Dress-p.i.n.k. tool



**Early detection =
screening + early diagnosis**

WHO Guide to Cancer Early Diagnosis 2017

PINK STUDY'S FEATURES



PINK CONSORTIUM:

16 public and private diagnostic centers, ICF-CNR



Study population:

Women **over forty** who **SPONTANEOUSLY** undergo to one or more breast examinations including:

who fill out an anamnestic **questionnaire** at baseline

clinical breast examination

mammography

at least one **second** diagnostic test between **US, DBT, MRI or CESM**

Secondary approach

Primary approach



Exclusion criteria:

having a breast implant, being pregnant or breastfeeding

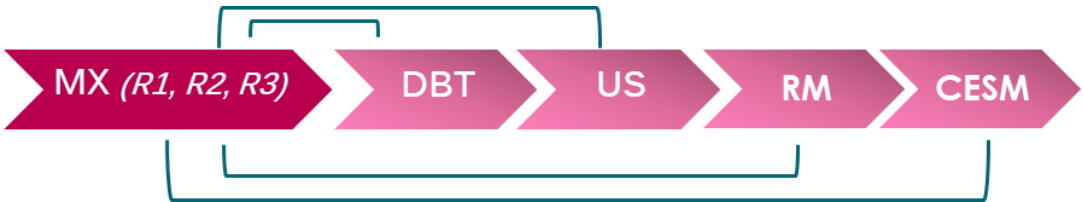
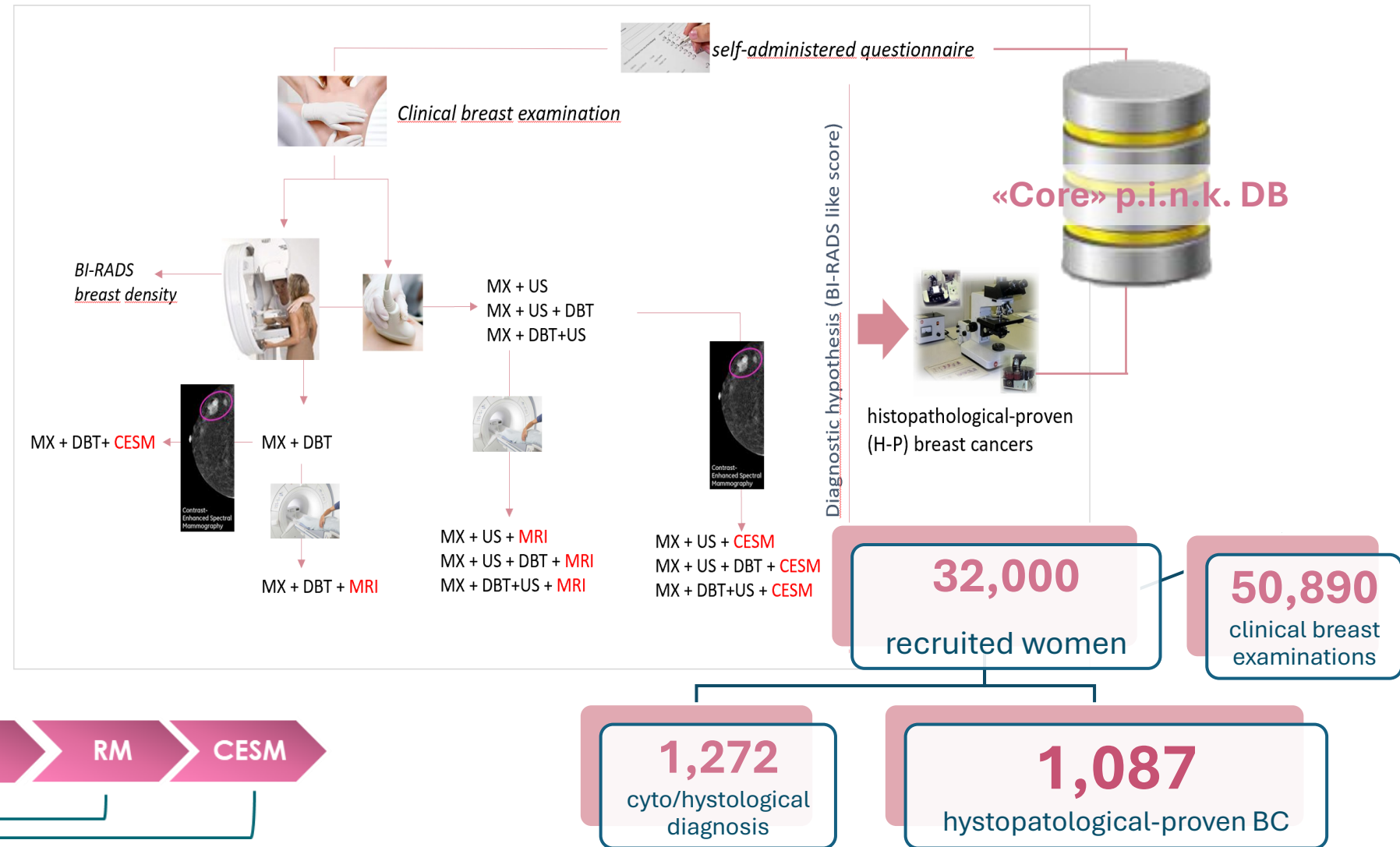


Recruitment:

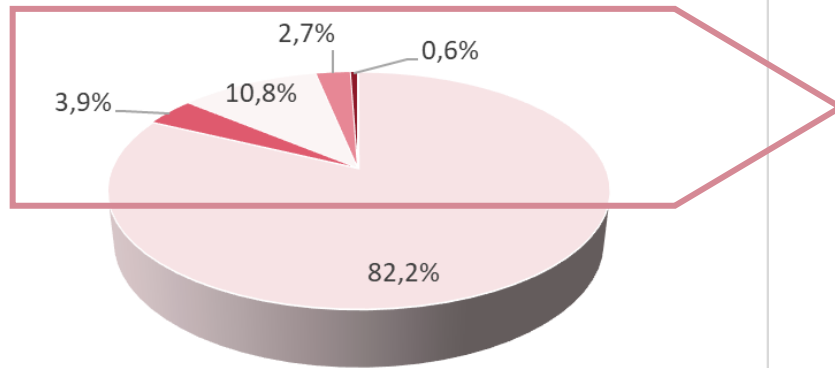
April, 2018 – December, 2025

«CORE» PINK DATA: promote equity in early diagnosis

How many BCs are detected by **MX** and how many are detected by **other diagnostic methods** only, in a framework of integrated imaging?

