Health Literacy and Equity Guide for Digital Health Promotion

GENERALITAT VALENCIANA

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CONTENT

EXECUTIVE SUMMARY

Digital interventions have become powerful tools for promoting healthy lifestyles. To prevent exacerbating existing health inequalities, it is crucial to integrate **health literacy and equity perspectives** throughout all stages of the development of these interventions.

The **Health Literacy and Equity Guide for Digital Health Promotion** aim to ensure the integration of the equity perspective, as well as, health literacy, in all phases of the process of creating a digital health promotion intervention. For that purpose, this Guide is targeted to all researchers and professionals involved on creating digital interventions to promote healthy lifestyles. This Guide includes a set of recommendations organised into Transversal recommendations, Research and Evaluation, Design, Validation, Promotion, and Dissemination phases. With these recommendations, a scientific justification and a practical application are provided in order to facilitate their comprehension and implementation.

This Guide was developed in the context of the “Boosting the Usability of the EU Mobile App for Cancer Prevention” (**BUMPER**) Project, which aims to support the creation of an EU Mobile App for Cancer Prevention through the dissemination of the European Code Against Cancer (H2021, Grant Agreement number 101079924). The Guide is based on scientific evidence and inputs from a multidisciplinary team of public health, health literacy, health promotion, social science, equity, and epidemiology experts. The recommendations included were elaborated by mapping grey literature documents on digital health literacy and equity in digital health promotion interventions, including guidelines, reports, tools and manuals. These recommendations were further supported by scientific articles, books, research projects, official websites, and toolkits.

The inclusion of the equity perspective and health literacy is essential when developing and **implementing digital health promotion interventions**. This Guide seeks to support professionals and the scientific community in developing more inclusive and equitable digital health promotion interventions, creating initiatives that not only reach a wider audience but also deeply engage with individuals from diverse backgrounds, following the proportionate universalism approach.

1. INTRODUCTION

In the current digital era, digital interventions have become powerful tools to promote healthy lifestyles and foster equity in access to health information and services (1). Considering this, innovative initiatives and projects aimed at developing and implementing digital interventions to promote healthy lifestyles are increasing. To avoid exacerbating the health inequalities present in our society (2), it is crucial to integrate the health literacy and the equity perspective from the conceptualization to the evaluation stages of the development of these interventions, that's it, across the entire process.

This Guide has been developed in order to support professionals and researchers to include health literacy and the equity perspective in the development and implementation of digital health interventions. These recommendations re intended to ensure that digital health interventions are accessible, understandable, and culturally appropriate for all end users, regardless of their level of health literacy and socioeconomic and political context.

This Guide is a product of the "Boosting the Usability of the EU Mobile App for Cancer Prevention" (BUMPER) Project, which aims to support the creation of an EU Mobile App for Cancer Prevention through the dissemination of the European Code Against Cancer (ECAC). This is an EU-funded initiative (H2021, Grant Agreement number 101079924) implemented by a consortium of members with many years of experience as promoters of the ECAC, in health promotion and addressing health literacy amongst diverse groups. The project coordinator is the Association of European Cancer Leagues (ECL). This project has been developed over two years (November 2022 to November 2024) and has resulted in the launch of the first EU Mobile App for Cancer Prevention. All the information and outcomes of this project (partners involved, work packages, deliverables, etc.) can be found on its website: https://bumper.cancer.eu/

While this Guide was created in the context of Work Package 4 on "Addressing health literacy via engagement of end users of the EU mobile App for cancer prevention" to support the BUMPER consortium partners in creating this Cancer Prevention App, it is applicable to any project or initiative where a digital intervention aimed at promoting healthy lifestyles is developed.

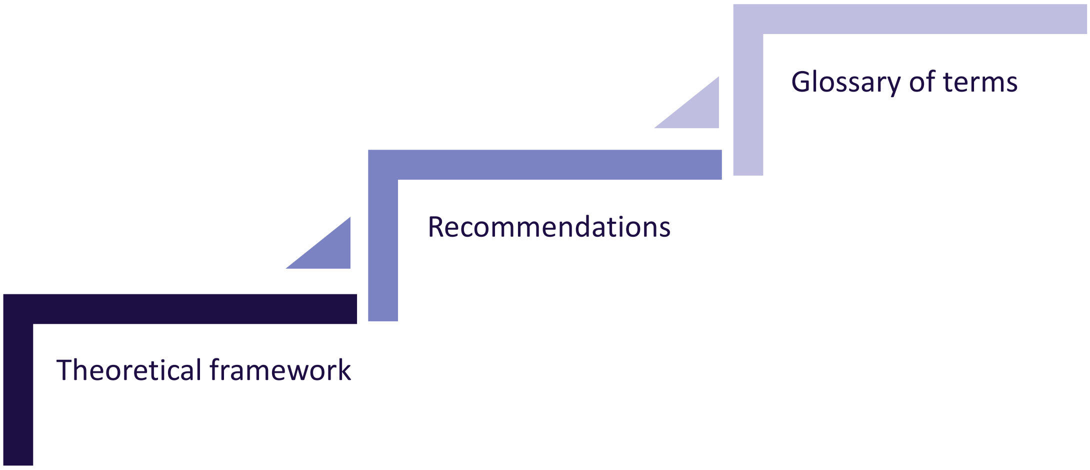
2. SCOPE AND PURPOSE

This Health Literacy and Equity Guide for Digital Health Promotion targets all researchers and professionals aimed to support them in the integration and assurance of the equity perspective, as well as, the digital health literacy, in all phases of the process of creating a digital health promotion intervention. To achieve this, **specific objectives** have been established**:**

- Raise **awareness** among professionals about equity perspective and digital health literacy and how to take them into account in the process of designing and implementing a digital health promotion intervention;
- Provide professionals with a set of **recommendations** to guide them during the development of the intervention.

3. HOW TO USE THE GUIDE

It is recommended to first read the **theoretical framework** included in this Guide. This will provide the reader with a base to better understand the recommendations in detail. After this, the **recommendations**, including general and specific ones, should be read, along with their justification and detailed practical applications. At the end of this Guide, a **glossary of terms** has been provided with the key terms used that can help reader to understand some of the recommendations.



4. HOW THE GUIDE WAS DEVELOPED

This Guide has been developed based on **scientific evidence** and the expertise of the multidisciplinary team involved. This team comprises experts in public health, health literacy, health promotion, social science, equity, and epidemiology, who have worked together to create the Guide. Moreover, it was reviewed by the BUMPER consortium and Dr. Cristina Vaz de Almeida, a health literacy expert.

To develop the recommendations included in this Guide, **mapping of grey literature** including guidelines, reports, tools, manuals, etc. was conducted. This mapping has been performed to identify documents containing recommendations on how to address digital health literacy and equity during the development of a digital intervention to promote healthy behaviours. As a result of this mapping, 39 documents have been used to develop the recommendations (3–42). To support the recommendations developed, scientific articles, books, research projects, websites and toolkits were used.

5. THEORETICAL FRAMEWORK

European Context

Taking into account the increasing digitalisation of our society, one of the priorities of the European Union is tackling this **digitalisation** in the health sector and healthcare systems of the EU Member States.

In the European Commission Communication on the implementation of the Digital Single Market Strategy (43), the European Union's stance on digitalisation in the health sector is clear. It emphasises the need for a digital transformation in health and care that can provide cost-effective tools to support the transition from a hospital-based healthcare model to a patient-centred and integrated one, improve access to care, and contribute to the sustainability and resilience of healthcare systems (43). Following this European Communication, the European Parliament's resolution of 2018 on "*Enabling the digital transformation of health and care in the Digital Single Market; empowering citizens and building a healthier society*"(44) highlights the need to promote health, prevent and control diseases, help address patients' unmet needs, and facilitate equal access for citizens to high-quality care services through the appropriate use of digital innovations(44).

In this European context, the European Commission launched the Healthier Together EU Non-Communicable Diseases Initiative covering the period 2022-2027(45). This initiative addresses the most prevalent non-communicable diseases (NCDs), complementing the actions of the Europe's Beating Cancer Plan in the case of cancer disease (45), through a holistic approach that takes into account the impact of the social determinants of health and the importance of promoting the health equity. To assist Member States in facilitating investments that contribute to reducing the burden and impact of NCDs, and specifically to implement good practices on a wider scale, the European Commission launched the **EU4Health Programme**, among other instruments (46). This programme has been launched aimed to support Member States in health promotion and disease prevention by reducing health inequalities and also, taking into account the increase of digital transformations, among other objectives (46). This EU4Health programme is implanted by annual work programmes supporting initiatives from the EU member states related to its objectives, such as digital health initiatives that take into account equitable access to digital health resources. In this context, “Boosting the Usability of the EU Mobile App for Cancer Prevention” (BUMPER) Project was granted to support the creation of an EU Mobile App for Cancer Prevention through the dissemination of the European Code Against Cancer (ECAC). The Health Literacy and Equity Guide for Digital Health Promotion was developed within this project.

Health Literacy

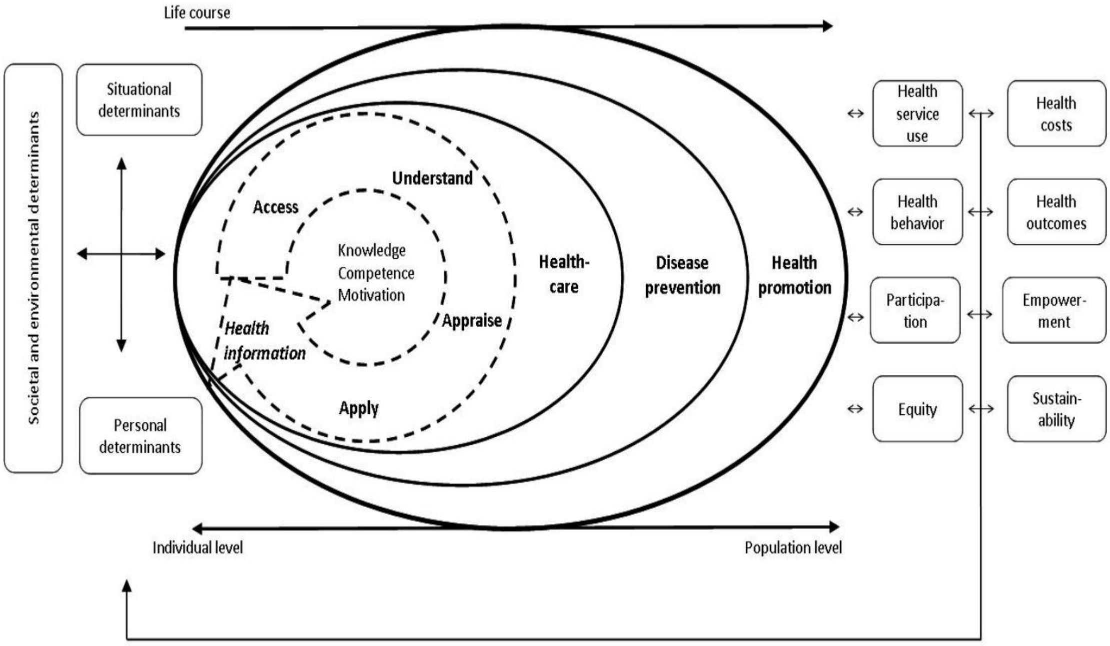
Currently, work is underway on the concept of health literacy in a holistic, integrative manner and as a cross-cutting approach, involving multiple interinfluences from the context (47). One of the most commonly used definitions is that of Sorensen et al. (4), who define **Health literacy** as “*the personal knowledge, competencies, and motivation that enable people to access, understand, appraise, and use information and services to form judgments and take decisions in terms of healthcare, disease prevention, and health promotion”* (48). In this definition, the importance of the individual's intrinsic motivation is highlighted.

A more broader and holistic definition of health literacy is “*A dynamic, multidimensional construct that relates to the degree and development of individuals' cognitive and social skills. It has to do with their knowledge, capacity and attitudes that are developed in a given context and throughout the stages of the life cycle, which allow them to better access, use, understand, evaluate, and interpret the health system and health information. It is critical for informed decision-making and empowers people and communities to maintain and promote one‘s own health and well-being.*” (47).

When we talk about **digital health literacy** we are referring to the ability to search for, access, understand, appraise, validate, and apply online health information, and to formulate and express questions, opinions, thoughts, or feelings when using digital devices (49).

In Europe, almost one third of the population is thought to have insufficient health literacy, making health literacy a key element to target in the European public health policies (50). Efforts aimed at increasing and improving the level of health literacy will also help population to identify false information and, therefore, help reduce misinformation, a growing concern with the rise of digitisation over the last decade.

Figure 1: Health literacy model.

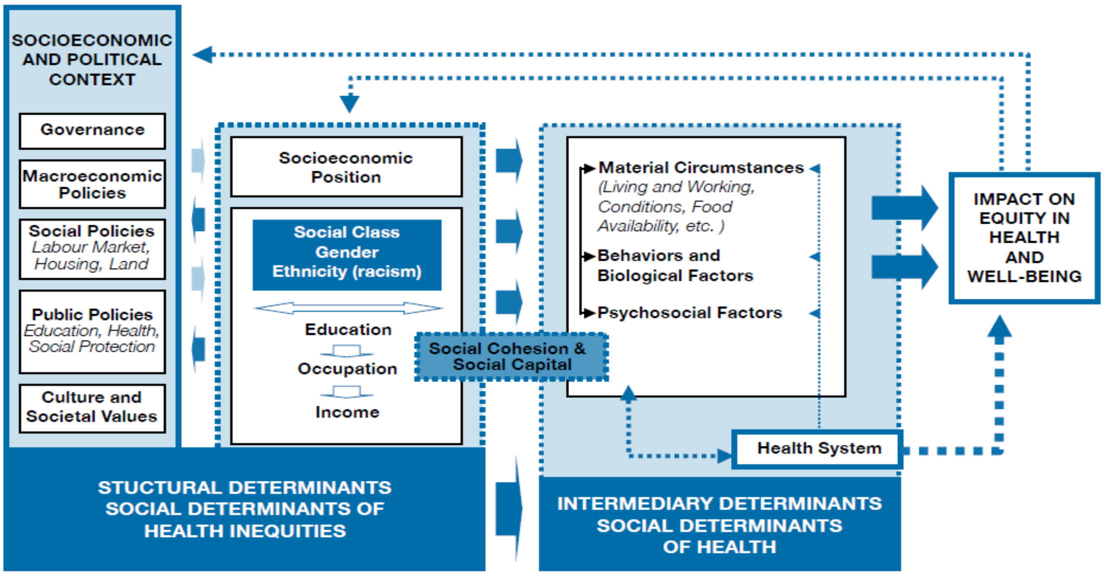


Source: Sørensen K, et al. Health literacy and public health: a systematic review and integration of definitions and models. *BMC Public Health*. 2012:25;12:80.

