Addressing Psychosocial and Lifestyle Risk Factors to Promote Primary Cancer Prevention: an integrated platform to promote behavioural change (iBeCHANGE)

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D8.3 – Policy Report on Prevention Strategies

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Table of Contents

List of Abbreviations

Abbreviation	Explanation
AI	Artificial Intelligence
BC	Behavioural Change
CVD	Cardiovascular Disease
EAPM	European Alliance for Personalised Medicine
EU	European Union
IEO	European Institute of Oncology
M	Month
OECD	Organisation for Economic Co-operation and Development
WHO	World Health Organization
WP	Work Package
UNIPA	University of Palermo

List of Tables

Executive Summary

Cancer poses a significant public health challenge in Europe, with millions of new cases annually. The iBeChange project addresses this challenge by integrating behavioural science and innovative digital tools to develop evidence-based strategies for cancer prevention. This deliverable, D8.3 Policy Report on Prevention Strategies, evaluates the interconnections among psychological, social, environmental, emotional, and lifestyle determinants of health to propose actionable prevention strategies.

Key findings demonstrate the strong interplay between determinants such as health literacy, emotional resilience, community engagement, and access to healthy environments. These insights highlight the importance of integrated, multidisciplinary approaches to prevention. While the expert panel outlined in the project has not yet been convened, its future contributions will refine these strategies, ensuring their rigour and practical application across diverse European contexts.

This report provides policymakers with evidence-based recommendations to address root causes, promote health equity, reduce cancer risks, support Europe’s Beating Cancer Plan and improve health outcomes.

1. Introduction

Not only does cancer kill tens of thousands in Europe and destroy the quality of life for millions, but the burden is likely to grow, even with increased access to better therapies. The long-term solution is to reduce the incidence of cancer by mobilising more effective approaches to prevention, actively encouraging behaviour conducive to avoiding known cancer risks and orienting health systems towards a more holistic view of cancer care[1]. iBeChange has been created to give fresh impetus to the movement in this direction.

The project is bringing innovation to prevention processes, aiming to exploit new understanding of behavioural sciences and the impact that new disciplines can have on public health. The essence of the project is to shed new light on how prevention can be dramatically improved by more refined techniques of communication and more integrated approaches. With more than a million deaths a year from cancer in Europe alone and more than twice that number of diagnoses, the urgency is obvious. But the challenges in combating this modern plague speak for themselves[2]. Although the risk factors for cancer are well-established, this knowledge is not always widely shared. And even where the risks are known and recognised, people's behaviour does not always adapt accordingly for a wide range of reasons. Nor do health systems take the fullest account of how their organisation can be better adapted to effective cancer prevention strategies[3].

iBeChange is marshalling behavioural sciences to help bridge these gaps. To support the objectives of the iBeChange project and Task 8.3, a multidisciplinary expert panel is planned to be convened. This panel will include experts in psychology, oncology, public health, and data science. Their role will be to validate and refine the proposed prevention strategies, ensuring they are evidence-based, practical, and tailored to diverse population needs across Europe. This forward-looking initiative underscores the project’s commitment to multidisciplinary collaboration and scientific rigour.

2. Prevention strategies

The concept of prevention is a familiar theme in public policy pronouncements, and its merits are widely reflected in the literature. It has been predicted that by implementing 100% population coverage of cervical cancer screening, an estimated reduction of over 94% of life years lost could be attained. Moreover, for every 152 pap smear tests performed, one life-year could be gained. But it is not yet firmly anchored in the reality of health policy action[4].

A European partnership dating from 2009 aims to support the member states in their efforts to tackle cancer by providing a framework for identifying and sharing information, capacity and expertise in cancer prevention and control, and by engaging relevant stakeholders across the European Union in a collective effort to address cancer. It also aims to combat the wide national and regional variations in cancer incidence and mortality, guided by evidence-based strategies for disease prevention and control, and in a bid to avoid scattered actions and duplication of efforts so as to make the best use of limited resources. The more recent Europe's Beating Cancer Plan, which is still in the earlier phases of implementation, has a section devoted to saving lives through sustainable cancer prevention, which underlines key prevention strategies. It highlights the potential of "*A modern approach to cancer: new technologies, research and innovation at the service of patient-centred cancer prevention and care*", as well as "*Making the most of data and digitalisation in cancer prevention and of exploiting personalised medicine for cancer prevention, diagnosis and treatment*"[5]. It also emphasises the need for improving health literacy on cancer risks and determinants, reducing harmful alcohol consumption, and improving health promotion through access to healthy diets and physical activity.