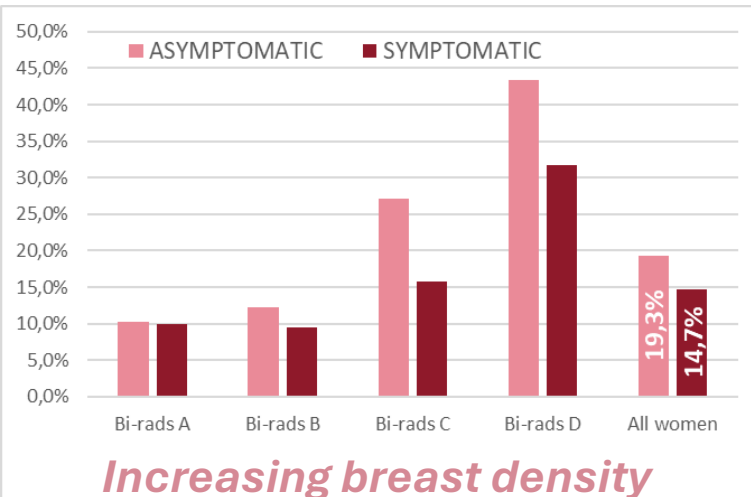
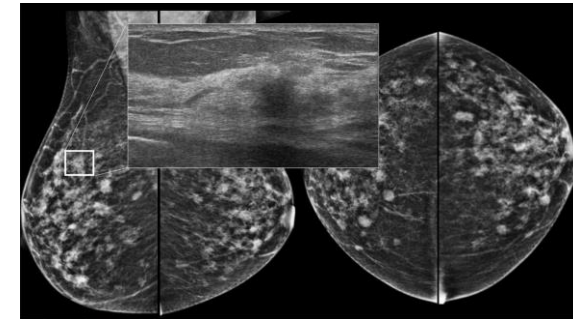


«CORE» PINK DATA: CURRENT FINDINGS



Overall Additional Detection rate
17.8% [15.7 – 20.2%] of all BC cases are undiagnosed by MX (*Bi-RADS:1-3*)
19.3% [16.6 – 22.3%] asymptomatic women
14.7% [11.3 – 18.8%] symptomatic women

Compared to DBT (5.8%), **US** has proven to be the most sensitive method for detecting cancers missed by mammography (14.6%)



Integration of different diagnostic methods is more sensitive among **younger women** and among women with **dense breast**

PINK QUESTIONNAIRES DATA: TARGETING RISK



Which combinations of non-modifiable and lifestyle-related factors could influence the chance of having BC?

Franchini M et al, 2022. <https://doi.org/10.3390/cancers14235801>



cancers

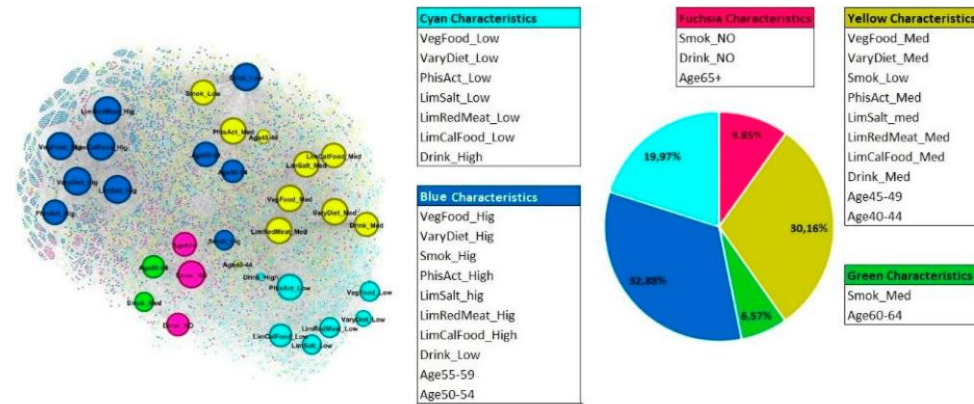


Article

Promote Community Engagement in Participatory Research for Improving Breast Cancer Prevention: The P.I.N.K. Study Framework

Michela Franchini ¹, Stefania Pieroni ^{1,*}, Francesca Denoth ¹, Marco Scalese Urciuoli ¹, Emanuela Colasante ¹, Massimiliano Salvatori ¹, Giada Anastasi ¹, Cinzia Katia Frontignano ², Elena Dogliotti ³, Sofia Vidali ⁴, Edgardo Montrucchio ², Sabrina Molinaro ^{1,*}, Tommaso Susini ⁵ and Jacopo Nori Cucchiari ⁴

5601 post-menopausal women → 100 BCs



The P.I.N.K. framework represents an example of integrating and analyzing in a new way a huge amount of clinical data together with data on lifestyle and daily habits to emphasize their crucial role in the development of BC. It also shows the importance of defining the effects of preventive/predisposing behavior combinations to identify targeted risk profiles.