Social Determinants of Health

The **social determinants of health** are the *social, cultural, political, economic, and environmental conditions in which people are born, grow up, live, work, and age, and their access to power, decision-making, money, and resources* (51). The framework includes two main categories of social determinants: intermediary health determinants and structural determinants (51). **Intermediary determinants** directly influence health through behaviours, biological factors and psychosocial circumstances. These include material circumstances (housing, financial means), psychosocial circumstances (stressors, social support), health-related behaviours (diet, physical activity) and the health system's impact on equitable access and intersectoral action. Social cohesion and social capital also play a role, with social cohesion referring to integration mechanisms within a society and social capital encompassing trust, participation, reciprocity and a sense of community belonging. **Structural determinants** influence health through intermediary determinants and are considered the "causes of the causes" of health inequities. They include socioeconomic position and socioeconomic and political context.

Figure 2: The social determinants of health model.

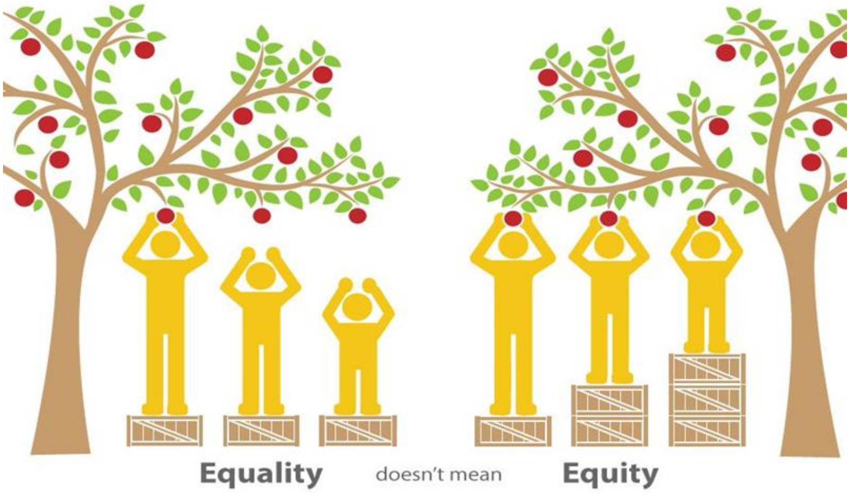


Source: World Health Organization (2010). A conceptual framework for action on the social determinants of health. Social Determinants of Health discussion paper 2. Geneva**:** World Health Organization.

The **social inequalities in health** produced by these social determinants are those systematic differences in health status among different socioeconomic groups, which are socially produced, and therefore unfair and avoidable (52).

To reduce these inequalities we need to work with a **proportionate universalism approach**, which involves resourcing and delivering universal services at a scale and intensity proportionate to the degree of need (53). It is important to differentiate the terms equality and equity when talking about the proportionate universalism approach. **Equality** is providing the same resources and services to the entire population regardless of their needs (54,55). **Equity**, by contrast, is the provision of resources and services taking into account the needs of each population group (54,55).

Figure 3: Difference between Equality and Equity



Source: Neudorf C et al. Better Health for All. Health Status reporting Series 3. Advancing Health Equity in Health Care. Saskatoon Health Region. 2014.

6. HEALTH LITERACY AND EQUITY RECOMMENDATIONS

The health literacy and equity recommendations are organised into the following subtopics**: Transversal recommendations, Research and Evaluation, Design, Validation, Promotion, and Dissemination phases**. The Transversal, and Research and Evaluation recommendations apply to all the steps to be performed in the development of a digital intervention for promoting healthy lifestyles. The recommendations included in the rest of the phases are related to the Design, Validation, Promotion and Dissemination of the intervention.

Each general recommendation contains one or more **specific recommendations**, a **justification** and a **practical application**. The practical application contains a real example of how the recommendation has been applied in other contexts or a tool to assist the professionals in implementing the recommendation.

Transversal

Recommendation 1: Include the social determinants of health, including health literacy in all phases of the digital health promotion intervention.

Taking into account the existence of health inequalities caused by the social determinants of health, including health literacy (52), it is necessary to ensure that all actions aimed at improving population health consider these determinants, with a special focus on the most socially vulnerable groups.

One way to ensure the inclusion of equity and gender mainstreaming is by using the acronym PROGRESS-Plus (56). This acronym was created by Evans and Brown in 2003 to emphasize the multidimensionality of health distribution among different subgroups of the population (56). The PROGRESS acronym refers to the following determinants**:** **P**lace of Residence, **R**ace/ethnicity/culture, and language, **O**ccupation, **G**ender/Sex, **R**eligion, **E**ducation, **S**ocioeconomic status, **S**ocial capital. The Plus determinants include Age, Disability, Sexual orientation, Discrimination, etc. (56). By using this PROGRESS-Plus acronym, the inclusion of different social determinants can be ensured.

Recommendation 2: Create a multidisciplinary, multilingual, multicultural team, including health literacy and equity experts.

Health and disease are two events that can be observed from different perspectives based on previous experiences, culture and even the individual's level of health literacy. The importance of forming multidisciplinary teams with professionals from different disciplines and multicultural backgrounds lies in design and implement health actions considering the diversity of perspectives on the same event. These teams enrich the entire work process and ensure that the final product is as comprehensive as possible.

Moreover, given that health and disease are influenced by living and working conditions, all the disciplines and cultural backgrounds are essential for advancing health taking into account the social, political, economic, educational and environmental context (57).

Recommendation 3: Use co-creation and participatory methods including all the stakeholders. A special focus should be placed on end-users, taking into account the representativeness of social vulnerable groups (e.g. populations with low digital health literacy, rural areas, etc.).

Working only from the perspective of experts and professionals in the field can lead to generalisations and assumptions that are not specific to the target population.

In the development of any health action targeted at the population, it is essential that all phases, including design, planning, implementation, and evaluation, involve key people and target populations, with special consideration for the socially vulnerable and hard-to-reach groups (8,9,14–16,31,32,58). This allows professionals to take into account the diversity in needs, cultures, ethnicities, experiences, etc.

Recommendation 4: Ensure universal access of the digital health promotion intervention developed at a scale and intensity proportionate to the degree of need of different end users, especially of those with low health literacy.

Different population groups have specific needs considering for example, their sociodemographic and socioeconomic characteristics, behavioural profiles, life cycle and contexts. For example, population groups with higher socioeconomic status have different health information needs compared to socially vulnerable population groups, such as ethnic minorities (59). The importance of considering the perspective of proportional universalism lies in this heterogeneity of population needs. By integrating this perspective, we ensure universal access to all services aimed at improving population health but tailored to the needs of each population group (53).

This recommendation encompasses the previous transversals recommendations because to understand the needs of the population and ensure this adapted universal access, it will be necessary to take into account the social determinants of health, include multidisciplinary and multicultural teams and use co-creation methodologies and participation in all phases of the BUMPER project.

Recommendation 5: Use inclusive, assertive, clear and positive language with collective and generic terms that represent different population groups.

It is important to make good use of language so everyone feels addressed and represented in terms of gender, ethnicity, sexuality, age, etc. Professionals should be aware of the significant power that language has in terms of making socially vulnerable groups visible or even promoting the reduction of inequalities present in society.

Some practices aimed at improving inclusive language include using collective and generic terms such as citizenship, childhood, population, etc., and using gender-inclusive terms when referring to mixed-gender groups, for example, "chairmen and chairwomen" (23). Another practice is, for example, consulting socially vulnerable population groups, such as those with low health literacy levels, on how they prefer to be addressed (60).

Recommendation 6: Use different European languages to ensure that the digital health promotion intervention and its promotion are understandable for all potential end users.

Developing a digital health promotion intervention only in one language closes the doors to the entire population who cannot understand that specific language. This reality limits the dissemination and use of the digital health promotion intervention and promotes social inequalities among countries and within the same countries.

Recommended readings

- Dahlgren G, Whitehead M. Policies and strategies to promote social equity in health. Stockholm: Institute of Futures Studies; 1991.
- Marmot M. Fair Society, Healthy Lives: the Marmot Review: strategic review of health inequalities in England post-2010. 2010. Available from: https://www.instituteofhealthequity.org/resources-reports/fair-society-healthy-lives-the-marmot-review/fair-society-healthy-lives-full-report-pdf.pdf
- Jiménez Rodrigo M.L, Martínez Morante M. Guía para incorporar la perspectiva de género en la investigación en salud. Granada, Spain: María del Mar García Calvente; 2010. Escuela Andaluza de Salud Pública. Available from:

https://www.easp.es/project/guia-para-incorporar-la-perspectiva-de-genero-a-la-investigacion-en-salud/

- OXFAM. Inclusive Language Guide. United Kingdom. 2023. Available from: https://policy-practice.oxfam.org/resources/inclusive-language-guide-621487/
- Sorensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: A systematic review and integration of definitions and models. BMC Public Health. 2012; 12: 80

Research and Evaluation

Hypothesis and objectives

Recommendation 7: When framing the research/evaluation question, and defining the objectives and hypotheses, consider the unequal impact of social determinants of health in the problem addressed (e.g. gender, age, ethnicity, country of residence, socioeconomic level, educational level, digital health literacy level, etc.).

S.R 7.1: Incorporate the interests of different social groups in the research/evaluation question and give priority to the needs of the most socially vulnerable groups.

S.R 7.2: Address social and gender-specific objectives and hypotheses if appropriate. If the objectives and hypotheses refer to only one sex or gender or one socioeconomic and cultural group, clearly indicate and justify the decision.

When initiating any research project and/or activity, whether qualitative or quantitative, it is essential to consider that the perception of health and the adoption of healthy behaviours vary accordingly to the different social determinants of health, such as gender, age, health literacy level, culture, political context and country of residence (23,24,33,58).

Therefore, when formulating the research/evaluation question, hypotheses, and objectives, it is necessary to keep in mind the heterogeneity of the population and avoid drawing conclusions that do not consider socially vulnerable groups.

PRACTICAL APPLICATION

1) Equity perspective in health research[1]

The Guide to incorporating a gender perspective in health research (original name**:** "*Guía para incorporar la perspectiva de género a la investigación en salud*"), published in 2010 by the Andalusian School of Public Health, aims to guide the health research scientific community on the practical application of equity and gender perspectives in

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[1] For more information about The Guide to incorporating a gender perspective in health research, please visit: https://www.easp.es/project/guia-para-incorporar-la-perspectiva-de-genero-a-la-investigacion-en-salud/

research (23). Among its recommendations, it is included the following table of best and bad practices for formulating hypotheses. This table can support researchers in developing their hypotheses and in formulating their research/evaluation question to collect the needs and experiences of different groups:

Table 1: Bad and best practices for formulating hypotheses.

Bad Practices 👎	**Best Practices** 👍
Referring hypotheses to one sex when the results are intended to be generalised to both sexes.	Including hypotheses that address possible differences and similarities between women and men.
Failing to take into account gender differences.	If the assumptions refer to only one sex, it should be clearly indicated and justified the decision.
Not taking into account the heterogeneity of women and men (mainly according to age).	Including hypotheses that address the diversity of women's and men's situations and experiences.
Omitting variables of a social, economic or cultural nature from the hypotheses.	Taking into account the possible influence of social, economic and cultural factors.

Source: Jimenez Rodrigo M, Martínez Morante E. Guía para incorporar la perspectiva de género en la investigación en salud. Granada, Spain: Escuela Andaluza de Salud Pública. Consejería de salud.; 2010.

2) Guide for racial Equity in the Research Process[2]

The Urban Institute developed in 2020 a *Guide for Racial Equity in the Research Process* (61). In this guide the researcher can find questions to ensure that they are taking into account the racial equity across their project/intervention. For example, when conceptualizing the research, they propose some of the following questions:

> 1. What factors contribute to or compound racial inequities around this problem? More specifically, what policies, institutions, or actors have shaped these inequalities, disparities, and/or disparate impacts? What actors, at what levels of influence, could reduce these inequities?

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[2] For more information about the Guide for Racial Equity in the Research Process, please visit: https://www.urban.org/sites/default/files/publication/103102/urban_institute_guide_for_racial_equity_in_research_process_0.pdf

2. What opportunities are there to highlight or study the barriers faced by people of colour?
3. Can the project/intervention be completed with integrity without analyses of racial and ethnic groups?
4. How will barriers, structural racism, or historic discrimination be included in the framing of the research?

Study population and sample

Recommendation 8: Ensure equitable representation of the population in the study sample and include the most vulnerable groups (e.g. elder people, low health literacy, low socio-economic level, ethnic minorities, etc.).

S. R 8.1: Use population/patient associations, key contact points, and other stakeholders to access socially vulnerable groups in a research study.

S.R 8.2: Stratify the sample according to sex, age, health literacy level, ethnicity, and all social determinants of health related to the objective under study.

Social determinants of health create a great diversity of groups and sub-groups. For example, the differential impact of gender roles on men and women highlights the necessity of incorporating a gender perspective not only in sample selection but also in the design and implementation of population-directed programmes (62). If the equitable representation of the population is not taken into account in the study sample, it will not be possible to conduct subsequent subgroup analysis, and therefore, the conclusions will be general and not representative of the population's reality. For example, the evidence demonstrates gender-based differences in the use of information and digital information sources (63). This underscores the need to consider this axis of inequality when selecting the sample for the study of health communication and health literacy

To avoid this, on one hand, quantitative studies should strive for representativeness, considering at least the sex, age and geographic area of the population (23,33). On the other hand, qualitative studies should look for structural or theoretical representativeness (64), meaning that different socioeconomic strata of the population are represented. Additionally, special efforts should be made to reach the hard-to-reach population (65).