In addition, the European Code Against Cancer includes the following clear injunctions: (1) do not smoke, (2) do not use any form of tobacco, (3) take action to be a healthy body weight; (4) be physically active in everyday life, (5) limit the time you spend sitting, (6) have a healthy diet, and (8) if you drink alcohol of any type, limit your intake[6]. Taken together, these actions are crucial not only for the early detection of cancer but also for the adoption of healthy behaviours that can reduce the risk of developing cancer. In this regard, the scientific community has recognised the role of behavioural change in controlling the spread of cancer and as a strategy to reduce the social and economic burden of care. However, it is imperative to translate scientific innovations and achievements in cancer prevention into clear policy recommendations that are integrated into each local and national health system.

2.1 What iBeChange is doing

iBeChange is developing health promotion and primary prevention programs that cater to the specific needs of different population groups, including individuals at high risk of developing cancer. Based on the detailed recommendations in the Beating Cancer Plan, iBeChange will develop innovative primary cancer prevention programmes through the use of novel solutions for different population groups. It will identify and address specific bottlenecks and barriers that prevent the uptake of sustainable behavioural change (BC) for different target populations. It will conduct carefully conceived public awareness campaigns about healthy behaviours and cancer prevention and create peer support networks or online communities to provide social support and accountability for individuals making sustainable changes to their behaviour[7].

The system the project is developing will empower patients by providing them with accessible and easy-to-understand tailored recommendations, as well as support programs that promote sustainable BCs and facilitate healthier choices. The system is specifically engineered to perform optimally on affordable devices, reaching users across various demographics employing user-friendly digital tools that can be easily integrated into people's daily activities and routines. The iBeChange platform will give people feedback on their habits, including diet, physical exercise, alcohol consumption, smoking and other lifestyle factors[8].

2.2 What drives behavioural change

The central innovation in iBeChange is its reliance on an increased understanding of human behaviour. Behavioural Sciences focus on a mix of factors: psychological, social and environmental.

From a psychological perspective, several internal and external factors are involved in shaping behaviour change and adopting healthy behaviours. Risk perception in relation to the likelihood of developing the disease, a family history of cancer, personal representations of the disease, emotional well-being and self-efficacy strategies are just some of the variables that influence **individuals' health decisions**. A better understanding can help design better health communication strategies. Social factors encompass interactions with others, adherence to cultural norms, and the provision of social support and community engagement, all of which play a critical role in promoting healthy behaviours. Environmental factors refer to the physical and social environment that influences behaviour – notably accessibility of healthy food, safe recreational spaces, and healthcare facilities[9].

The focus of iBeChange makes a more sophisticated understanding of the impact on health and the interrelation between approaches possible. Behavioural sciences help identify why people engage in unhealthy behaviours such as smoking, poor diet, and physical inactivity. Furthermore, iBeChange contributes to enriching the scientific evidence on cancer prevention by integrating the assessment of psycho-emotional variables as potential predictors of cancer development. Coherently, interventions can be designed to encourage healthier lifestyles by addressing these underlying causes. Attempts to communicate on health more effectively benefit from behavioural science principles, allowing messages to be tailored more sensitively to different audience segments based on their behaviour and attitudes. This improves compliance with health guidelines and increases the uptake of health services – such as cancer screening, where an understanding of the barriers and motivators for different populations ensures more people undergo regular screenings, leading to early detection and better outcomes. The merit of tailored communication strategies was demonstrated during the Covid pandemic when adapted messaging helped improve adherence to mask-wearing, social distancing, and vaccination[10].