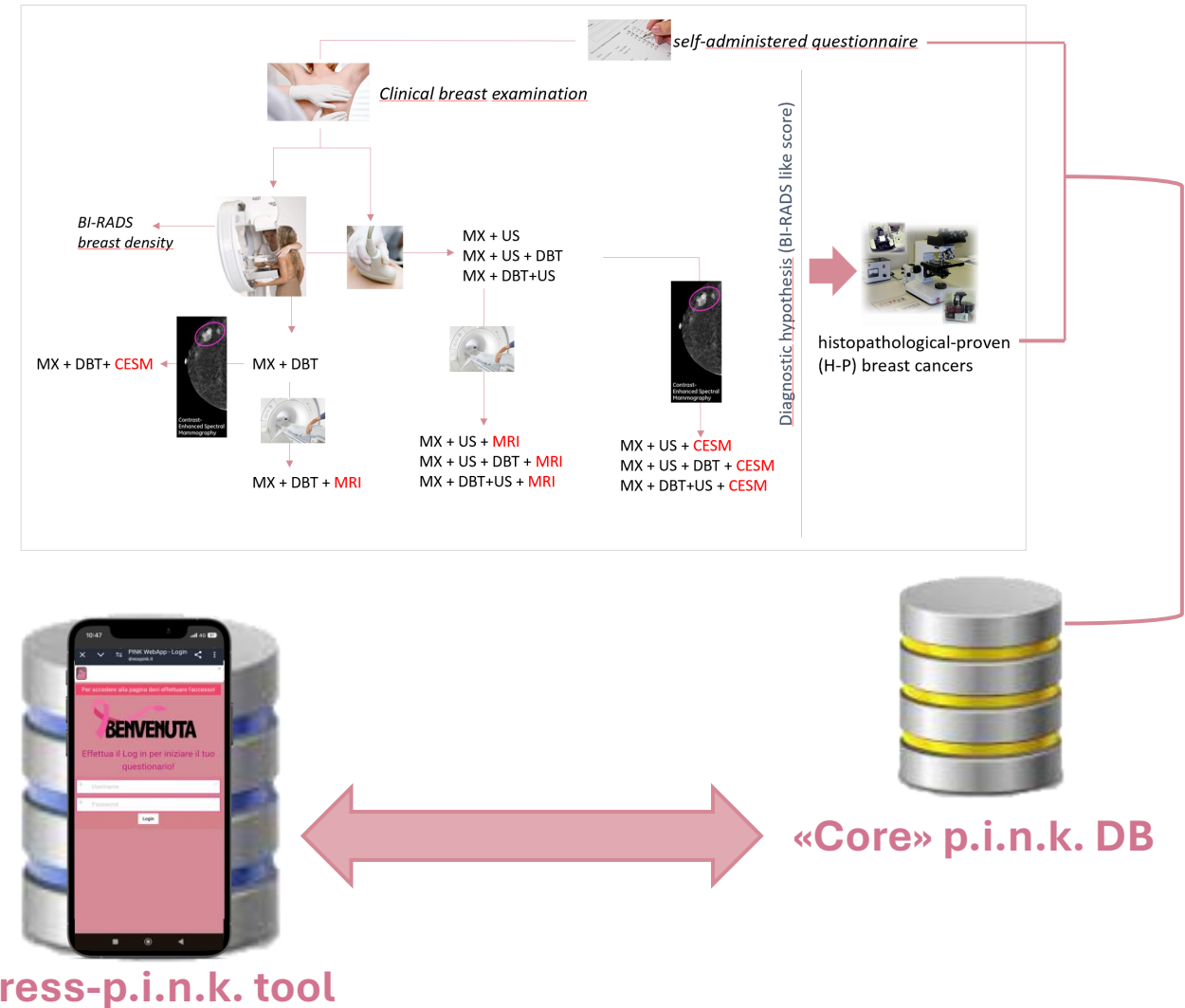
«DRESS- p.i.n.k» DATA: promote equity in primary prevention



How to collect **more detailed data** about non-modifiable and lifestyle-related factors using a **participatory approach**?



How to **share valid information** on lifestyle-related factors to **promote health** and **changing risky behaviours**?



Dress-p.i.n.k. tool

THE DRESS-p.i.n.k.: a tool to collect data

Widely used technology
(Telegram bot)

Few questions per day

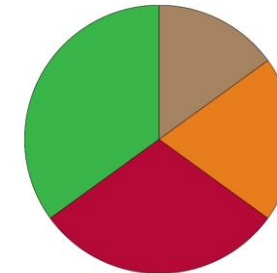
Easy answer through
graphical representation

No missing data



10. Immagina di mettere quello che mangi a PRANZO in un unico piatto. Inserisci nelle rispettive caselle la percentuale che meglio rappresenta il tuo consumo per CATEGORIA: vedrai colorarsi il grafico sottostante. Tieni presente che la somma delle categorie che compongono il tuo piatto dovrà essere 100%.

Cereali	Fonti Proteiche	Frutta	Verdura
015	020	030	035



Questions

6. Quante volte *A SETTIMANA* consumi frutta secca a guscio (mandorle, noci, nocciole)? [Rispondi 0 se consumi frutta secca a guscio meno di una volta alla settimana]

- 0
- 1
- 2
- 3
- 4
- 5
- 6+

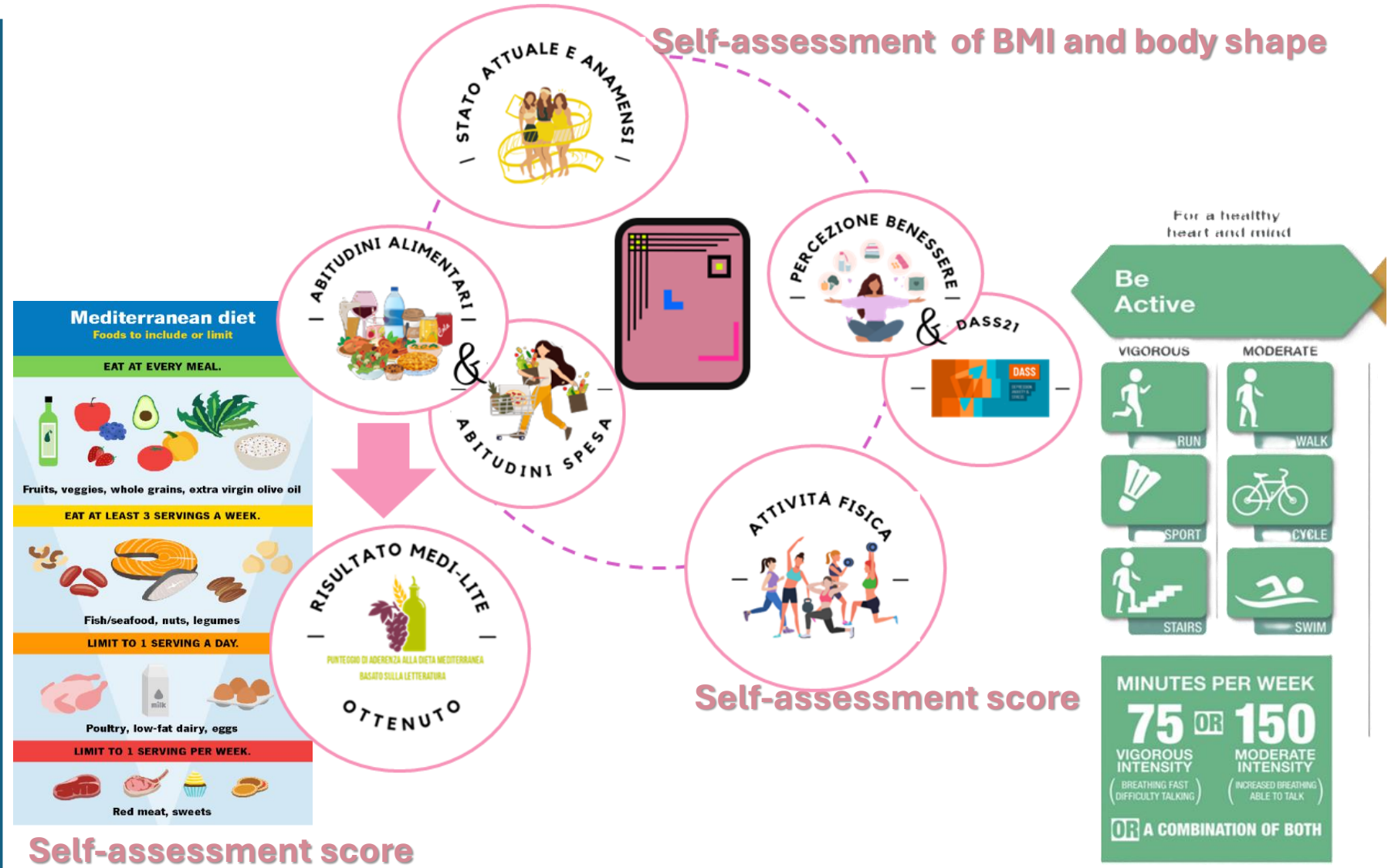
7. Clicca sull'immagine con la porzione di frutta secca a guscio che consumi abitualmente.