PRACTICAL APPLICATION

1) Gender and Equity perspective in the study sample[3]

The Hipàtia Community developed in 2022 *The Sex and Gender Perspective in Research Toolkit* aimed to guide researchers through different questions related to taking into account sex/gender in basic science, clinical, health system and population health studies. Regarding the study population, the following questions are formulated to help researchers to identify if they have considered the gender perspective**:**

> **1.** Has sex/gender been considered in the inclusion and exclusion criteria?
> **2.** Is there enough justification as to why women/female or men/male or diverse individuals are included (or excluded)?
> **3.** Are some populations inappropriately excluded on the basis of sex/gender by the inclusion/exclusion criteria?
> **4.** Are those factors that intersect with sex/gender considered in the inclusion/exclusion criteria?
> **5.** Has sex/gender been considered in the recruitment and retention strategies to ensure as broad as possible study participation?
> **6.** How will you guarantee equal numbers of sex/gender-diverse individuals?
> **7.** Is oversampling needed to ensure a sufficient number of sex/gender-diverse participants?
> **8.** Has sex/gender been considered as a potential barrier to participation?

Research Methodologies

Recommendation 9: Combine the use of quantitative and qualitative methodologies and techniques.

The combination of quantitative and qualitative methodologies enriches research results, facilitating the study of an event from different perspectives in a more

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[3] For more information regarding The Sex and Gender Perspective in Research Toolkit, please visit: https://aquas.gencat.cat/web/.content/minisite/aquas/publicacions/2022/toolkit_perspective_sex_gender_research_aquas2022.pdf

comprehensive and complex manner (24,34,58). This combination is called methodological triangulation and makes the results of the study more reliable (66,67).

PRACTICAL APPLICATION

1) Recommendations for behavioural and social science researchers that are critical to promoting digital health equity[4]

The COVID pandemic has increased the use of technology in the healthcare sector. In this regard, Jaworski et al. from the National Institute of Health (68) has developed five recommendations aimed at behavioural and social science researchers that are critical to promoting digital health equity. These recommendations aims to ensure that the introduction of technologies in the healthcare system do not create or exacerbate existing health inequalities. Among the 5 recommendations is**:** “Using methods that elevate perspectives and needs of underserved populations”, which underscores that mixed methods approaches can be helpful in gaining critically important real-world, contextual understandings, and gaining a deeper and more nuanced understanding of the relevant constructs.

All the recommendations are**:**

> **1.** Centering equity in research teams and theoretical approaches.
> **2.** Focusing on issues of digital health literacy and engagement.
> **3.** Using methods that elevate perspectives and needs of underserved populations.
> **4.** Ensuring ethical approaches for collecting and using digital health data.
> **5.** Developing strategies for integrating digital health tools within and across systems and settings.

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[4] For more information about the Jaworski et al study, please visit: https://pubmed.ncbi.nlm.nih.gov/36318232/

2) Authors using the triangulation methodology[5]

An example of the use of methodological triangulation in cancer research is the study by Braga et al. (69). This study explores the meaning of distress experienced by cancer patients to observe if the cancer diagnosis, stage, and chemotherapy treatment influence this experience. To do so, they use in-depth interviews and a validated questionnaire to measure perceived distress.

Informed consent

Recommendation 10: Tailor the informed consent process for participation in the study according to the target audience considering the health literacy level, among other social determinants of health (e.g. age, ethnicity, context, country of residence, etc.).

S.R 10.1: Ensure that the informed consent form is accessible, readable and understandable, facilitating its comprehension by low health literacy participants. The use of a glossary of terms, graphics and pictures, audio-visuals (leaflets, for example), or slides in the annexes can contribute to a better understanding of the information.

S.R 10.2: Provide participants with different options for receiving the information.

In the research process, it is essential (and legally required) for researchers to provide participants with all the necessary information to participate in a research study in an informed manner (38). This information must be relevant, comprehensive, and understandable, ensuring that the participant receives it in the clearest possible way. Additionally, it is important to consider the target population, adapting the content and presentation format as much as possible to ensure comprehension (39-41).

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[5] For more information about the Braga et al study, please visit: https://pubmed.ncbi.nlm.nih.gov/34101309/

PRACTICAL APPLICATION

1) i-Consent project: Guidelines for tailoring the informed consent process in clinical studies[6]

The Guidelines for tailoring the informed consent process in clinical studies, that are part of the i-Consent project, aims to provide information and evidence to assist with the development or review of the consent process. Some of the recommendations are directed at the population with low health literacy, such as the use of a glossary of terms to explain difficult concepts or the use of dictionaries and links related to the consent content so that participants can seek further information. Additionally, they also recommend providing information at a level of at least three years below the average education level of the target population.

2) Vigira Project: Different ways to deliver the informed consent[7]

The Vigira project is a clinical trial funded by the European Union's Horizon 2020 program that searches to answer the following question: When a child is vaccinated against the flu, does it also provide protection against other respiratory viruses? In this project, participants are given the option to read the informed consent in different ways, such as through the website, on paper, or by downloading the content directly from the website. In this way, they can choose the format that is most convenient for them.

Recommendation 11: Be sure that materials given during informed consent process are clear, simple and inclusive and do not reinforce gender stereotypes.

To improve the understanding of informed consent, researchers can provide informative materials that support this process, such as graphics, brochures, images, etc. The informative materials should be understandable for the entire population. Furthermore, they should be inclusive of all social groups, especially socially vulnerable groups (3,12).

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[6] For more information about the i-Consent project, visit the website: https://i-consentproject.eu/es/

[7] For more information about the Vigira project, please visit: https://estudiovigira.es/

PRACTICAL APPLICATION

1) i-Consent project: Guidelines for tailoring the informed consent process in clinical studies[8]

The Guidelines for tailoring the informed consent process in clinical studies, part of the i-Consent project, includes a series of recommendations for the development of the materials provided during the informed consent process. Among these recommendations is the possibility of co-creating such materials with the target population, whenever feasible, and ensuring that they are inclusive and do not reinforce sexist stereotypes.

Data collection

Recommendation 12: Consider the gender and equity perspective during the data collection in the qualitative and quantitative studies.

S.R 12.1: Include variables related to the social determinants of health (e.g. health literacy, cancer literacy, gender, age...) in the design of data collection techniques.

S.R 12.2: For quantitative survey studies, use validated existing surveys related to social determinants of health, including levels of health literacy.

S.R 12.3: For qualitative studies, use participatory methods such as focus groups, personal interviews, brainstorming, Delphi techniques, nominal groups, etc.

S.R 12.4: For studies based on literature searches, be sure to include keywords referring to social determinants of health, health literacy and equity.

S.R 12.5: Ensure that the data collector has received training in health literacy, social and gender sensitivity and inclusive language.

Not taking into account the perspective of social equity and gender mainstreaming in research, particularly in data collection, can lead to systematic errors, such as interpreting results from men as valid for the entire population (70).

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[8] For more information on the i-Consent project, please visit: https://i-consentproject.eu/es/

To avoid perpetuating these biases, on one hand, it is necessary to include variables in information-gathering techniques that allow for characterizing the target population under study through social determinants of health, such as gender, age, or health literacy (34). Furthermore, the use of validated questionnaires in quantitative research that incorporate social determinants of health, as well as the use of qualitative techniques that consider these determinants, promotes equity and gender mainstreaming (34). In the case of literature searches, one way to include such perspective is by adding keywords related to social determinants of health in the search terms. For this, the use of the acronym PROGRESS-Plus could be useful (56). The PROGRESS acronym refers to the following determinants**:** Place of Residence, Race/ethnicity/culture, and language, Occupation, Gender/Sex, Religion, Education, Socioeconomic status, Social capital. The Plus determinants include Age, Disability, Sexual orientation, Discrimination, etc. (56). Finally, one key aspect in collecting information is that the person responsible for it has adequate training in equity and social and gender sensitivity.

All of the above will enable researchers to obtain results that shed light on the social and gender inequalities influencing the object under study (13,17,23,33,58,71).

PRACTICAL APPLICATION

1) Social Determinants of Health variables**:** European Health Interviews Survey[9]

Some examples of questions that include the social determinants of health are found in the European Health Interview Survey (72). This survey, besides collecting information about the population's health, also includes variables related to the social determinants of health, such as sex, country of origin, nationality and marital status.

2) Optimising Health Literacy and Access (Ophelia) process[10]

The Optimising Health Literacy and Access (Ophelia) process, developed by Richard H Osborne team at Swinburne University of Technology (Australia), is a process focused on identifying community health literacy needs in order to prioritise actions to

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[9] For more information on the European Health Interviews Survey, please visit: https://ec.europa.eu/eurostat/documents/203647/203710/EHIS_wave_1_guidelines.pdf/ffbeb62c-8f64-4151-938c-9ef171d148e0

[10] For more information on the Ophelia process, please visit: https://healthliteracydevelopment.com/

improve health outcomes and reduce health inequities (73). For this, the Ophelia Manual gives step-by-step guidance to implement this Ophelia process in different health projects. In the manual, researchers can find some examples and recommendations on how to collect health literacy information (Phase 1). For example, there are some examples regarding the data needed for a project to reduce falls in elderly community members. Furthermore, there are two Health Literacy Surveys**:** The Health Literacy Questionnaire (HLQ) scales and eHealth Literacy Questionnaire (eHLQ).

3) MesH Terms related to PROGRESS-Plus Acronym[11]

In the context of the European project Cancer and Control Joint Action, which aims to contribute to reduce the burden of cancer in the European Union, an internal use table was created associating MesH terms with the different determinants integrated into the PROGRESS-Plus acronym developed by Evans and Browns (56). You can find this internal use table in Table 2, which can assist in integrating MeSH terms related to social determinants of health in literature searches.

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[11] For more information about the European project Cancer and Control Joint Action, please visit: https://cancercontrol.eu/archived/index-2.html

Table 2: PROGRESS-plus and MeSH terms.

Progress-Plus categories	**Open list of variables and key words**	**Indicative list of MeSH terms**
Place of residence	Level of area deprivation; rural/urban area; high/middle/low income countries; particular region/town/community; neighborhood characteristics such as air pollution, deforestation, water quality, etc.	"Residence Characteristics" [MeSH]
Race/ethnicity/culture/language	Racialized groups; people that share origin, background, culture, traditions or language and consider themselves distinctive within a society; cultural beliefs and norms, etc.	"Ethnic Groups"[MeSH] OR "Emigration and Immigration"[MeSH] OR "Culture" [MeSH]
Occupation	Occupational status such as out of work, underemployment, informal workers, unsafe working environments; certain occupations; employee benefits and employer-funded insurance system, etc.	Socioeconomic Factors"[MeSH]
Gender/sex	Men/women; transgendered individuals; gender roles; gender violence, etc.	"Sex Factors"[MeSH] OR "Gender identity"[MeSH]
Religion	Religion, belief, etc.	"Religion"[MeSH]
Education	Level of education, health literacy	"Educational Status"[MeSH]
Socioeconomic status	Socioeconomic level; income, etc.	"Socioeconomic Factors"[MeSH] OR Insurance Coverage"[MeSH]
Social capital	Social relationships and networks, civic participation; interpersonal trust, etc.	"Social Support" [MeSH].
Age	Elderly/young people, etc.	"Age Factors"[MeSH]
Disability	Physically/mentally disability, etc.	"Disabled persons" [MeSH]
Sexual orientation	Bisexuality, heterosexuality, homosexuality, etc.	"Sexuality" [MeSH]
Discrimination	Ageism, homophobia, racism, sexism, etc.	"Social discrimination" [MeSH]

Source: developed on the context of the European project Cancer and Control Joint Action, based on Evans T, Brown H. Road traffic crashes: operationalizing equity in the context of health sector reform. *Int J Inj Contr Saf Promot*. 2003; 10(1-2): 11-2.

Analysis and interpretation

Recommendation 13: Stratify the analyses by socioeconomic, educational and gender variables. Focus on health literacy, and look at the interaction and intersection of these variables.

S.R 13.1: Specify if there are significant differences by socioeconomic, educational and gender variables. If there are no significant differences, also specify it.

In order to analyse the results of research/evaluation from the social equity and gender perspective, it is essential to stratify the results by variables related to the social determinants of health (23,24,40,58). Additionally, it is important to note that analysing variables independently may hide the existence of inequality relationships in the studied event (23).

Several studies observed that health literacy and digital health literacy are related to the educational level of a person, as well as age, gender, and geographic location (74–76). Furthermore, some authors propose a mediating effect of health literacy in the relationship between socioeconomic status and health results, health behaviours, and access to health services (75). Therefore, studying the intersection and possible interaction between the health literacy variable and other variables will enrich the study's results and will allow for interpretation considering the social equity and gender perspective.

PRACTICAL APPLICATION

1) Sex and Gender Perspective in Research: a Toolkit[12]

The Sex and Gender Perspective in Research Toolkit, developed by the Hipàtia Community, provides the following questions to help researchers assess whether they have included a gender perspective in their data analysis:

> 1. Does the project analyse the impact of sex/gender on study findings?

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[12] For more information regarding Sen and Gender Perspective in Research Toolkit, please visit: https://aquas.gencat.cat/web/.content/minisite/aquas/publicacions/2022/toolkit_perspective_sex_gender_research_aquas2022.pdf

> 2. As what kind of variable do you analyse sex/gender**:** as an independent variable, as an effect modifier or as a confounder, and why?
> 3. Is there a plan to investigate differences within any of the sex/gender identities?
> 4. Are other relevant variables analysed with respect to sex/gender?
> 5. Will a possible interaction between sex and gender be part of the analysis?
> 6. Do qualitative analyses consider gendered language, gendered interactions and gendered themes?

2) Guide for Racial Equity in the Research Process[13]

The Urban Institute developed in 2020 *The Guide for Racial Equity in the Research Process* (61). In this guide the researcher can find questions to ensure that they are taking into account the racial equity across their project. Some questions related to the analysis and interpretations of the results are**:**

> 1. Is there scope for subgroup analysis beyond the required analyses? Can this subgroup analysis have accompanying explanatory text? If so, could that text include an explicit discussion of racial equity, instead of a simple reporting of the results?
> 2. Are we correctly differentiating between income levels and race, making sure not to conflate the two and making sure not to perpetuate stereotypes?

Recommendation 14: Use theoretical models of social determinants of health, gender inequalities in health, and health literacy to guide the interpretation of results.

S.R 14.1: Avoid systematically interpreting results on what is observed in the general population, and reinforce the analysis in minorities, considering their self-perception of the event under study.