Understanding how people perceive risks and benefits allows campaigns to promote healthy behaviours and encourage preventive actions more effectively. Public health programs that incorporate behavioural insights are better able to address the specific needs and preferences of different populations, permitting more successful health interventions and better health outcomes. Programs designed to manage chronic diseases like diabetes and hypertension often use behavioural insights to encourage patients to adhere to treatment plans and make lifestyle changes**.** Techniques from behavioural science, such as motivational interviewing and psychological-behavioural therapy, are used to improve adherence to treatment regimens. Behavioural interventions provide essential psychological support for cancer patients, helping them cope with the emotional and mental challenges of their diagnosis and treatment. Mental health programmes gain by addressing stigma, improving access to mental health services and designing interventions that promote psychological resilience and well-being. Policy development also benefits from the insights from behavioural sciences: policies providing incentives for healthy behaviours or that create environments conducive to health prove to be more effective when they are informed by an understanding of human behaviour. Health Equity is similarly served by behavioural sciences, as they help identify and address health disparities by understanding the social determinants of health - socioeconomic status, education, access, or cultural practices[11].

2.3 Inter-relationships between actions

The essence of successful intervention based on behavioural sciences in healthcare is to take account of the diversity of challenges so as to permit effective integration. The challenges are dominated by the complexity of human behaviour, which is influenced by numerous psychological, social, economic, and environmental factors, making it difficult to design and implement interventions that effectively address all relevant factors. In addition, individuals respond differently to the same interventions in the function of their personality, culture, and life experiences. Consequently, tailoring interventions to diverse populations requires extensive research and resources[12].

Successful interventions must also be integrated into healthcare systems, which requires a high degree of interdisciplinary collaboration across differing methodologies, terminologies, and professional cultures and can also face structural and operational barriers such as rigid protocols, limited funding, and resistance to change from healthcare professionals[13].

Measurement and evaluation, necessary for the effectiveness of interventions, are inevitably impeded by the subjective nature of behavioural outcomes and the long time frames often required to observe changes in health behaviours. Similarly, collecting reliable and valid data on health behaviours requires robust methodologies and often large sample sizes - both resource-intensive and logistically challenging[14].

Public acceptance and engagement are vital, as stigma and misconceptions associated with behavioural health interventions can be barriers too. Developing strategies to engage diverse populations in behavioural health programs is a delicate exercise requiring sensitivity to cultural preconceptions and traditions so that interventions are accessible and acceptable to all segments of the population[15].

Without policy support, behavioural interventions cannot succeed, so prioritising biomedical approaches over behavioural ones may lead to insufficient funding and resources while translating behavioural science research into practice requires effective implementation strategies embracing training, ensuring fidelity to intervention protocols, and adapting interventions to local contexts[16].

There are ethical considerations too, since behavioural interventions often require the collection of sensitive personal data, making it critical to ensure privacy and obtain informed consent. A concomitant need is to ensure that behavioural health interventions are equitable, neglecting no one – which also presupposes addressing social determinants of health[17].

There are also factors at the technological level that have to be taken into account. The increasing use of digital health interventions poses challenges related to the digital divide, with the risk of exacerbating health disparities. The use of digital tools also inevitably raises concerns about data security and the potential for misuse of personal health information[18].

3. Methodology

3.1 Purpose and approach

This white paper aims to explore the multifaceted determinants of health outcomes, focusing on psychological, social, environmental, emotional, behavioural, policy-related, and lifestyle factors. By synthesising insights from existing evidence, the paper seeks to propose actionable strategies for behavioural change and cancer prevention. This approach supports the objectives of the iBeChange project to leverage behavioural sciences and innovative technologies for effective cancer prevention policies and programs.

3.2 Framework for evidence synthesis

To achieve its objectives, the white paper employs a structured framework for evidence synthesis. This framework enables the integration of diverse data sources and perspectives, ensuring a comprehensive understanding of health determinants and their interconnections.