THE DRESS-p.i.n.k.: topics



Self-assessment of individual mental and physical health, lifestyle and habits to increase women awareness



THE DRESS-p.i.n.k.: health promotion



Provide scientifically-proven information about diet, food purchasing and cooking habits, quality of sleep and physical activity.

To learn more, click here

3. Chi effettua la tua spesa, tu compresa, quale criterio utilizza fra i seguenti? [scegli una o piu' risposte]

Per approfondire clicca qui!

- Nessun criterio in particolare
- Preferisco il prodotto certificato DOP, DOC, IGP
- Preferisco i prodotti Biologici certificati
- Preferisco prodotti italiani/locali
- Preferisco prodotti 'No OGM'
- Prodotti a Km zero
- Prodotti di stagione

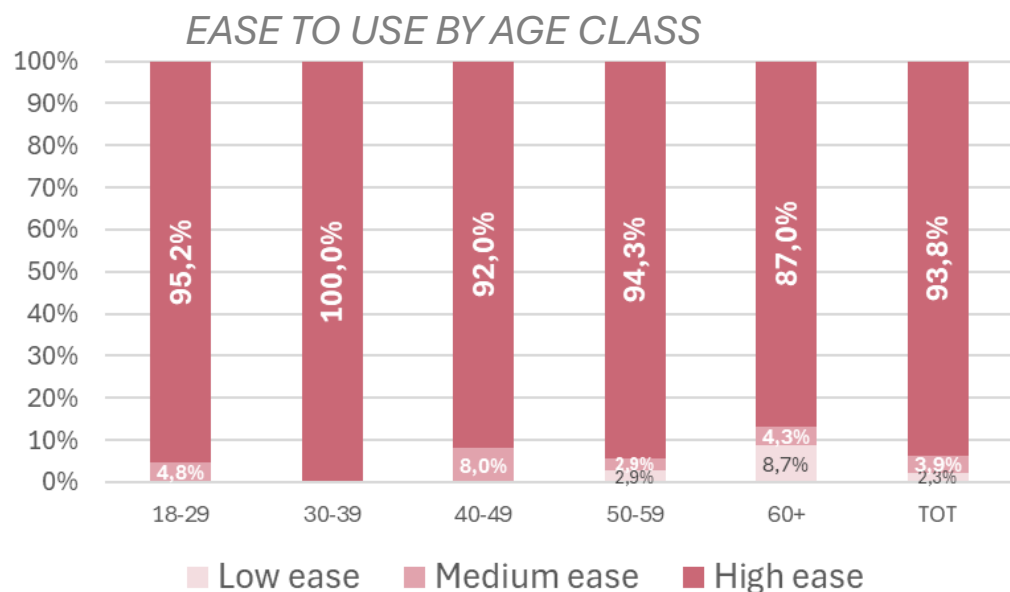
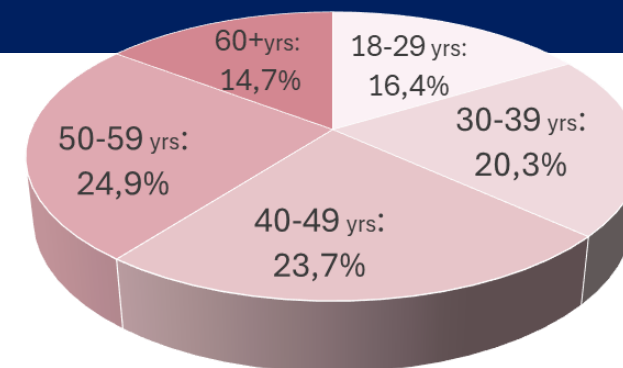
4. Se la tua spesa abituale include verdura, in quale forma la acquisti prevalentemente? [scegli una o più risposte]

Per approfondire clicca qui!