The use of social determinants of health throughout the research/evaluation process, specifically in the interpretation of the results, helps

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[13] For more information about the Guide for racial Equity in the Research Process, please visit: https://www.urban.org/sites/default/files/publication/103102/urban_institute_guide_for_racial_equity_in_research_process_0.pdf

explain for phenomena observed from a perspective of social equity and gender (22–24,40). It also allows for the interpretation and explanation of results for socially vulnerable groups, such as ethnic minorities or those with low literacy levels (23,40). Lastly, it enables the formulation of new hypotheses, considering the perspective of social equity and integrating gender mainstreaming throughout the entire study.

Some of health literacy theoretical models that can be used to interpret the results are:

- Self-efficacy model (77).
- Transtheoretical Model (78).
- Self-Determination Theory (79).
- Problem Solving Theory (80).
- Biopsychosocial Model (81).
- Assertiveness, Clarity, and Positivity Model (ACP model) (82–85).

Recommended readings

- Dahlgren G, Whitehead M. Policies and strategies to promote social equity in health. Stockholm: Institute of Futures Studies; 1991.
- Solar O, Irwin A. A conceptual framework for action on the social determinants of health. Social Determinants of Health Discussion Paper 2 (Policy and Practice).
- Sorensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: A systematic review and integration of definitions and models. BMC Public Health. 2012; 12: 80, https://doi.org/10.1186/1471-2458-12-80

Results presentation and dissemination

Recommendation 15: Present the results disaggregated by social and gender variables such as sex, gender, educational status, and health literacy.

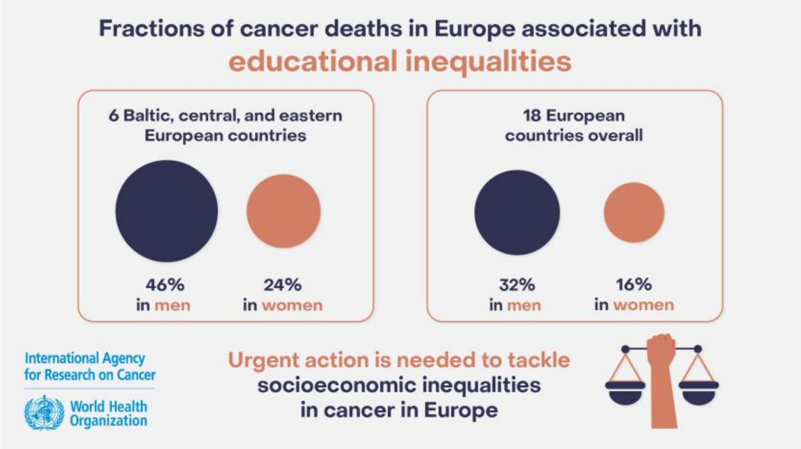
Taking into account the different experiences and characteristics of each population group, presenting and disseminating the results disaggregated by sex, educational level, health literacy or other social determinants of health reflects the existence of different realities within the same event (23,24) or even the absence of differences (12,23). This approach allows for a comprehensive understanding and explanation of the event from multiple perspectives and in greater depth.

PRACTICAL APPLICATION

1) Presenting the results considering the social determinants of health[14,15]

A visual example of the results presentation disaggregated by sex is one of the infographics from the International Agency for Research on Cancer (IARC) regarding cancer deaths associated with educational inequalities in Europe. This infographic is the result of a new study led by the IARC, in collaboration with the Erasmus Medical Centre (Netherlands) and other international partners, for researching socioeconomic inequalities in cancer mortality in Europe.

Figure 4: Example of presenting results considering the social determinants of health



Source: International Agency for Research on Cancer (IARC). Socioeconomic inequalities in cancer mortality between and within countries in Europe: a population-based study [Internet]. 2020. Available from: https://www.iarc.who.int/infographics/socioeconomic-inequalities-in-cancer-mortality-between-and-within-countries-in-europe-a-population-based-study/

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[14] For more information on this study, please visit: https://www.thelancet.com/action/showPdf?pii=S2666-7762%2822%2900247-2

[15] Infographic available from: https://www.iarc.who.int/infographics/socioeconomic-inequalities-in-cancer-mortality-between-and-within-countries-in-europe-a-population-based-study/

Recommendation 16: Report the research results back to the study participants taking into account the level of health literacy.

The participation of research subjects in a study does not end when data collection is completed; it finishes with the dissemination of the study results and the closure of the project. In this regard, providing the participants of a study with information about the project's results has several benefits (23), including increasing their knowledge about the studied event and fostering a sense of involvement, which facilitates their participation in future projects. Lastly, it is important to ensure that the process of returning information to the participants is done considering their characteristics, especially their level of health literacy.

PRACTICAL APPLICATION

1) Guidance for returning research results to participants[16]

Returning Individual Research Results to Participants is a guidance that reviews the current evidence on benefits, harms, and costs of returning individual research results, considering ethical, social, operational and, regulatory aspects. This guide can support researchers in the process of reporting the research results back to the study participants.

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[16] For more information about The Returning Individual Research Results to Participants guidance, please visit: https://www.ncbi.nlm.nih.gov/books/NBK525088/

Design

Target groups

Recommendation 17: Define target groups by identifying specific needs from different collectives according to socioeconomic, cultural, political, gender, and health literacy determinants.

S.R 17.1: Involve potential end users in determining the needs and characteristics of their own group such as gender, race/ethnicity, culture, and digital health literacy (User Personas).

S.R 17.2: Combine quantitative and qualitative methodologies to identify specific needs: scoping reviews, surveys, qualitative interviews, focus groups, etc.

When designing any digital health promotion intervention, it is essential to consider the target population and its sociodemographic and socioeconomic characteristics, behavioural profiles, life cycle and context as impactful factors for the effectiveness of implementing the intervention (7,21,37,41).

The User-Centered Design approach is based on keeping potential users at the centre throughout the development of technology and has been gaining popularity over the years (86). One of the principles of User-Centered Design is the creation of User Personas, a widely accepted practice to ensure that technology is designed with potential users in mind (87). User Personas are defined as fictional potential users who represent the target population and for whom we have created a description (86). When creating these User Personas, it is important to include social and gender variables in their description, such as age, educational level or digital health literacy, to ensure the inclusion of potential end users from socially vulnerable groups. Moreover, it is particularly relevant to involve potential end users in the process of creating these profiles, as it ensures that their perspectives, experiences and considerations are taken into account.

PRACTICAL APPLICATION

1) Use of the User Personas: Label2Enable project[17]

The project Label2Enable is an EU-funded project. Its objective is to promote integrated quality criteria in the CEN-ISO/TS 82304 handbook for health and well-being applications. To obtain the quality seal based on these criteria, each application must use the EU certification scheme, a digital tool that this project will develop. In the process of developing this tool, User Personas have been created for different stakeholders to identify their needs and expectations. Additionally, they encourage the project's target population to provide comments and suggestions regarding the User Personas they have created.

Here is an example of one of the User Personas they have developed**:**

Figure 5: User Persona of the EU-funded project Label2Enable.

Comment on the app manufacturer persona

Patients, citizens, carers

Challenges:

The sheer number of apps in the app stores makes choosing them confusing. I can't determine which apps are relevant to me, benefit my health, keep my data safe and provide value for money. I trust my GP most. and Google searches and app stores least to give recommendations on health apps. However in practice, I have to make do with app store information, Google searches, family and friends to help me decide. I have a somewhat older device and internet access can be troublesome. I am not that tech savvy and health literate and have limited funds. I largely have to rely on my young educated digital health literate kids to download an app.

Needs:

I need apps that are trustworthy and easy to use, keep my data secure and work effectively and consistently over time. I need them to be examined consistently by trustworthy experts. I expect a governmental organization to provide these assessments. I need my GP to recommend and support the use of apps. I want to be able to share my data with her, to enable her to integrate that information in my care. I need trustworthy understandable information in the app stores on the quality of health apps that addresses my concerns. Like most Europeans I have health insurance. I expect apps to be free and without advertisements. Even if I would have the budget, means and skills I don't want to spend money on apps that I'm not sure meet expectations.

Source: Label2Enable project. Comment on personas [Internet]. [Accessed in 23 June 2023]. Available from: https://label2enable.eu/engage/comment-on-our-personas

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[17] For more information about the User Personas and the Label2Enable project, please visit: https://label2enable.eu/

2) Use of the User Personas: EUREKA project[18,19]

The EUREKA project was one of a growing EU-funded projects that has aimed to strengthen and improve the flow of agricultural and rural-related knowledge and innovation at European, national and regional level. This project has resulted in the creation of the “EU FarmBook”. This single open-source e-platform collects and share the many different types of end-user material produced by Horizon 2020 multi-actor projects.

In order to test the feasibility of developing the EU FarmBook, the EUREKA team created User Personas to help understand the requirements of farmers, foresters and advisors across the European Union. These User Personas contain not only a description of the profile in terms of digital skills or educational level but also the person's own journey in solving a work-related problem.

Content

Recommendation 18: Adapt the content of the digital health promotion intervention to make it as readable and understandable as possible.

S.R 18.1: Use active voice.

S.R 18.2: Avoid the use of capital letters, except of titles and subtitles. It is preferable to use bold lowercase for emphasis.

S.R 18.3: Use short sentences.

S.R 18.4: Use assertive, clear/ plain language and avoid technical language.

S.R 18.5: Use bullet points to highlight the main ideas.

S.R 18.6: Use a readable font style (e.g.: Arial, Times New Roman…), avoiding “serif” font.

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[18] For more information about the EUREKA project, please visit: https://h2020eureka.eu//

[19] For more information regarding the EUREKA User Personas, please visit: https://h2020eureka.eu/personas-and-user-journeys

S.R 18.7: Regarding numbers provide absolute risk rather than relative risk and express risk or benefit in whole numbers instead of fractions, decimals, or percentages.

S.R 18.8: Use error messages in plain language, using traditional error-message visuals, like bold or red text, and offers a constructive solution.

S.R 18.9: Reduce the information that users have to remember and the unnecessary elements that can distract them from the key information.

S.R 18.10: Use help documentation whenever needed but ensure that this documentation is easy to search, present it in context, and list concrete steps that need to be carried out.

Many times, the messages in apps or websites are not understood by the population, resulting in a large amount of information that will not have the desired effect. In order to effectively reach the population and promote health empowerment, it is crucial to ensure that the content of these messages is understandable and comprehensible. For example, if we use complicated and highly technical terminology for the general population, they are unlikely to retain the information. For this reason, many guidelines aimed at improving communication strategies (6,7,10,11,21,25–30,35,36,42) recommend using of plain language and avoiding technical and complex words.

PRACTICAL APPLICATION

1) Toolkits for readability and understanding

Multiple digital tools can be used to evaluate the readability and understandability of content on digital platforms. These tools use different criteria to assess readability, such as sentence and word length, use of passive voice, etc. Depending on the language, these tools will vary. Below are some examples of these tools regarding the language:

- English: Flesch Kincaid Index.[20]

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[20] Flesch Kincaid Index link: https://app.readable.com/text/

- French**:** Kandel and Moles Modified Flesch Reading ease score or FABRA toolkit *(88)*.
- German**:** Hohenheim Comprehensibility index *(89)*.[21]
- Italian**:** GULPEASE index.[22]
- Portuguese**:** ALT software based on Flesch Kincaid Index *(90)*.
- Spanish**:** Fernández Huerta index based on Flesch Kincaid Index *(91)*.

Please note that these are just a few examples and there are additional tools available for each language.

2) Questions to assess if you are using plain language[23]

The Handbook developed by the NSW Government of Australia (26) includes a series of questions that can help professionals to identify whether they are using complex language or not. These questions are**:**

> 1. Have I replaced jargon with language people can understand?
> 2. Are any technical terms explained?
> 3. Have I given the most important information first?
> 4. Have I used lists and headings to make the information clear?
> 5. Have I asked my intended audience if the information is easy to understand*?*

Additionally, this guide also provides suggestions for transforming complex words into simpler ones that are suitable for all levels of health literacy, such as changing "Cardiac" to "Heart".

3) Checklist evaluation of printed/digital materials[24]

The Portuguese Society of Health Literacy (SPLS) (original name “Sociedade Portuguesa Literacia em Saúde”) has scientific, training, technical, organizational,

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[21] Hohenheim Comprehensibility index. Link to download the software: https://klartext.uni-hohenheim.de/klartext_textlab

[22] GULPASE index. Link for download it in Google chrome: https://chrome.google.com/webstore/detail/gulpease-index/icgmhocomfehhnkjniaocdljckhcldmo?hl=it

[23] For more information about this Handbook, please visit: https://cbrhl.org.au/wp-content/uploads/2020/11/Northern-NSW-Health-Literacy-Handbook.pdf

[24] To access the rest of the checklists, please visit: https://splsportugal.com/events/questionarios-para-apoio-a-literacia-em-saude/

ethical and human purposes in promoting, developing and improving the practice of Health Literacy (https://splsportugal.com/). On its website, different questionnaires and checklists are available to facilitate the assessment of health literacy. Among these checklists, there is the "Printed/Digital Materials Evaluation Checklist" allowing professionals to assess if health literacy has been considered in the design of their materials.

Table 2: Printed/Digital Materials Evaluation Checklist.

Images and support context	✓
Images contain essential information	Yes/No
Visual information is clear	Yes/No
Images make messages more understandable	Yes/No
Images are large enough	Yes/No
Images are informative	Yes/No
Are the images easily understood by your recipients?	Yes/No
Is it worth making a pre-test of the images to use?	Yes/No
Images help you understand the rest of the content	Yes/No
Images are easy to remember	Yes/No
More time is spent looking at the images than the text	Yes/No
Without images, it would be more difficult to remember the information	Yes/No
Displayed images improve satisfaction	Yes/No
Images promote greater memorization of information, compared to text	Yes/No
Best practices for visual presentation	
Do you use colours to highlight information, but with a palette of up to 5 colours?	Yes/No
Has an adequate contrast been achieved between background and content?	Yes/No
Is the information aligned, in blocks, with sufficient ventilation?	Yes/No
Are the statistical data in clearly legible graphs, with contrasting colors and legends that are understandable for the segment for which they are intended?	Yes/No
Was it possible to reduce the representation of variables in graphs to a maximum of six?	Yes/No
Are sans-serif fonts used (without excessive graphics)?	Yes/No
Does the bracket use only 2 or 3 fonts, albeit in various sizes?	Yes/No
Are airy and white spaces included, so that the information is	Yes/No

easier to read?	
Pie charts are used to represent proportions	Yes/No
Are line graphs used to represent information with temporal evolution?	Yes/No

Source: Vaz de Almeida, C. Sociedade Portuguesa Literacia em Saúde. Questionnaires and checklists to support health literacy [Internet]. 2022. Available from: https://splsportugal.com/wp-content/uploads/2024/03/CHECKLIST-DE-AVALIACAO-DOS-MATERIAIS-IMPRESSOS.pdf

Recommendation 19: Use a layered approach to present study information.