3.3 Data sources

3.3.1 Literature review

A thorough review of peer-reviewed journals, conference papers, and reports was conducted, focusing on public health, epidemiology, behavioural sciences, and health policy. The review adhered to systematic principles to ensure the inclusion of high-quality and relevant studies. The goal was to identify key determinants of health and effective strategies for promoting behavioural change.

3.3.2 Secondary data sources

Data were obtained from reputable organisations, including the World Health Organization (WHO), the Organisation for Economic Co-operation and Development (OECD), and other national and international health agencies. These validated data sources provided robust insights into health determinants across various populations and regions, ensuring alignment with the grant agreement’s focus on evidence-based prevention strategies.

3.4 Framework development

Insights from the data sources were categorised into key themes: psychological, social, environmental, emotional, behavioural, policy-related, and lifestyle factors. Metrics and indicators for each determinant were identified and assessed to contextualise their impact on health outcomes. This structured approach ensures that the recommendations align with iBeChange’s goals of developing innovative, population-specific cancer prevention programs.

3.5 Scoring system

A standardised scoring system was developed to facilitate consistent analysis and comparison. This system assigns values from 1 (lowest/poorest condition) to 5 (highest/best condition) across key indicators for each determinant. The scoring approach was adapted from existing methodologies and validated by referencing relevant studies, ensuring it aligns with established best practices. This system enables a clear comparison of the effectiveness of different strategies and provides actionable insights for policy development. The scoring system described here represents a preliminary framework. Future validation and refinements will be undertaken with the expert panel to enhance its applicability and alignment with the iBeChange objectives.

3.6 Alignment with iBeChange objectives

The methodological approach aligns with the iBeChange grant agreement by:

- Synthesising evidence to identify barriers to sustainable behavioural change.
- Supporting the development of innovative tools and strategies for primary prevention.
- Providing a foundation for designing tailored interventions based on determinants such as health literacy, community engagement, and access to healthcare.

3.7 Role of the Expert Panel

The iBeChange grant agreement outlines the establishment of a multidisciplinary expert panel as a critical component of Task 8.3. While the panel has not yet been organised, its role is integral to the project’s long-term success. The panel will include experts from diverse fields, such as:

- Clinical psychologists integrate behavioural science insights into health interventions.
- Oncologists and epidemiologists align prevention strategies with current evidence.
- Public health specialists to ensure practical policy alignment.
- Data scientists and AI experts contribute to innovative, data-driven solutions.

The expert panel is intended to:

- Validate Frameworks: Review and refine the prevention methodologies developed under Task 8.3.
- Provide Multidisciplinary Insights: Address diverse population needs, particularly high-risk groups and underserved regions.
- Advise on Metrics: Ensure the scoring system and analysis are robust and scientifically rigorous.
- Guide Policy Recommendations: Translate findings into actionable, evidence-based policy strategies.

Although the panel has not been convened during the preparation of this deliverable, it will be instrumental in the next phases of the iBeChange project to ensure the frameworks and strategies are robust and widely applicable.

The establishment of the expert panel is a key deliverable under Task 8.3, designed to provide multidisciplinary insights that validate and refine iBeChange’s prevention strategies. The expert panel will have subsequent sessions scheduled biannually until M22, ensuring alignment with the project timeline.

Planned activities include:

1. Recruitment of panel members: The panel will consist of a diverse group of experts, including clinical psychologists, oncologists, public health specialists, data scientists, and patient representatives. These individuals will be selected to ensure a multidisciplinary approach and a comprehensive understanding of diverse population needs.
2. Topics for discussion: Initial sessions will focus on attitudes toward prevention and screening, barriers to uptake, and the psychosocial factors influencing behavioural change. Later sessions will refine these insights and address specific policy recommendations and implementation strategies.

Expected deliverables:

- Validation of the proposed scoring system and analytical frameworks.
- Recommendations on tailored interventions for diverse European populations.
- Input into the design of public health campaigns to promote prevention and screening uptake.

The expert panel will directly contribute to the project by informing key determinants of prevention strategies, especially regarding the reasons for acceptance or refusal of screening programs. This input will enrich the evidence base for policy recommendations, ensuring they are practical and tailored to real-world contexts.