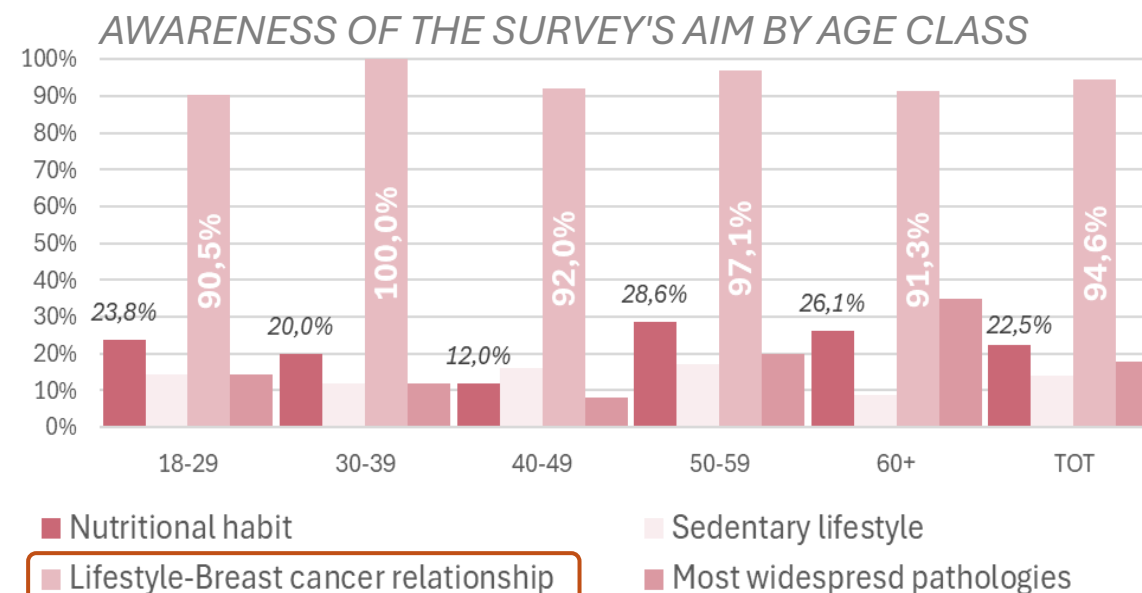
- Non acquisto verdura
- Fresca
- Surgelata al naturale
- Surgelata già cucinata (padellate di verdure, patate fritte/precotte)
- Cucinata al banco gastronomia
- Scatolame/vetro
- Liofilizzata (polvere di spinaci, piselli, carote)
- Disidratata (carote, barbabietole, mix di verdure)
- Pronta al consumo dal banco frigo

DRESS-p.i.n.k.: easy to use and comprehend

Rn The tool is equally used by women of various ages



Rn 94% of women found it easy to use



Rn 95% of women understood the real objective of the survey

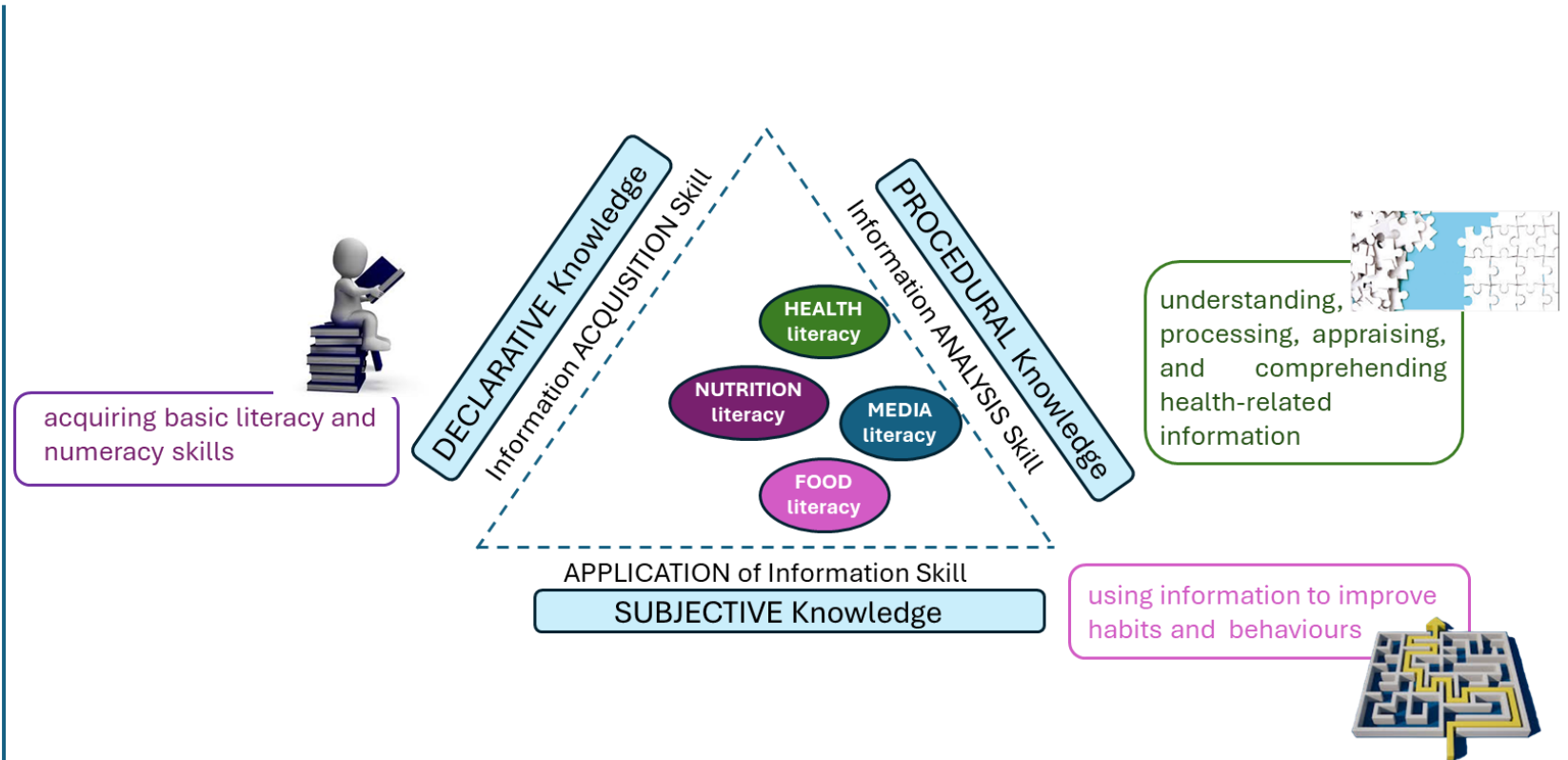
WHICH LITERACY FOR HEALTH PROMOTION

Health literacy:

- mediates and moderates self-assessed health
- has the potential to predict health

Limited health literacy:

- follows a social gradient and can further reinforce existing **inequalities**
- is associated with higher health system costs