S.R 19.1: Basic information should be at the general level and more specific information in sub-layers.

S.R 19.2: Differentiate the basic and more specific information, for example, putting the sub-layers in boxes or different colours.

One way to present information in an easier way to understand is through the use of the Layered Approach (12). The Layered Approach is characterized by presenting information in layers, turning the process of information provision into a kind of expandable format (92). The essential information is presented in the first layer, while subsequent layers provide additional information that users can expand upon. This accessible but non-essential information supports informed decision-making. The use of the layered approach also allows users to decide and choose the amount of information they wish to receive, giving them freedom of choice.

PRACTICAL APPLICATION

1) Supporting the Layered approach in the informed consent[25]

The study by Symons et al. (93) examines the opinions of adolescent and adult populations regarding the use of the Layered Approach in the specific case of informed consent. They conducted qualitative research through in-depth interviews and focus groups, where participants were asked about this methodology. As a final result, they found that participants supported the use of the Layered Approach because it

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[25] For more information about Symons study, please visit: https://trialsjournal.biomedcentral.com/articles/10.1186/s13063-022-07023-z

improved the understanding and retention of information before signing the informed consent.

Recommendation 20: Design the content aimed at motivating behavioural change to improve adherence to cancer prevention recommendations.

S.R 20.1: Start by introducing the target prevention behaviour.

S.R 20.2: Use assertive, clear and positive language, limiting the use of these words**:** Don't-Unless-Not-Should.

S.R 20.3: Show the actions you want your audience to take, instead of explaining those that the audience should not do.

S.R 20.4: Use simple illustrations and avoid unnecessary details.

S.R 20.5: Use realistic pictures to illustrate healthy behaviours.

S.R 20.6: Use cues (arrows or circles) to emphasize key information.

Technological platforms such as websites and apps are increasingly employed to promote changes in health behaviours and population health empowerment (94). It has been observed that interventions that places a special emphasis on promoting behavioural change in their design are more effective in eliciting such change (94). Considering that the App developed in the BUMPER project aims to disseminate and promote adherence to ECAC recommendations, the aforementioned recommendations (7,35,36) should be applied in the design and development of its content.

PRACTICAL APPLICATION

1) A guide to writing and designing easy-to-use health Websites[26]

The U.S Department of Health and Human Services developed a guide to support the provision of online health information actionable and engaging with a special focus on low health literacy population. Across this guide there are some strategies and recommendations for this aim, such as "Tell users what they can gain from adopting the desired behaviour".

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[26] For more information about this guide, please visit: https://pubmed.ncbi.nlm.nih.gov/22763891/

2) Example of an app to promote a healthy lifestyle: WASABY App (WASABY project)[27]

The European project WASABY, led by Fondazione IRCCS - Istituto Nazionale Tumori (INT) and funded by the European Commission, has created the WASABY App. This is an educational App designed to help young people learn about the messages within the ECAC and how to embrace a healthy lifestyle while reducing their cancer risk.

Specifically, this App promotes cancer prevention messages to young females aged 13-19, by focusing on established risk factors only. This App serves as a practical example of an application for improving cancer risk factors knowledge among young women.

3) Example of an App to promote healthy lifestyle: APP Way Woman's Health (SMART project)[28]

The SMART project, led by the Centro di Riferimento per l'Epidemiologia e la Prevenzione Oncologica in Piemonte (CPO Piemonte) and funded by the Ministry of Health CCM, aims to encourage the adoption of healthy lifestyles through the development of innovative, personalized, and interactive tools promoted within cervical and breast cancer screening programs. To achieve this goal, they have created an App targeting women between 25 and 75 years of age, which corresponds to the target age for cervical and breast cancer screening in Italy.

In this App, the women fill out a brief questionnaire on lifestyles and provide some personal information necessary for conducting the study. If the questionnaire reveals habits that can be improved, the women will gain access to the corresponding areas where they will find useful advice and tools. In each area, through a personalized agenda and a results monitoring system, the women will be able to track their progress and visualize the available resources in the project's affected contexts.

Recommendation 21: Adapt the content to the specific information needs of different target groups identified, with a special focus on those with different health literacy levels.

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[27] For more information about the WASABY project, please visit: http://www.wasabysite.it/index.html

[28] For more information about the SMART project, please visit: http://www.stilingioco.it/

Basing the content solely on the generalized needs of the population may result in the intervention not meeting the needs of socially vulnerable population groups, such as ethnic minorities or those with low (digital) health literacy, who would benefit the most from this intervention. For this reason, the content should be tailored to the information needs of the identified target groups (18).

PRACTICAL APPLICATION

1) Using opinions from potential end users for a Website design[29]

The study by Hornbach et al. (95) aims to design a patient-friendly website for the Psycho-Oncological Care Programme. This program was launched in Germany between 2017 and 2022 to reduce psychosocial stress in adult cancer patients.

To create the website for this programme, they used participatory approaches that allowed them to focus the design and development based on the opinions, needs, and expectations of the participants.

2) Feedback from potential end users: WASABY project[30]

As mentioned in recommendation 20 of this section, the European project WASABY, funded by the European Commission, has created the WASBY App, an educational App designed to help young people to learn about the messages within the ECAC and how to embrace a healthy lifestyle while reducing their cancer risk.

For the development of this App, the opinions of potential end-users from 5 different European countries have been taken into account. These opinions were related to the usability and sustainability of the App. This way, they ensured that this App meets the information and usability needs of the target population.

3) Optimising Health Literacy and Access (Ophelia) process[31]

The Optimising Health Literacy and Access process, developed by Richard H Osborne team in Swinburne University of Technology (Australia), is focused on identifying community health literacy needs in order to prioritises actions to improve health outcomes and reduce health inequalities (73). For this, the Ophelia Manual

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[29] For more information on Hornbach study, please visit: https://pubmed.ncbi.nlm.nih.gov/35206155/
[30] For more information about the WASABY project, please visit: http://www.wasabysite.it/index.html
[31] For more information of the Ophelia process, visit: https://healthliteracydevelopment.com/

provides step-by-step guidance to implement this Ophelia process in different health projects.

The main focus of this process is the identification of needs prior to the development of the health intervention.

Recommendation 22: For different cultural backgrounds, adapt the images and the content, and ensure the representativeness of all possible ethnic groups.

Culture plays a significant role in both the self-perception in terms of health condition and how people react to the different health promoting messages. Therefore, just as the content should be adapted to different levels of health literacy, cultural differences among the target population should be taken into account as well (7). This statement should be applied not only in terms of making the content respectful to the existing cultural diversity, but also in terms of making the images used representative of a wide range of the European population (7).

PRACTICAL APPLICATION

1) Diversity in an image[32]

The image included in the infographic by the Health and Environment Alliance (HEAL) and the collaboration of the Association of European Cancer Leagues (ECL) is an example of diversity representations. It tells the story behind environmental cancer prevention**:**

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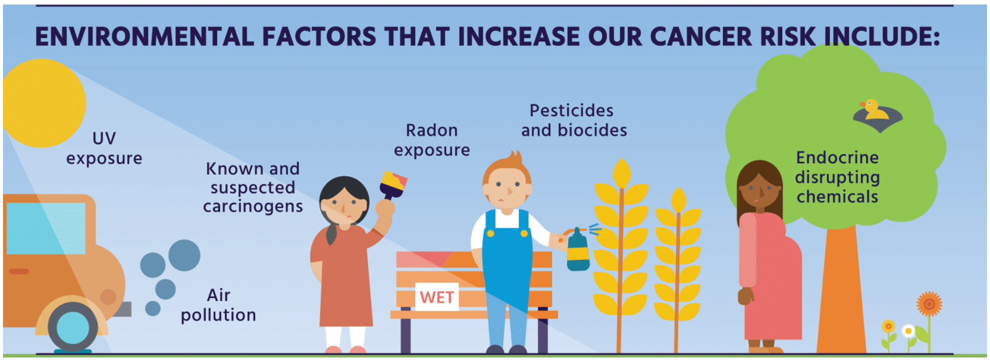
[32] For more information on this infographic, please visit: https://www.env-health.org/heal-and-european-cancer-leagues-relaunch-infographic-illustrating-how-europe-can-prevent-cancer-by-tackling-environmental-pollutants/

Figure 6: Example of diversity in an image



Source: Health and Environment Alliance (HEAL). HEAL and European Cancer Leagues relaunch infographic illustrating how Europe can prevent cancer by tackling environmental pollutants [Internet]. 2022. Available from: https://www.env-health.org/heal-and-european-cancer-leagues-relaunch-infographic-illustrating-how-europe-can-prevent-cancer-by-tackling-environmental-pollutants/

Content communication strategies

Recommendation 23: Use different health communication strategies to deliver the content of the digital health promotion intervention.

S.R 23.1: Consider offering end users more than one format for receiving information.

As the target population should be taken into account when designing the content of an intervention, different strategies for delivering information should also be considered (21). For example, some guidelines show that women tend to prefer female voices in health-related topics (21), or that for young populations, interventions through peer-education aimed at improving healthy lifestyles are the most effective (11,96–98).

This demonstrates that communication strategies may vary depending on the target population. Although these preferences for receiving health information are known, it is also important to consider that each individual is unique with different needs and experiences. To avoid generalized stereotypes, information should be provided taking into account these evidence preferences but always allowing individuals to choose how they receive the information.

PRACTICAL APPLICATION

1) Gamification method for Young users: WASABY App[33].

As mentioned in previous recommendations 20 and 21, the WASABY App is an educational App designed to help young people to learn about the messages within the ECAC and how to embrace a healthy lifestyle while reducing their cancer risk. As it is targeted at young people, they used the gamification method to promote healthy lifestyles. In this way, the message might better reach young people than, for example, using video tutorials or podcasts.

Usability

Recommendation 24: Ensure ease of navigation within the digital health promotion intervention.

S.R 24.1: Use step-by-step navigation, with previous and next buttons whenever possible.

S.R 24.2: Ensure ease of navigation within the application. Use an "emergency exit", like a cancel button.

S.R 24.3: Align blocks of text to the left (not justified).

S.R 24.4: Ensure that the text fits the screen and that the end user can read it without scrolling.

S.R 24.5: For low digital health literacy groups, minimize menu hierarchies and offer linear navigation.

S.R 24.6: For low digital literacy users, reduce access to the internet and connectivity and reduce data load as much as possible, allowing for offline usage so that users can download/upload data when a connection is available.

In addition to the content, ease of navigation is crucial for its continued use over time, especially for individuals with low health literacy levels (26,36,37). Ensuring a user-friendly interface and intuitive navigation can contribute to better engagement and usage of the app among this population.

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[33] For more information about the WASABY project, please visit: http://www.wasabysite.it/index.html

PRACTICAL APPLICATION

1) Usability guideline for mobile learning Apps[34]

The study by Kumar and Mohite (99) proposes a series of evidence-based recommendations to guide in the development of educational mobile applications. These recommendations include avoiding watermark images in the background of the screen, promotes the use of "Error" messages to help users identify errors and provide a solution, and the use of a language similar to other apps on the market.

Recommendation 25: Take into account the different kinds of disabilities when designing the content.

S.R 25.1: For visual disability, use a description of visual information and strong colour contrast.

S.R 25.2: For hearing disability, use captions, transcriptions, or sign language.

S.R 25.3: For visual and hearing disabilities use a screen reader and braille to read descriptive transcripts that include the audio and visual information as text.

S.R 25.4: Ensure that the digital health promotion intervention is adapted to those people who cannot use their hands and use speech recognition software.

Throughout history, people with disabilities have to fight for their rights, freedoms and the eradication of discrimination that has persisted over time. As a result of this struggle, the United Nations adopted the International Convention on the Rights of Persons with Disabilities (100), which porpoise is to promote and ensure equal rights and fundamental freedoms for people with disabilities, as well as respect for their inherent dignity.

There are multiple forms of disability**:** physical, mental and sensory. In the specific case of a digital health promotion intervention, during its development, different physical and sensory disabilities (36,38) must be taken into account, with priority given to visual, auditory, visual and auditory disabilities, and those related to reduced or absent mobility of the upper limbs.

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[34] For more information on Kumar and Mohite study, please visit: https://www.researchgate.net/publication/309257982_Usability_guideline_for_mobile_learning_apps_An_empirical_study

PRACTICAL APPLICATION

1) EqualWeb AI ToolBar: Ensuring the accessibility in a Website[35]

One of the tools to ensure that the design of a website is inclusive is the use of the EqualWeb AI Toolbar. This tool was created by the EqualWeb Company, which aims to promote an inclusive and equitable use of the web by the entire population, regardless of their disability status. The EqualWeb AI Toolbar is a tool that allows for the creation of accessibility profiles, which can easily and effectively adjust the website according to the user's disability situation. This tool, when applied to a website, can assist in the design of the App and ensure that it takes into account a range of disabilities.

2) Action to reducing inequalities in digital accessibility to cancer screening information[36,37]

In the context of the Innovative Partnership for Action Against Cancer Joint Action (iPAAC JA), a contest of best practices tackling social inequalities in cancer prevention emerged. In this contest, the following best practice was identified in the Centre for Cancer Detection (Belgium): “Improving informed decision making in the Flemish cancer screening programs for people with a disabilities”. This action aims to improve the informed decision-making of people with a disability by improving digital accessibility to cancer screening information. To this end, they adapted the national website for screening programmes currently running in Belgium (www.bevolkingsonderzoek.be) to follow the principles of a POUR Website: **P**erceivable, **O**perable, **U**nderstandable, and **R**obust.