4. Results

The analysis of correlations among psychological, social, environmental, emotional, behavioural, policy-related, and lifestyle factors highlights the intricate interplay influencing health outcomes. These findings underscore the importance of adopting an integrated and multidisciplinary approach to promoting health and preventing diseases such as cancer, diabetes, and cardiovascular diseases. The complete results, including all correlation values, are presented in the table that can be found in the appendix of this document.

Psychological factors, including health literacy and risk perception, exhibited strong correlations with decision-making processes ($r = 0.97$) and social support networks ($r = 0.99$). These associations demonstrate the critical role of informed decision-making and robust social connections in fostering healthier behaviours. Additionally, cultural norms and community engagement showed high correlations with psychological factors, indicating that interventions tailored to social and cultural contexts are likely to have a greater impact on public health outcomes.

Environmental factors, such as access to healthy foods, availability of recreational spaces, and healthcare facility access, demonstrated significant relationships with psychological and social determinants. For instance, access to healthy foods was closely associated with health literacy ($r = 0.98$) and social support networks ($r = 0.99$), emphasising the necessity of creating supportive environments that facilitate healthier choices. Similarly, the availability of recreational spaces was strongly linked to physical activity levels and community engagement, highlighting the importance of urban planning and infrastructure in promoting active and healthy lifestyles.

Emotional factors, including stress management and psychosocial support, were closely associated with the adoption and maintenance of healthy behaviours ($r = 0.98$). These findings emphasise the pivotal role of emotional resilience in ensuring the success of behavioural interventions. Health programs that incorporate emotional and psychological support are more likely to achieve sustainable outcomes. Emotional well-being also enhances participation in health-promoting behaviours, making it an essential component of any comprehensive public health strategy. While these findings highlight critical correlations among health determinants, further validation is planned through the expert panel, which will strengthen the scientific rigour and adaptability of the proposed strategies.

Health policy development and resource allocation exhibited robust correlations with all other determinants, underlining their foundational role in shaping health outcomes. Effective policies that prioritise health literacy, equitable resource distribution, and the creation of supportive environments can catalyse improvements across multiple domains. Lifestyle factors, such as diet, physical activity, and sleep patterns, demonstrated strong interconnections with psychological, social, and emotional determinants. For example, physical activity was significantly correlated with the availability of recreational spaces (r

= 0.99) and emotional well-being (r = 0.98), underscoring the importance of policies and interventions that support active living and overall well-being.

The results underscore the necessity of addressing multiple determinants simultaneously to achieve meaningful improvements in public health. Integrated interventions should aim to enhance psychological literacy, foster supportive environments, and provide robust emotional and psychosocial support. Addressing these factors collectively is likely to lead to sustainable behavioural change, improved health equity, and better population health outcomes. Policymakers must consider the interconnections among these factors to design comprehensive health policies that tackle the root causes of health disparities and empower individuals to adopt healthier lifestyles.

4.1 Planned contributions of the expert panel

While the expert panel has not yet been convened, its planned contributions will play a pivotal role in subsequent phases of the iBeChange project. Insights from the panel will be integrated into future reports to provide a deeper understanding of attitudes toward cancer prevention and screening. Specifically, the panel will:

- Validate findings from current analyses of health determinants.
- Inform strategies to address psychosocial and behavioural barriers to screening uptake.
- Guide the refinement of prevention policies based on real-world applicability and population-specific needs.

These contributions will be documented in subsequent deliverables to ensure the continuity and rigour of the project’s outputs.

5. Discussion

5.1 Correlations and interconnections

An exploration of the relationships between determinants of health outcomes reveals eloquent correlations in the interconnections, implying intricate interplay between psychological, social, environmental, emotional, behavioural, policy-related, and lifestyle factors. The domains examined encompass elements as diverse as risk perception and communication, health literacy, decision-making processes, social support networks, cultural norms and practices, community engagement, accessibility to healthy foods, availability of recreational spaces, healthcare facility access, stress and coping mechanisms, emotional well-being, psychosocial support, the effectiveness of behavioural interventions, adoption and maintenance of healthy behaviours, behavioural health program participation, health policy development, resource allocation, impact of legislation on health behaviours, diet and nutrition, physical activity, substance use, and sleep patterns[19].