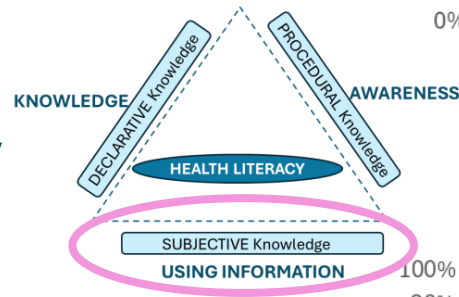


Source: Truman E, et al, 2020. <https://doi.org/10.1093/heapro/daz007>

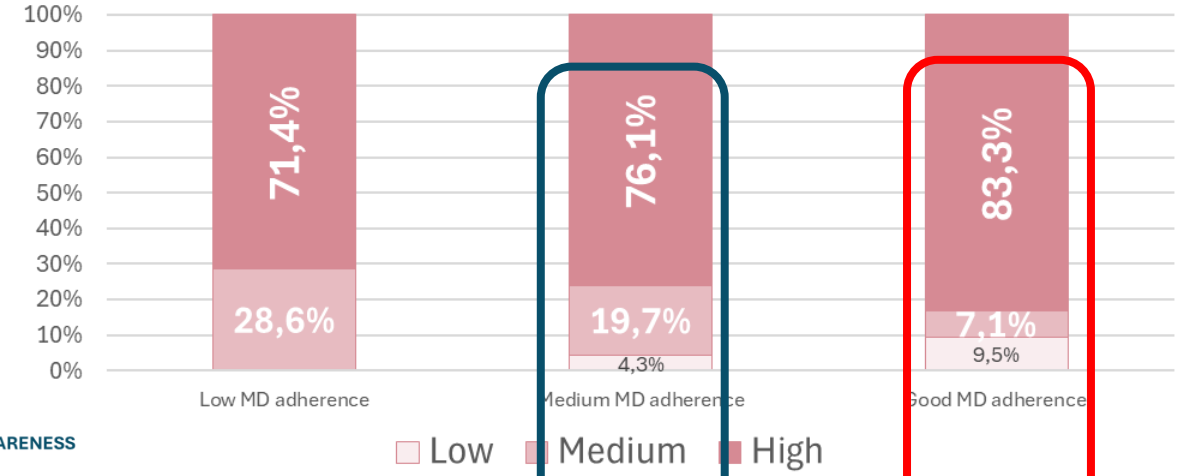
NUTRITION: promote behavioural change

77% of women declare high usefulness in acquiring greater knowledge and awareness; **83%** among women highly adherent to the Mediterranean Diet

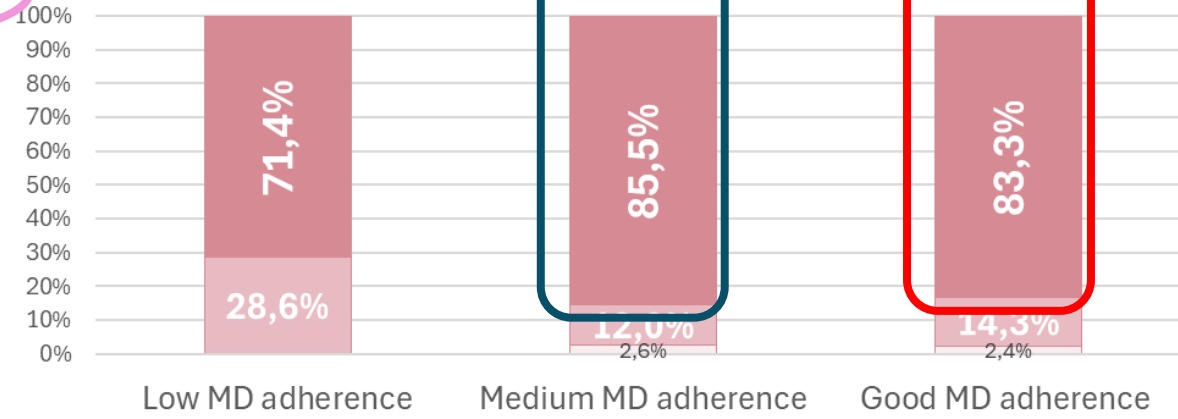
Among women who are partially adherent to the Mediterranean Diet, **76%** declare high usefulness in increasing health literacy while **85.5%** found the provided information very useful in changing their behaviours



GAINING GREATER AWARENESS OF NUTRITIONAL RISK FACTORS



USEFULNESS IN CHANGING NUTRITIONAL BEHAVIORS

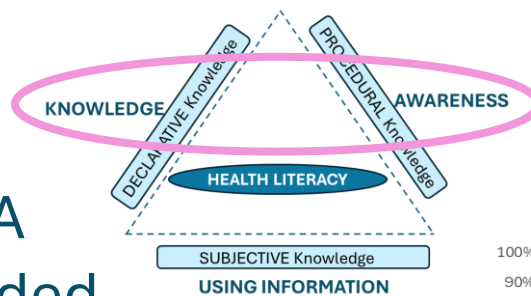




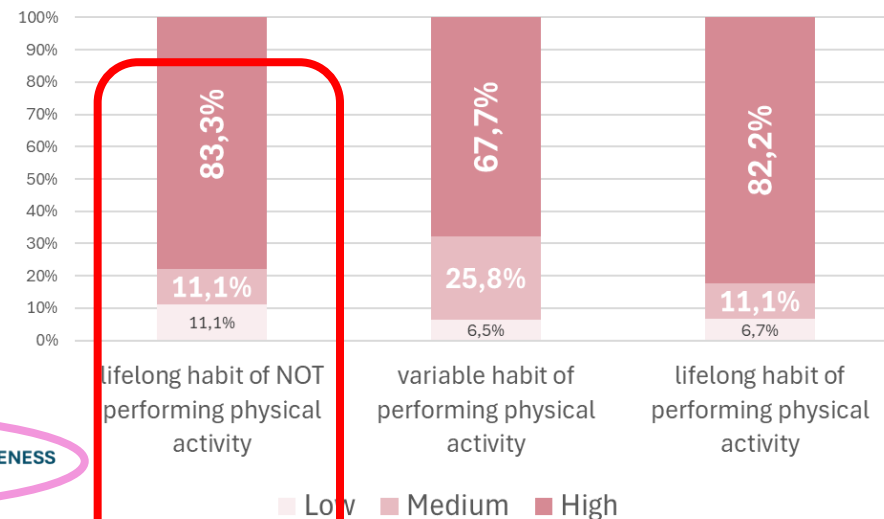
PHYSICAL ACTIVITY: promote knoweldge

79% of women declare high usefulness in acquiring greater knowledge and awareness; **82%** among women with a lifelong habit of performing P.A.