3) Leserlich calculators: useful calculators for font size and images colour[38]

The Leserlich web is a German website created to ensure an inclusive communication design. This website contains two interactive tools available in English that can be used to calculate precise font sizes and colour values for specific

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[35] For more information about the EqualWeb AI Toolbar and its other tools, please visit: https://www.equalweb.com/html5/?_id=8591&did=1116&G=8593

[36] For more information about the IPAAC JA: https://www.ipaac.eu/

[37] For more detailed information about this best practice, please visit: https://www.ipaac.eu/res/file/contest-best-practices/decision-making-application-form.pdf

[38] Here the Font Size Calculator and Contrast Calculator: https://www.leserlich.info/index-en.php

applications. The Font Size calculator can be used for smartphone text among others and is designed to make it easier to identify inclusive font size. The Contrast Calculator can be used in screen and printed colour text or images and enables text designers without prior knowledge and experience to determine if the contrast of certain colour combinations is inclusive.

Validation

Target groups

Recommendation 26: Ensure representativeness of different population groups in the piloting activities considering the social determinants of health, with special emphasis on including the most socially vulnerable groups.

S.R 26.1: Take into account the health literacy level of the participants, ensuring the representativeness of those with low health literacy levels.

S.R 26.2: Perform the pilot studies considering potential gender differences in needs and preferences.

S.R 26.3: Ensure representativeness of people of different ages and other social determinants of health.

The population's needs, expectations and experiences regarding an improving health intervention differ for each individual and population group. For example, individuals with low health literacy levels will require a more user-friendly app than those with higher levels.

To determine if the digital health promotion interventions meets the diverse needs and expectations of the population, it is important to pilot and validate its use, including different population groups in the process, considering social determinants of health such as age, educational level, ethnicity and health literacy level (21).

PRACTICAL APPLICATION

1) Piloting a Mobile Health App for HIV prevention[39]

The Muaka's et al. study (101) aims to develop and pilot an app targeted at preventing Human Immunodeficiency Virus (HIV) infection among the population in Tanzania. In the pilot development of this App, they have taken into account the representativeness of the sample, considering not only the participants' gender but also their geographic area of residence, mobile device ownership, and socioeconomic

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[39] For more information about Mauka et al study, please visit: https://pubmed.ncbi.nlm.nih.gov/34617904/

position. In doing so, they encourage the presence of diverse opinions regarding the app they want to develop and implement.

Methods

Recommendation 27: Use qualitative and quantitative methodologies to explore the needs, barriers and facilitating factors taking into account potential inequalities due to social determinants of health.

See Recommendation 9 in Research and evaluation section.

Informed consent

Recommendation 28: Be sure to tailor the informed consent for participating in the pilot activities.

S.R 28.1: Ensure that the informed consent form is readable and understandable, facilitating its comprehension by low health literacy pilot activities participants. The use of a glossary of terms, graphics and pictures, audio-visuals (leaflets, for example) or slides in the annexes can contribute to a better understanding of the information.

S.R 28.2: Provide pilot activities participants with different options for receiving the information.

S.R 28.3: Be sure that materials given during the informed consent process are inclusive and do not reinforce gender stereotypes.

See Recommendations 10 and 11 in the Research and Evaluation section.

Data collection

Recommendation 29: Take into account social determinants of health such as gender, sex, health literacy,etc. in the data collection process during the pilot activities.

S.R 29.1: Include variables related to social determinants of health (e.g. health literacy, cancer literacy, gender, age...) in the design of data collection techniques.

S.R 29.2: For quantitative survey studies, use validated existing surveys related to social determinants of health, including health literacy.

S.R 29.3: For qualitative studies, use participatory methods such as focus groups, personal interviews, brainstorming, Delphi techniques, nominal groups, etc.

S.R 29.4: For studies based on literature searches, be sure to include keywords referring to social determinants of health.

S.R 29.5: Ensure that the data collector has received training in health literacy and social and gender sensitivity.

See Recommendation 12 in the Research and evaluation section.

Impact Evaluation

Recommendation 30: Assess the Health Equity Impact (HEIA) of the pilot activities, with special focus on health literacy impact.

It has been observed that the younger population, with higher education levels and health literacy levels, tends to use health apps more frequently (102). In addition, studies show that the population that download health apps often reports better health and an intention to engage in health promotion actions related to diet and physical activity (102). These studies highlight the existence of social inequalities in health resulting from the use of health apps.

Therefore, it is essential to evaluate the impact of these app's pilot activities in terms of equity and health literacy, to determine whether their impact is distributed equitably among the population or if, on the contrary, they are reinforcing social inequalities in health.

PRACTICAL APPLICATION

1) Health Equity Impact Assessment[40,41]

The Health Equity Impact Assessment framework offers a structured approach for users to incorporate evidence and effectively consider the potential impacts on equity (103). Currently, there is a Health Equity Impact Assessment tool that supports users to analyse a new program or action's impact on health inequalities and/or on

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[40] For more information regarding the Health Equity Impact Assessment tool, please visit: https://www.wellesleyinstitute.com/publications/health-equity-impact-assessment/

[41] For more information regarding the Health Equity Impact Assessment tool, please visit: https://www.health.gov.on.ca/en/pro/programs/heia/docs/workbook.pdf

health socially vulnerable groups (104,105). This tool guides policy makers and different stakeholders to maximize positive impacts and reduce negative ones that could potentially widen health inequalities among population groups.

2) Digital Health Equity Impact Assessment[42]

The Were et al. work (106) provides a systematic approach to assess the equity impact of digital health interventions. This approach comes from the Health Equity Impact assessment using an example case of mobile personal health records. Across this paper, the reader can find guidance for evaluating the equity impact of the digital intervention.

Report results back

Recommendation 31: Ensure report pilot activities results back to the participants taking into account the characteristics of the target group, with a special focus on participants with low health literacy.

See Recommendation 16 in the Research and evaluation section.

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[42] For more information about the new Digital Health Equity Impact Assessment, please visit: https://pubmed.ncbi.nlm.nih.gov/31188438/

Promotion

Promoter’s characteristics

Recommendation 32: Ensure multilingual, multicultural, and multidisciplinary promoters.

In the process of promoting the use of a digital health promotion intervention, the role of promoters is crucial to ensure its adoption and even sustainable use over time.

When designing the promoter selection strategy, it is important to consider the diversity of potential end users who will be using the App, as not all users will speak the same language, share the same culture, or have the same level of health literacy. In this regard, these diversities should also be taken into account when selecting the promoters for the App, thereby enhancing the ability to reach the potential end user (4,20).

PRACTICAL APPLICATION

1) Multidisciplinary promoters: National Action Plan Health Literacy (Germany)[43]

The National Action Plan on Health Literacy (31) is developed in response to the growing need to improve health literacy among the German population. In this regard, the National Plan includes a series of recommendations aimed at enhancing the community health literacy of the community through the implementation of targeted activities. Throughout the document, it emphasizes the importance of carrying out these activities through the collaboration of different community sectors, such as schools, gyms, citizen initiatives, self-help groups, clubs, etc.

Recommendation 33: Consider including peer-education promoters taking into account the characteristics of the potential end user groups.

Peer education refers to an educational approach where the person who belongs to the same social group than the learners acts as a strong source of motivation in learning (107). The fact that both the educator and the learner share

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[43] For more information about this National Plan, please visit: https://www.nap-gesundheitskompetenz.de

common characteristics, such as culture, language, or age, allows them to share experiences and opinions on the same topics, thus facilitating empathy between them and, consequently, improving the effectiveness of the intervention (107).

PRACTICAL APPLICATION

1) Peer education for diabetes self-management[44]

In the context of the project "Los Caminos: Developing Culturally Sensitive Paths to Diabetes Self-Management" (108), peer education was used to reinforce diabetes self-management among urban and low-income populations by promoting healthy lifestyles such as physical activity, healthy diet, and adherence to diabetes medication. The multicultural nature of the geographic area was also taken into account, considering the culture of both the educators and the learners.

Following this methodology, a clear improvement was observed in physical activity levels and fruit and vegetable consumption.

Promoters’ needs, capacities and assets identification

Recommendation 34: Identify the specific needs, current capacities, and potential assets of the digital health promotion intervention promoters taking into account their age, gender, educational level, and digital health literacy, social and ethnic background.

A key factor for the successful promotion of a digital health promotion interventionis that the promoters have the knowledge and tools that enable them to perform their function properly. They cannot promote something they are not trained in or would not even know how to use. Additionally, they need to be equipped to respond to the questions that potential end users may ask them. To do so, their training needs, capabilities and potentialities must be studied, always taking into account factors such as age, gender, educational level, and digital health literacy, to design training modules appropriate to their characteristics (109).

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[44] For more information about this project, please visit: https://pubmed.ncbi.nlm.nih.gov/19966071/

PRACTICAL APPLICATION

1) Identifying the capacity building of health professionals[45]

The Stark et al. study (110) developed an online course on infant and child nutrition targeting healthcare professionals in low- and middle-income countries. Before the development of this online course, they conducted an information needs assessment of the healthcare professionals.

2) Identification of needs considering socioeconomic and gender variables[46]

The Nordmann et al. work (111) aims to determine and evaluate the needs and acceptance of healthcare professionals regarding the implementation of an app for their training on female genital mutilation/cutting. Through a qualitative study, they identified the needs and expectations of these healthcare professionals regarding the use of the app. To analyse these identified needs, they consider variables such as age, occupation, marital status, educational level, and religion, among others. They also consider their previous experience in mobile phone usage, disaggregating the results by gender.

Promoters training

Recommendation 35: Adapt the training programmes for the promoters to the needs, capacities and potential assets identified, taking into account their digital health literacy levels.

S.R 35.1: In the promoter´s training, include relevant equity and health literacy concepts that they should take into account, such as a social and gender-sensitive approach and health literacy.

Once the needs and capabilities of the promoters have been identified, training programs must be implemented to address those needs or even enhance existing capabilities. When adapting these programmes for the promoters, due to the varying levels of health literacy in the population, their level of digital literacy should also be taken into account. Furthermore, this training should not only aim to meet the

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[45] For more information on Stark et al study, please visit: https://pubmed.ncbi.nlm.nih.gov/24842306/

[46] For more information on Nodrmann et al study, please visit: https://pubmed.ncbi.nlm.nih.gov/36078567/

information needs of the promoters but also promote their awareness in terms of equity and health literacy models (112).

PRACTICAL APPLICATION

1) Developing training programmes considering trainees needs[47]

The Lai et al. study (113) develops and evaluates a training workshop for trainers aimed at enabling residents of a public low-rent housing estate to implement health promotion activities in their community. Before the workshop's development, focus groups with different residents were conducted to understand their role in the community, gather their opinions on health promotion, and collect suggestions for the workshop design and implementation of actions. These focus groups considered the participants' age, gender, and educational level. All the gathered information was used to guide the development of the workshop, considering their opinions and needs.

2) 123 Digit tool[48]

The 123 Digit tool is a platform that, after signing in, offers many resources related to train the general public about digital technology and public services. It can also be used as a training platform through the use of forums or chats. It is available both in French and in Dutch.

This tool can be a useful resource in case it is observed that App developers need to improve their digital competences.

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[47] For more information on Lai et al study, please visit: https://pubmed.ncbi.nlm.nih.gov/28841677/

[48] To know more about 123 Digit tool, please visit: https://www.123digit.be/fr/

Dissemination

Dissemination strategy

Recommendation 36: Adapt the dissemination activities of the digital health promotion intervention to different User Personas taking into account social determinants of health (e.g.**:** sex, age, gender, educational level, etc.)

The Persona Method creates and designs different user profiles comprising a target audience (114). These archetypal users have demographic details such as names, gender, age, and job descriptions, to make them more human and to facilitate empathising with them (114). It is a technique used in the design of digital products, but it can be used in marketing and health communication planning too.

The personas allow the professional to design dissemination actions that effectively connect with the target population.

PRACTICAL APPLICATION

1) User Personas for disseminating strategies[49]

The Digital Communication, User Analytics and Innovative Products (DIGICOM) project had the goal of creating new and innovative dissemination products, tools and services for European statistics. Within this project, 5 User Personas from European statistics were created to guide the design of new dissemination products. In the elaboration of these User Personas they have considered the social determinants of health, such as names, gender, age and even job descriptions.

Recommendation 37: Use inclusive language in the dissemination activities of the digital health promotion intervention.

Using inclusive language in the dissemination of the digital health promotion intervention avoids spreading messages that promote stereotypes. It also runs away from generalisations and simplifications that distort social reality. Word choice has a significant impact on feels so we need to assure the language used for dissemination is

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[49] For more information about this project and the user personas created, please visit: https://cros-legacy.ec.europa.eu/DIGICOM/personasEuropeanStatistics

representing European Union’s population in terms of gender, ethnicity, sexuality, age, etc.

PRACTICAL APPLICATION

1) Inclusive Language Guide[50]

The Inclusive Language Guide (2023) (60) is a guide produced by Oxfam International which aims to ensure that our language does not imply concepts that are patronizing or reinforce stereotypes related to gender, race, sexuality, inequality and disability. The guide is based on a set of Feminist Principles for Language Use and gives examples of how to put these principles into practice. It also is divided into thematic sections such as Disability, Physical and Mental Health; Gender Justice, Sexual Diversity and Women’s Rights; and Migration, among other issues.

Recommendation 38: Make sure the dissemination activities arrive at different population groups, especially those with low levels of digital health literacy.

It is important to define the target audience before developing any communication strategy, taking into account its needs. Moreover, reviewing and evaluating actions have to be done through the dissemination process to ensure the target audience is reached. Widely effective communication of the digital health promotion intervention, including population groups with low health literacy, can be accomplished through different methods such as plain language and readability tools. Considering the health literacy level of the potential end users for designing a dissemination action for the digital health promotion intervention is key for the message to be understood.

PRACTICAL APPLICATION

1) The Health Literacy “How to” Guide[51]

The Health Literacy “How to” Guide (2018) of the National Health Service (NHS) in England (11) provides practical tools and techniques to enhance approaches and practice of health communication that effectively arrive to people with low levels

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[50] To know more about the Inclusive Language Guide, please visit: https://policy-practice.oxfam.org/resources/inclusive-language-guide-621487/

[51] For more information regarding The Health Literacy “How to Guide” guide, please visit: https://library.nhs.uk/wp-content/uploads/sites/4/2020/08/Health-literacy-how-to-guide.pdf

of health literacy. The guide gives different examples of tools for checking the use of plain English in reports and other writing materials, such as the software Drivel Defence, the A-Z of alternative words guide and the How to write in plain English guide. It also contains examples of readability tools such as Readable.io website or the SMOG Test (simplified measure of gobbledygook) for measuring how easy it is to read and comprehend a document.