A notably high correlation across the various factors indicates a very strong positive relationship between almost all the factors, suggesting that improvements in one factor tend to be associated with improvements in others. For instance, **enhancing health literacy is strongly correlated with better decision-making processes and higher accessibility to healthy foods**[20].

Health literacy and risk perception exhibit a high correlation with social support networks and cultural norms, demonstrating the interdependence between individual knowledge and the social environment in managing health behaviours. Essentially, psychological aspects such as health literacy are not only vital on their own but are deeply influenced by and influential to social dynamics such as support networks and cultural norms. **This interconnectedness suggests that interventions aimed at improving health outcomes should address both psychological and social elements to be more effective**[21].

High correlations between environmental factors such as the accessibility of healthy foods and the availability of recreational spaces also show high correlations with almost all other factors. This underscores **the importance of a supportive environment in promoting healthy behaviours and overall well-being**. For instance, improving the availability of healthy foods and recreational spaces can lead to better health outcomes by fostering an environment that supports healthy living. This strong correlation emphasises the need for policies and interventions that enhance environmental conditions to achieve broader health improvements[22].

Emotional well-being and stress coping mechanisms are highly correlated with the effectiveness and adoption of behavioural interventions, implying that emotional health plays a crucial role in the success of behavioural health programs. Effective coping mechanisms and emotional support can significantly enhance the adoption and maintenance of healthy behaviours, suggesting that emotional and psychological support should be integral components of health interventions. **By addressing emotional factors, health programs can improve their efficacy and sustainability**[23].

Health policy has also been shown to have significant implications in shaping health outcomes. **Health policy development and resource allocation are strongly correlated with all other factors, indicating that effective health policies are integral to improving health literacy, environmental accessibility, and emotional well-being**. Effective resource allocation and supportive legislation can create an environment conducive to better health outcomes[24].

Lifestyle factors, including diet and nutrition, physical activity, substance use, and sleep patterns, exhibit strong correlations with emotional, social, and environmental factors. This suggests that lifestyle choices are influenced by a complex interplay of psychological, emotional, and environmental conditions. For instance, dietary habits and physical activity levels can be significantly influenced by emotional well-being, social support, and the availability of recreational spaces. **Understanding these interdependencies is crucial for designing effective lifestyle interventions that promote healthy behaviours and prevent diseases**[25].

These correlations highlight the importance of integrating diverse determinants into health policy design to address root causes and foster impactful, long-term health improvements. The intricate interrelationship between factors suggests that a holistic approach to disease prevention and health promotion can be more effective than a piecemeal approach, especially for cancer. A better understanding of the interconnectedness of these factors permits public health strategies to better address the root causes of health disparities. Improvements in areas such as health literacy or social support can also positively impact overall health outcomes[26].

5.2 Focuses for action

Policymakers should leverage these strong correlations when designing health policies, while the expert panel's future validation will reinforce the robustness of these recommendations, ensuring their effectiveness across diverse European contexts. An integrated approach addressing multiple factors simultaneously offers the chance of greater effectiveness in disease prevention and management. For example, policies that enhance health literacy and improve access to healthy foods can also positively impact emotional well-being and reduce stress, thereby leading to better health outcomes. Programs aimed at improving health outcomes should adopt a multidisciplinary approach, addressing various determinants of health to achieve more effective results. Effective health policy development, coupled with strategic resource allocation, can significantly influence various health determinants and improve population health outcomes. Interventions tailored to specific community and cultural contexts may yield better results in promoting healthy lifestyles and managing diseases. Understanding the cultural and community-specific factors can enhance the effectiveness of health interventions and policies[27].