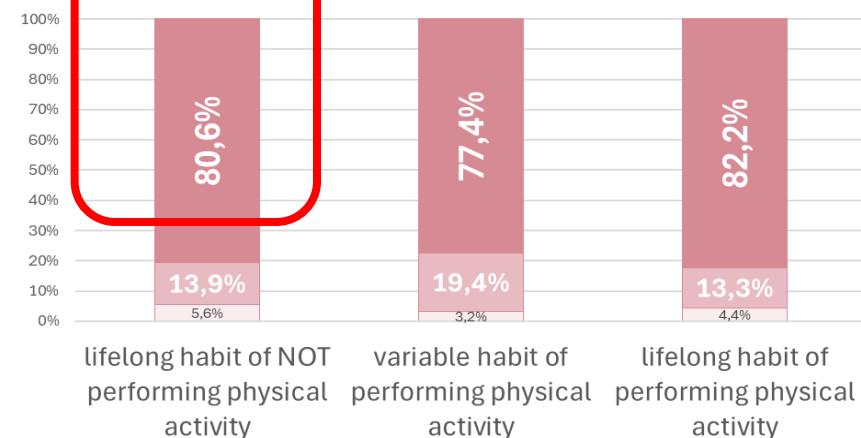
Women who did not perform PA during their life found the provided information **more useful in increasing health literacy** than in changing their behaviours.



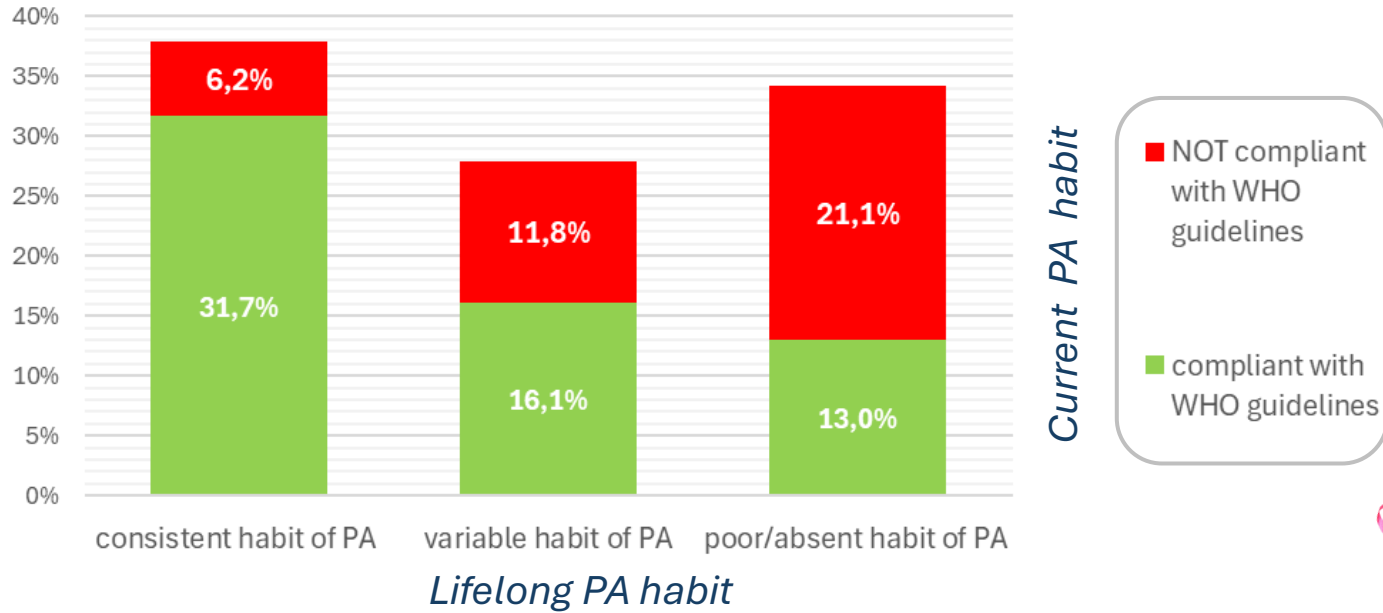
GAINING GREATER AWARENESS OF PERSONAL RISK FACTORS



USEFULNESS IN CHANGING BEHAVIORS



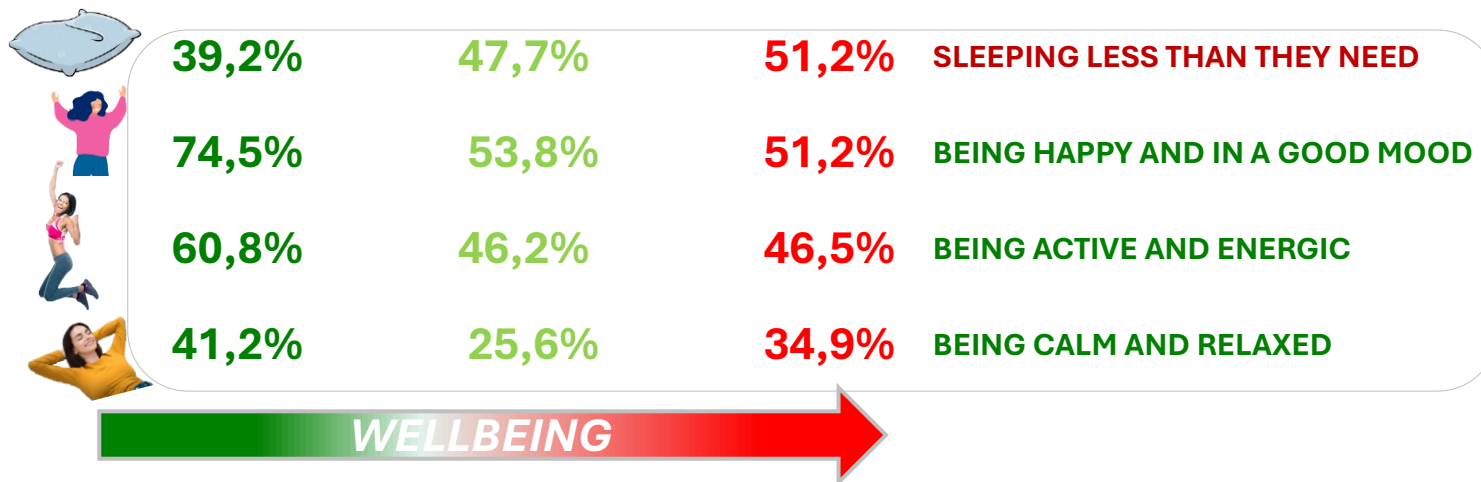
LEVERS OF CHANGE



PROMOTING PA AT AN EARLY AGE

Physical activity habits during the young adult years are likely to be important influences on habitual physical activity during overall adult life