2) 12 Questions to Guide a Product-Driven Dissemination strategy[52]

The Community for Advancing Discovery Research in Education (CADRE) is a network of STEM education researchers that has developed 12 questions to guiding the dissemination of a resource, activity, event or project milestone to reach the widest possible audience:

> 1. What is the product, event or milestone?
> 2. Who is you audience?
> 3. What is the purpose of communication?
> 4. What is the message?
> 5. What is the method of communication?
> 6. Is your product accessible?
> 7. What is the timeline for dissemination?
> 8. Who is responsible for communications?
> 9. Who can help you disseminate?
> 10. Don’t be afraid to share more than once
> 11. How will you know you are successful?
> 12. Evaluate and identify successful strategies.

Sustainability

Recommendation 39: Take into account the differences between countries for planning and ensuring the sustainability of the digital health promotion intervention.

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[52] For more information regarding these 12 questions, please visit: https://cadrek12.org/resources/dissemination-toolkit-guide-product-dissemination

The sustainability of the digital health interventions, such as the impact of health apps, is defined as "*the longevity and continuous manifestation of the benefits and outcomes of digital innovations for health workers, the standard of healthcare and patient experience long after the end of the program*" (115). The existing global digital divide today leads to varied sustained use of such digital interventions between and within countries. It has been observed that in low- and middle-income countries, the scarcity of infrastructure, equipment, and internet access are the primary barriers to long-term sustainability (115). Conversely, one of the main facilitators is the widespread availability of mobile phones (115).

PRACTICAL APPLICATION

1) Sustainability barriers and facilitators in low and middle income countries[53]

Safiata Kaboré et al. (115) conducted a systematic review to identify barriers and facilitators for the sustainability of digital health interventions in low- and middle-income countries. This work can guide in identifying barriers and facilitators that may be encountered in the sustained use of the App developed.

Recommendation 40: Consider the characteristics of potential end users to encourage continued use, with a special focus on health literacy and digital health literacy (e.g.: age, gender, health literacy, etc.)

Studies show that many downloaded apps are never used (103). Apart from environmental factors that can influence the use of health Apps, factors such as age, level of digital literacy in health or educational level, can also impact the use of these Apps (103). Thus, it is necessary to take these characteristics into account when planning the App sustainability.

PRACTICAL APPLICATION

1) Differences in mobile health app use regarding social and gender characteristics[54]

Bol N et al. study (116) provides a more differentiated understanding of the use of health apps considering gender, age, and digital health literacy, among other

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[53] For more information about Kaboré et al. paper, please visit: https://pubmed.ncbi.nlm.nih.gov/36518563/

[54] For more information on Bol N et al. work, please visit: https://www.tandfonline.com/doi/full/10.1080/01972243.2018.1438550

factors. This paper provides valuable insights into identifying the social and gender factors that can impact the use of different health apps. This study also emphasizes the importance of considering these factors within the context of specific health applications, such as nutrition, physical activity, and other relevant domains.

GLOSSARY OF TERMS

Community health literacy	This refers to health literacy-related assets (knowledge, resources, abilities), including: knowledge held by people in the community; the extent to which knowledge is trusted, circulated and adapted freely in a community; health-promoting customs embedded in cultural beliefs and norms, and in traditional or emerging practices of daily life; relationships between the community and outside sources of information. Family, peer and community conversations and interactions are central to determining community health literacy, behaviours and outcomes. 📖 World Health Organization (WHO). Health literacy development for the prevention and control of non-communicable diseases: volume 3: recommended actions. 2022.
Digital divide	The gap among individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies and to their use of the Internet for a wide variety of activities. 📖 OECD Understanding the Digital Divide, OECD Publications, Paris, 2001, p. 32.
Digital health literacy	The ability to search for, access, understand, appraise, validate, and apply online health information and to formulate and express questions, opinion, thoughts, or feelings when using digital devices. 📖 M-POHL. The HLS19-DIGI Instrument to measure Digital Health Literacy. Factsheet. Vienna: Austrian National Public Health Institute; 2022.
Digital skills	In addition to internet access, digital skills also generate significant inequalities. Digital skills or “e-Skills” mainly refer to the ability to master the use of ICT. At a time when ICTs are everywhere in the social and professional environment, their mastery becomes an essential component of knowledge, knowledge and skills. 📖 Digitalisation : Vers une politique d’inclusion numérique en Belgique [Internet]. Fgov.be. [cited 8th of May 2023]. Available from: https://www.ccecrb.fgov.be/p/fr/807/vers-une-politique-d-inclusion-numerique-en-belgique

Equity in health	Absence of unfair, avoidable or remediable differences in health status among population groups defined socially, economically, demographically or geographically or by other dimensions of inequality (e.g. sex, gender, ethnicity, disability, or sexual orientation). Health equity is achieved when everyone can attain their full potential for health and well-being.
	🕮 World Health Organization (WHO). Health promotion glossary of terms 2021. Geneva; 2021. Available from: https://www.who.int/publications/i/item/9789240038349
Gender	A social and cultural construct, which distinguishes differences in the attributes of men and women, girls and boys, and accordingly refers to the roles and responsibilities of men and women. The concept of gender includes the expectations held about the characteristics, aptitudes and likely behaviours of both women and men (femininity and masculinity). This concept is useful in analysing how commonly shared practices legitimize discrepancies between sexes.
	🕮 United Nations Children’s Fund (UNICEF). GENDER EQUALITY: Glossary of Terms and Concepts. 2017. Available from: https://www.unicef.org/rosa/media/1761/file/Genderglossarytermsandconcepts.pdf
Gender mainstreaming	Strategy for integrating gender concerns in the analysis, formulation and monitoring of policies, programmes and projects. The purpose of gender mainstreaming is to promote gender equality and the empowerment of women in population and development activities. This requires addressing both the condition, as well as the position, of women and
	🕮 United Nations Population Fund. Frequently asked questions about gender equality_ What is gender mainstreaming? [Internet]. 2005. [cited 7th of May 2024]. Available from: https://www.unfpa.org/resources/frequently-asked-questions-about-gender-equality
Hard-to-reach population	Those sub-groups of the population that are difficult to reach or involve in research or public health programmes due to their physical and geographical location (e.g. in mountains, forests or deserts) or their social and economic situation.
	🕮 Shaghaghi A, Bhopal RS, Sheikh A. Approaches to Recruiting ‘Hard-To-Reach’ Populations into Re-search: A Review of the Literature. *Health Promot Perspect*. 2011; 1(2): 86-94. Doi: 10.5681/hpp.2011.009

Health communication

The use of communication strategies (e.g. interpersonal, digital and other media) to inform and influence decisions and actions to improve health. May involve the integration of digital and other mediated communication with more local, personal or traditional forms of communication.

World Health Organization (WHO). Health promotion glossary of terms 2021. Geneva; 2021. Available from: https://www.who.int/publications/i/item/9789240038349

Health empowerment

Social, cultural, psychological or political processes through which people gain greater control over decisions and actions affecting their health.

World Health Organization (WHO). Health promotion glossary of terms 2021. Geneva; 2021. Available from: https://www.who.int/publications/i/item/9789240038349

Health inequalities

The avoidable differences in health outcomes among groups and individuals that have been determined *socially* without the possibility to reach their health potential; the highest level of health for all people.

Ad hoc definition based on:

- How can health information systems be used to monitor health inequalities? What EU and international policies, programmes and systems are in place? Looking at good practices and how progress can be made [Internet]. Eurohealthnet.eu. [cited 5th May 2023]. Available from: https://eurohealthnet.eu/wp-content/uploads/documents/2018/180302_PolicyPrecis_UsingHealthSocialDataMonitorHealthInequalities_WebLayout.pdf

- Delaware Health and Social Services. Health Equity Guide for Public Health Practitioners and Partners [Internet]. Delaware: Delaware Health and Social Services; [Cited 5th of May 2023]. Available from: https://www.dhss.delaware.gov/dhss/dph/mh/files/healthequityguideforpublichealthpractitionersandpartners.pdf

Health literacy

Dynamic and multidimensional knowledge, capacity and attitudes that encompass individuals' cognitive and social skills, enabling them to access, understand, appraise, and use healthcare information effectively within their context and throughout the stages of the life cycles. It is critical for informed decision-making and empowers people and communities to maintain and promote one‘s own health and well-being.

Ad hoc definition based on:

-World Health Organization (WHO). Health promotion glossary of terms 2021. Geneva; 2021. Available from: https://www.who.int/publications/i/item/9789240038349

- Sørensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, et al. Health literacy and public health: A systematic review and integration of definitions and models. *BMC Publ Heal*. 2012; 12 (80): 12-80.

-Sociedade Portuguesa Literacia em Saúde. Ensaio sobre o conceito de literacia em saúde. Cristina Vaz de Almeida (cord..) 2023.

Health Equity Impact Assesment tool

A tool used to analyse a new program or policy's potential impact on health disparities and/or on health disadvantaged populations. Its aim is to maximize positive impacts and reduce negative impacts that could potentially widen health disparities between population groups—in short, more equitable delivery of the program, service, policy etc.

Ad hoc definition based on:

- Haber R. Health Equity Impact Assessment. A PRIMER. Health Equity Roadmap. Wellesley Institute advancing urban health. 2010.

- Ontario Ministry of Health and Long-Term Care,. Health Equity Impact Assessment (HEIA) Workbook. 2012.

Health promotion

The process of enabling people, individually and collectively, to increase control over the determinants of health and thereby improve their health.

World Health Organization (WHO). Health promotion glossary of terms 2021. Geneva; 2021. Available from: https://www.who.int/publications/i/item/9789240038349

Intersectionality

A theory or framework for conceptualizing an individual or group as having overlapping identities and experiences that may be affected by different forms of discrimination and disadvantage. It is related to various forms of social stratification, such as race, class, gender, religion, and disability status, and recognizes that these identities do not exist independently.

Delaware Health and Social Services. Health Equity Guide for Public Health Practitioners and Partners [Internet]. Delaware: Delaware Health and Social Services; [cited 5th of May 2023]. Available from: https://www.dhss.delaware.gov/dhss/dph/mh/files/healthequityguideforpublichealthpractitionersandpartners.pdf

Layered approach

The layered approach is a process where information is presented in layers, transforming the information provision process into a kind of dropdown menu. The essential information is presented in the first layer, while in the subsequent layers, additional information that the user can expand upon is provided.

Ad hoc definition based on:

- Bunnik E, Janssens A, Schermer M. A tiered-layered-staged model for informed consent in personal genome testing. *Eur J Hum Genet*. 2013; 21 (6): 596-601

- Fons Martínez J, Díez-Domingo J, Calvo Rigual F, Ferrer Albero C, Cubillo M (i-Consent Project). Improving the guidelines for Informed Consent, including vulnerable populations, under a gender perspective. Spain, 2017: Publications Office of the European Union.

mHealth

The use of mobile phones, personal digital assistants, and other wireless technologies to support health objectives.

Ad hoc definition based on:

- World Health Organization (WHO). MHealth: New horizons for health through mobile technologies: second global survey on eHealth. Geneva: 2011.

- mHealth provides opportunities, but risks widening inequalities [Internet]. EuroHealthNet. 2017 [cited 5th of May 2023]. Available from: https://eurohealthnet.eu/publication/mhealth-provides-opportunities-but-risks-widening-inequalities/

- World Health Organization (WHO). WHO guideline: recommendations on digital interventions for health system strengthening. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.

Misinformation	Misleading or inaccurate information that can be manifested in different shapes (images, video, audio or text.). Although misinformation is not necessarily associated with the intention to deceive, it is related to the dissemination of false or incorrect narratives, which can occur, for example, due to lack of information, misunderstanding of a message or even distortion of information for 📖 Caled, D., Silva, M.J. Digital media and misinformation: An outlook on multidisciplinary strategies against manipulation. J Comput Soc Sc 5, 123–159 (2022). https://doi.org/10.1007/s42001-021-00118-8
Optimising Health Literacy and Access (Ophelia)	This process identifies community health literacy needs that should be taken into account to the co-design and testing of potential solutions. Involves meaningful engagement with community members, health workers, service managers and decision-makers. 📖 Ad hoc definition based on: - Ophelia (Optimising Health Literacy and Access). [Website]. 2022. Available from: https://healthliteracydevelopment.com/ - Osborne R, Elmer S, Hawkins M, Cheng C. The Ophelia Manual. The Optimising Health Literacy and Access (Ophelia) process to plan and implement National Health Literacy Demonstration Projects. Centre for Global Health and Equity, School of Health Sciences, Swinburne University of Technology, Melbourne, Australia. 2021.
Plain language	The grammatically correct language that includes complete sentence structure and accurate word usage. It is clear writing that tells the reader exactly what the reader needs to know without using unnecessary words, jargon or expressions. 📖 Australian Commission on Safety and Quality in Health Care. Health literacy: Taking action to improve safety and quality. Sydney: ACSQHC, 2014.
Readability	The measure of how easy it is to read and comprehend a document. 📖 National Health System (NHS). Health literacy “how to” guide. 2020. Available from: https://library.nhs.uk/wp-content/uploads/sites/4/2020/08/Health-literacy-how-to-guide.pdf

Sex

Those characteristics biologically determined.

Solar O, Irwin A. A conceptual framework for action on the social determinants of health. Social Determinants of Health Discussion Paper 2 (Policy and Practice). World Health Organization (WHO). Geneva: 2010. Available from: https://apps.who.int/iris/bitstream/handle/10665/44489/9789241500852_eng.pdf?sequence=1&isAllowed=y

Social determinants of health

The underlying social, cultural, political, economic and environmental conditions in which people are born, grow up, live, work and age, and their access to power, decision-making, money and resources that give rise to these conditions of daily life. These social determinants influence a person’s opportunity to be healthy, their risk of illness, health behaviours and healthy life expectancy.

Ad hoc definition based on:

- World Health Organization (WHO). Health promotion glossary of terms 2021. Geneva; 2021. Available from: https://www.who.int/publications/i/item/9789240038349

- Delaware Health and Social Services. Health Equity Guide for Public Health Practitioners and Partners [Internet]. Delaware: Delaware Health and Social Services; [cited on 5 of May 2023]. Available from: https://www.dhss.delaware.gov/dhss/dph/mh/files/healthequityguideforpublichealthpractitionersandpartners.pdf

Social inequalities in health

Refer to differences in health that are systematic, socially produced, unnecessary and avoidable and are considered unfair and unjust. These inequalities exist both among countries and/or regions and among social groups.