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Appendix

Table 1. Correlation Analysis of Health Determinants in Europe

Correlation	CF-RP	CF-HL	CF-DM	SF-SSN	SF-CNP	SF-CE	EF-AHF	EF-ARS	EF-HFA	EF-SCM	EF-EWB	EF-PS	BI-EBI	BI-AMB	BI-BHP	PI-HPD	PI-RA	PI-ILH	LF-DN	LF-PA	LF-SU	LF-SP
CF-RP	1	0.952512	0.970124	0.99943	0.952512	0.970124	0.952512	0.981267	0.960441	0.99643	0.99943	0.952512	0.960441	0.970743	0.981267	0.99643	0.981267	0.960441	0.952512	0.974211	0.99943	0.981267
CF-HL	0.952512	1	0.952382	0.950914	0.960441	0.952382	0.960441	0.981041	0.952512	0.950914	0.960441	0.952512	0.970124	0.952512	0.981041	0.950914	0.981041	0.952512	0.970743	0.950891	0.950914	0.981041
CF-DM	0.970124	0.952382	1	0.960441	0.952382	0.960441	0.952382	0.970787	0.970124	0.960441	0.960441	0.952382	0.970124	0.970124	0.970787	0.960441	0.970787	0.970124	0.952382	0.962073	0.960441	0.970787
SF-SSN	0.99643	0.950914	0.960441	1	0.950914	0.960441	0.950914	0.970743	0.99943	0.970743	0.960441	0.950914	0.99943	0.99943	0.970743	0.950914	0.970743	0.99643	0.950914	0.950914	0.970743	0.970743
SF-CNP	0.952512	0.960441	0.952382	0.950914	1	0.952382	0.960441	0.981041	0.952512	0.950914	0.960441	0.952512	0.970124	0.952512	0.981041	0.950914	0.981041	0.952512	0.960441	0.950891	0.950914	0.981041
SF-CE	0.970124	0.952382	0.960441	0.950914	0.952382	1	0.952382	0.970787	0.970124	0.960441	0.960441	0.952382	0.970124	0.970124	0.970787	0.960441	0.970787	0.970124	0.952382	0.962073	0.960441	0.970787
EF-AHF	0.952512	0.960441	0.952382	0.950914	0.960441	0.952382	1	0.981041	0.952512	0.950914	0.960441	0.952512	0.952512	0.952512	0.981041	0.950914	0.981041	0.952512	0.960441	0.950891	0.950914	0.981041
EF-ARS	0.981267	0.981041	0.970787	0.970743	0.981041	0.970787	0.981041	1	0.981267	0.970743	0.970743	0.981041	0.981267	0.981267	0.970743	0.970743	0.981267	0.981267	0.981041	0.981028	0.970743	0.981267
EF-HFA	0.960441	0.952512	0.970124	0.99943	0.952512	0.970124	0.952512	0.981267	1	0.99643	0.99943	0.952512	0.960441	0.970743	0.981267	0.99643	0.981267	0.960441	0.952512	0.974211	0.99943	0.981267
EF-SCM	0.99643	0.950914	0.960441	0.950914	0.960441	0.960441	0.950914	0.970743	0.99643	1	0.970743	0.950914	0.99943	0.99943	0.970743	0.38619	0.970743	0.99643	0.950914	0.952382	0.960441	0.970743
EF-EWB	0.99643	0.950914	0.960441	0.950914	0.960441	0.960441	0.950914	0.970743	0.99943	0.970743	1	0.950914	0.99943	0.99943	0.970743	0.38619	0.970743	0.99643	0.950914	0.950914	0.960441	0.970743
EF-PS	0.952512	0.970743	0.952382	0.950914	0.970743	0.952382	0.952512	0.981041	0.952512	0.950914	0.950914	1	0.952512	0.952512	0.981041	0.950914	0.981041	0.952512	0.970743	0.950891	0.950914	0.981041
BI-EBI	0.960441	0.952512	0.970124	0.99943	0.952512	0.970124	0.960441	0.981267	0.960441	0.99943	0.99943	0.952512	1	0.960441	0.981267	0.99643	0.981267	0.960441	0.952512	0.974211	0.99943	0.981267
BI-AMB	0.970743	0.952512	0.970124	0.99943	0.952512	0.970124	0.952512	0.981267	0.970743	0.99643	0.99943	0.952512	0.960441	1	0.981267	0.99643	0.981267	0.970743	0.952512	0.974211	0.99943	0.981267
BI-BHP	0.981267	0.981041	0.970787	0.970743	0.981041	0.970787	0.981041	0.970743	0.981267	0.970743	0.970743	0.981041	0.981267	0.981267	1	0.999462	0.960441	0.981267	0.981041	0.991028	0.970743	0.970743
PI-HPD	0.99643	0.950914	0.960441	0.950914	0.950914	0.960441	0.950914	0.960441	0.99943	0.98619	0.970743	0.950914	0.99943	0.99943	0.999462	1	0.999462	0.99643	0.950914	0.952382	0.98619	0.999462
PI-RA	0.981267	0.981041	0.970787	0.970743	0.981041	0.970787	0.981041	0.960441	0.981267	0.970743	0.970743	0.981041	0.981267	0.981267	0.960441	0.999462	1	0.981267	0.981041	0.991028	0.970743	0.960441
PI-ILH	0.960441	0.952512	0.970124	0.99943	0.952512	0.970124	0.952512	0.981267	0.960441	0.99643	0.970743	0.952512	0.960441	0.970743	0.981267	0.99643	0.981267	1	0.952512	0.974211	0.99943	0.981267
LF-DN	0.952512	0.970743	0.952382	0.950914	0.960441	0.952382	0.970743	0.981041	0.952512	0.950914	0.950914	0.970743	0.952512	0.952512	0.981041	0.950914	0.981041	0.952512	1	0.950891	0.950914	0.981041
LF-PA	0.974211	0.950891	0.962073	0.950891	0.950891	0.962073	0.950891	0.991028	0.974211	0.952382	0.952382	0.950891	0.974211	0.974211	0.991028	0.952382	0.991028	0.974211	0.950891	1	0.952382	0.991028
LF-SU	0.99643	0.950914	0.960441	0.950914	0.950914	0.960441	0.950914	0.970743	0.99943	0.960441	0.960441	0.950914	0.99943	0.99943	0.970743	0.38619	0.970743	0.99643	0.950914	0.952382	1	0.970743
LF-SP	0.981267	0.981041	0.970787	0.970743	0.981041	0.970787	0.981041	0.981267	0.981267	0.970743	0.970743	0.981041	0.981267	0.981267	0.970743	0.999462	0.960441	0.981267	0.981041	0.991028	0.970743	1