SHOWING THE BENEFITS OF PA IN DAILY LIFE



Knowledge and awareness of the psychological benefits of physical activity and the risks of physical inactivity predict higher engagement in regular physical activity

TARGETING HEALTH PROMOTION ACTIVITIES

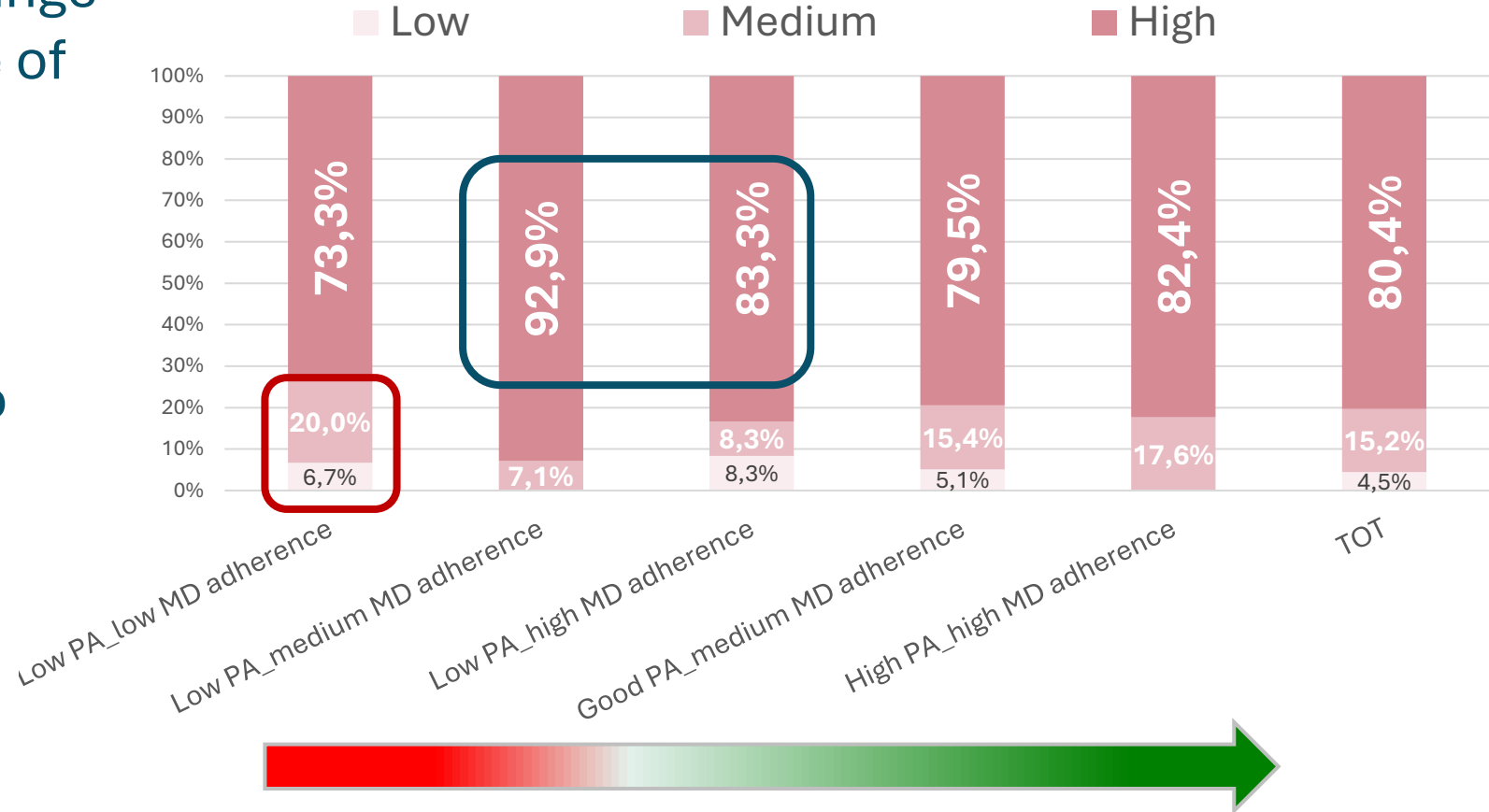


An intense stimulus to change behaviours reached a high rate of women (80.4%)







Women who most need to change their habits, show the highest rate of "resistance" to health promotion messages

USEFULNESS IN CHANGING BEHAVIORS



SUGGESTIONS FROM THE DRESS-p.i.n.k.

-  Health promotion is an extremely challenging topic, with highly uncertain outcomes due to the **general variability** in terms of **individual complexity** (*experience and skills acquired throughout life, culture, beliefs, psychological profiles and much more*) and **the focus** of promotion activities (*nutrition, physical activity, others*).
-  **Knowledge alone** is often insufficient to inspire change. Only providing a large amount of **general** health information is not health promotion. **Targeting is the key.**
-  **Habit formation** depends on the perception of a healthy behaviour (*i.e. PA*) as a lifestyle rather than as a temporary goal that needs to be achieved (*i.e. losing weight*) because the goal achievement may lead to stop the activity
-  **E-Coaching tools** hold great promise in **promoting** behavioural change by enabling ongoing support and in **reducing inequalities** in cancer prevention by improving access to quality information



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Fondazione
VERONESI



CNR - IFC

UNISCITI AL PROGETTO P.I.N.K.

PER AIUTARE LA RICERCA SUL
TUMORE AL SENO E RESTARE
AGGIORNATA



Avrai bisogno dell'App di Telegram, della connessione ad Internet e di 5 minuti del tuo tempo al giorno, per circa un mese.

**SEI UNA DONNA
E HAI ALMENO
18 ANNI?**

**INQUADRA IL
QR CODE E FAI
CLIC SU AVVIA**

per approfondire gli obiettivi del progetto, le modalità di tutela della privacy e decidere se partecipare registrandoti all'indirizzo Internet che ti verrà proposto.