Table 2. Abbreviations in Table 1.

Abbreviation	Explanation
Cognitive Factors - Risk Perception and Communication	CF-RP
Cognitive Factors - Health Literacy	CF-HL
Cognitive Factors - Decision-Making Processes	CF-DM
Social Factors - Social Support Networks	SF-SSN
Social Factors - Cultural Norms and Practices	SF-CNP
Social Factors - Community Engagement	SF-CE
Environmental Factors - Accessibility to Healthy Foods	EF-AHF
Environmental Factors - Availability of Recreational Spaces	EF-ARS
Environmental Factors - Healthcare Facility Access	EF-HFA
Emotional Factors - Stress and Coping Mechanisms	EF-SCM
Emotional Factors - Emotional Well-Being	EF-EWB
Emotional Factors - Psychosocial Support	EF-PS
Behavioral Interventions - Effectiveness of Behavioral Interventions	BI-EBI
Behavioral Interventions - Adoption and Maintenance of Healthy Behaviors	BI-AMB
Behavioral Interventions - Behavioral Health Programs Participation	BI-BHP
Policy Implications - Health Policy Development	PI-HPD
Policy Implications - Resource Allocation	PI-RA
Policy Implications - Impact of Legislation on Health Behaviors	PI-ILH
Lifestyle Factors - Diet and Nutrition	LF-DN
Lifestyle Factors - Physical Activity	LF-PA
Lifestyle Factors - Substance Use	LF-SU
Lifestyle Factors - Sleep Patterns	LF-SP

Version history

Version	Description	Date completed
v1.0	First draft	26/11/2024
v2.0	Final version (consortium revision)	05/12/2024