Ad hoc definition based on:

- Whitehead M, Dahlgren G. Concepts and principles for tackling social inequalities in health. World Health Organization; 2014 2014-12-02.

- World Health Organization (WHO). Social determinants of health: Key concepts. 2013 [Website]. Accessed in 23/03/2023. Available from: https://www.who.int/news-room/questions-and-answers/item/social-determinants-of-health-key-concepts

Social vulnerability

Potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks. Reducing social vulnerability can decrease both human suffering and economic loss.

📖 Agency for Toxic Substances and Diseases Registry. CDC/ATSDR Social Vulnerability Index. 2022 [Website]. Accessed on 23/03/2023. Available from: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html

Stakeholder

Anyone who has an interest – directly or indirectly – in the health and well-being of a community.

📖 Delaware Health and Social Services. Health Equity Guide for Public Health Practitioners and Partners [Internet]. Delaware: Delaware Health and Social Services; [cited 5th of May 2023]. Available from: https://www.dhss.delaware.gov/dhss/dph/mh/files/healthequityguideforpublichealthpractitionersandpartners.pdf

Intervention sustainability

The continued use of an intervention in a manner that brings benefits after this support is removed.

📖 Aarons GA, Hurlburt M, Horwitz SM. Advancing a conceptual model of evidence-based practice implementation in public service sectors. *Adm Policy Ment Health*. 2011 ;38(1):4–23.

Usability

The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.

📖 International Organization for Standardization (ISO). ISO/TS 20282-2: 2013. Usability of consumer products and products for public use — Part 2: Summative test method. 2013. Available from: https://www.iso.org/obp/ui/#iso:std:iso:ts:20282:-2:ed-2:v1:en

User-Centered Design approach

Perspective that is based on keeping potential users in a central position throughout the development of a technology. One of the principles of User-Centered design is the creation of User Personas.

📖 Ten Klooster I, Wentzel J, Sieverink F, Linssen G, Wesselink R, van Gemert-Pijnen L. Personas for Better Targeted eHealth Technologies: User-Centered Design Approach. *JMIR Hum Factors*. 2022. 15;9(1):e24172

User Persona

Generic descriptions of the different types of people involved in or benefiting from the health programme.

📖 World Health Organization. Digital implementation investment guide (DIIG): quick deployment guide [Internet]. 2022. Available from: https://www.who.int/publications/i/item/9789240056572

Vulnerable groups

Subgroups of the population that- because of their position in the social structure- are at higher risk of multiple exposures to cancer risk factors, both clustered cross-sectionally and accumulated longitudinally throughout the life course (e.g. people with mental, physical, and/or psychosocial disabilities, illiterate persons, refugees, prisoners etc.).

📖 Frohlich KL, Potvin L. Transcending the known in public health practice: the inequality paradox: the population approach and vulnerable populations. *Am J Public Health*. 2008; 98(2):216-21.

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ANNEX

Recommendations at a glance

Transversal

Recommendation 1: Include the social determinants of health, including health literacy, in all phases of the digital health promotion intervention process.

Recommendation 2: Create a multidisciplinary, multilingual, multicultural team, including health literacy and equity experts.

Recommendation 3: Use co-creation and participatory methods including all the stakeholders. A special focus should be placed on end-users, taking into account the representativeness of social vulnerable groups (e.g. populations with low digital health literacy).

Recommendation 4: Ensure universal access of the digital health promotion intervention at a scale and intensity proportionate to the degree of need of different end users, especially of those with low health literacy.

Recommendation 5: Use inclusive, assertive, clear and positive language with collective and generic terms that represent different population groups.

Recommendation 6: Use different European languages to ensure that the digital health promotion intervention and its promotion are understandable for all the potential end users.

Research and Evaluation

Hypothesis and objectives

Recommendation 7: When framing the research question, and defining the research study objectives and hypotheses, consider the unequal impact of social determinants of health in the problem addressed (for example, gender, age, ethnicity, country of residence, socioeconomic level, educational level, digital health literacy level, etc.).

S.R 7.1: Incorporate the interests of different social groups in the research question and give priority to the needs of the most socially vulnerable groups.

S.R 7.2: Address social and gender-specific objectives and hypotheses if appropriate. If the objectives and hypotheses refer to only one sex or gender or one socioeconomic and cultural group, clearly indicate and justify the decision.

Study population and sample

Recommendation 8: Ensure equitable representation of the population in the study sample, and include the most vulnerable groups (e.g. elder people, low health literacy, low socio-economic level, ethnic minorities, etc.).

S.R 8.1: Use population/patients associations, key contact points, and other stakeholders to access socially vulnerable groups in a research study.

S.R 8.2: Stratify the sample according to sex, age, health literacy level, ethnicity, and all social determinants of health related to the objective under study.

Research Methodologies

Recommendation 9: Combine the use of quantitative and qualitative methodologies and techniques.

Informed consent

Recommendation 10: Tailor the informed consent process for participation in the study according to the target audience considering the health literacy level, among other social determinants of health (e.g. age, ethnicity, context, country of residence, etc.).

S.R 10.1: Ensure that the informed consent form is accessible, readable and understandable, facilitating its comprehension by low health literacy participants. The use of a glossary of terms, graphics and pictures, audio-visuals (leaflets, for example), or slides in the annexes can contribute to a better understanding of the information.

S.R 10.2: Provide participants with different options for receiving the information.

Recommendation 11: Be sure that materials given during the informed consent process are inclusive and do not reinforce gender stereotypes.

Data collection

Recommendation 12: Consider the gender and equity perspective during the data collection in the qualitative and quantitative studies.

S.R 12.1: Include variables related to the social determinants of health (e.g. health literacy, gender, age...) in the design of data collection techniques.

S.R 12.2: For quantitative survey studies, use validated existing surveys related to social determinants of health, including levels of health literacy.

S.R 12.3: For qualitative studies, use participatory methods such as focus groups, personal interviews, brainstorming, Delphi techniques, nominal groups, etc.

S.R 12.4: For studies based on literature searches, be sure to include keywords referring to social determinants of health, health literacy and equity.

S.R 12.5: Ensure that the data collector has received training in health literacy, social and gender sensitivity and inclusive language.

Analysis and interpretation

Recommendation 13: Stratify the analyses by socioeconomic and gender variables. Focus on health literacy, and look at the interaction and intersection of these variables.

S.R 13.1: Specify if there are significant differences by socioeconomic and gender variables. If there are no significant differences, also specify.

Recommendation 14: Use theoretical models of social determinants of health, gender inequalities in health, and health literacy to guide the interpretation of results.

S.R 14.1: Avoid systematically interpreting results on what is observed in the general population, and reinforce the analysis in minorities, considering their self-perception of the event under study.

Results presentation and dissemination

Recommendation 15: Present the results disaggregated by social and gender variables such as sex, gender, educational status, and health literacy.

Recommendation 16: Report the research results back to the study participants taking into account the level of health literacy.

Design

Target groups

Recommendation 17: Define target groups by identifying specific needs from different collectives according to socioeconomic, cultural, political, gender, and health literacy determinants.

> **S.R 17.1:** Involve potential end users in determining the needs and characteristics of their own group such as gender, race/ethnicity, culture, and digital health literacy (User Personas).
>
> **S.R 17.2:** Combine quantitative and qualitative methodologies to identify specific needs**:** scoping reviews, surveys, qualitative interviews, focus groups, etc.

Content

Recommendation 18: Adapt the content of the intervention to make it as readable and understandable as possible.

> **S.R 18.1:** Use active voice, except for titles and subtitles.
>
> **S.R 18.2:** Avoid the use of capital letters. It is preferable to use bold lowercase for emphasis.
>
> **S.R 18.3:** Use short sentences.
>
> **S.R 18.4:** Use assertive, clear/plain language and avoid technical language.
>
> **S.R 18.5:** Use bullet points to highlight the main ideas.
>
> **S.R 18.6:** Use a readable font style (e.g.**:** Arial, Times New Roman…), avoiding “serif” font.
>
> **S.R 18.7:** Regarding numbers provide absolute risk rather than relative risk and express risk or benefit in whole numbers instead of fractions, decimals, or percentages.

S.R 18.8: Use error messages in plain language, using traditional error-message visuals, like bold or red text, and offers a constructive solution.

S.R 18.9: Reduce the information that users have to remember and the unnecessary elements that can distract them from the key information.

S.R 18.10: Use help documentation whenever needed but ensure that this documentation is easy to search, present it in context, and list concrete steps that need to be carried out.

Recommendation 19: Use a layered approach to present study information.

S.R 19.1: Basic information should be at the general level and more specific information in sub-layers.

S.R 19.2: Differentiate the basic and more specific information, for example, putting the sub-layers in boxes or different colours.

Recommendation 20: Design the content aimed at motivating behavioural change to improve adherence to cancer prevention recommendations.

S.R 20.1: Start by introducing the target prevention behaviour.

S.R 20.2: Use assertive, clear and positive language, limiting the use of these words**:** Don’t-Unless-Not-Should.

S.R 20.3: Show the actions you want your audience to take, instead of explaining those that the audience should not do.

S.R 20.4: Use simple illustrations and avoid unnecessary details.

S.R 20.5: Use realistic pictures to illustrate healthy behaviours.

S.R 20.6: Use cues (arrows or circles) to emphasize key information.

Recommendation 21: Adapt the content to the specific information needs of different target groups identified, with a special focus on those with different health literacy levels.

Recommendation 22: For different cultural backgrounds, adapt the images and the content, and ensure the representativeness of all possible ethnic groups.

Content communication strategies

Recommendation 23: Use different health communication strategies to deliver the content of the digital health promotion intervention.

S.R 23.1: Consider offering end users more than one format for receiving information.

Usability

Recommendation 24: Ensure ease of navigation within the digital health promotion intervention.

S.R 24.1: Use step-by-step navigation, with previous and next buttons whenever possible.

S.R 24.2: Ensure ease of navigation within the application. Use an “emergency exit”, like a cancel button.

S.R 24.3: Align blocks of text to the left (not justified).

S.R 24.4: Ensure that the text fits the screen and that the end user can read it without scrolling

S.R 24.5: For low digital health literacy groups, minimize menu hierarchies and offer linear navigation.

S.R 24.6: For low digital literacy users, reduce access to the internet and connectivity and reduce data load as much as possible, allowing for offline usage so that users can download/upload data when a connection is available.

Recommendation 25: Take into account the different kinds of disabilities when designing the content.

S.R 25.1: For visual disability, use a description of visual information and strong colour contrast.

S.R 25.2: For hearing disability, use captions, transcriptions, or sign language.

S.R 25.3: For visual and hearing disabilities use a screen reader and braille to read descriptive transcripts that include the audio and visual information as text.

S.R 25.4: Ensure that the digital health promotion intervention is adapted to those people who cannot use their hands and use speech recognition software.

Validation

Target groups

Recommendation 26: Ensure representativeness of different population groups in the piloting activities considering the social determinants of health, with special emphasis on including the most socially vulnerable groups.

S.R 26.1: Take into account the health literacy level of the participants, ensuring the representativeness of those with low health literacy levels.

S.R 26.2: Perform the pilot studies considering potential gender differences in needs and preferences.

S.R 26.3: Ensure representativeness of people of different ages and other social determinants of health.

Methods

Recommendation 27: Use qualitative and quantitative methodologies to explore the needs, barriers and facilitating factors taking into account potential inequalities due to social determinants of health.

Informed consent

Recommendation 28: Be sure to tailor the informed consent for participating in the piloting activities.

S.R 28.1: Ensure that the informed consent form is readable and understandable, facilitating its comprehension by low health literacy pilot participants. The use of a glossary of terms, graphics and pictures, audio-visuals (leaflets, for example), or slides in the annexes can contribute to a better understanding of the information.

S.R 28.2: Provide pilot participants with different options for receiving the information.

S.R 28.3: Be sure that materials given during the informed consent process are inclusive and do not reinforce gender stereotypes.

Data collection

Recommendation 29: Take into account social determinants of health such as gender, sex, health literacy, etc. in the data collection process during the piloting activities.

S.R 29.1: Include variables related to social determinants of health (e.g. health literacy, gender, age...) in the design of data collection techniques.

S.R 29.2: For quantitative survey studies, use validated existing surveys related to social determinants of health, including health literacy.

S.R 29.3: For qualitative studies, use participatory methods such as focus groups, personal interviews, brainstorming, Delphi techniques, nominal groups, etc.

S.R 29.4: For studies based on literature searches, be sure to include keywords referring to social determinants of health.

S.R 29.5: Ensure that the data collector has received training in health literacy and social and gender sensitivity.

Impact Evaluation

Recommendation 30: Assess the Health Equity Impact (HEIA) of the pilot activities, with special focus on health literacy impact.

Report results

Recommendation 31: Ensure report pilot activities results back to the participants taking into account the characteristics of the target group, with a special focus on participants with low health literacy.

Promotion

Promoter’s characteristics

Recommendation 32: Ensure multilingual, multicultural, and multidisciplinary promoters.

Recommendation 33: Consider including peer-education promoters taking into account the characteristics of the potential end user groups.

Promoters needs, capacities and assets identification

Recommendation 34: Identify the specific needs, current capacities, and potential assets of the digital health promotion intervention promoters taking into account their age, gender, educational level, and digital health literacy, social and ethnic background.

Promoters training

Recommendation 35: Adapt the training programmes for the promoters to the needs, capacities and potential assets identified, taking into account their digital health literacy levels.

> **S.R 35.1:** In the promoter´s training, include relevant equity and health literacy concepts that they should take into account, such as a social and gender-sensitive approach and health literacy.

Dissemination

Dissemination strategy

Recommendation 36: Adapt the dissemination activities of the digital health promotion intervention to different User Personas taking into account social determinants of health (e.g.: sex, age, gender, educational level, etc.).

Recommendation 37: Use inclusive language in the dissemination activities of the digital health promotion intervention.

Recommendation 38: Make sure the dissemination activities arrive at different population groups, especially those with low levels of digital health literacy.

Sustainability

Recommendation 39: Take into account the differences between countries for planning and ensuring the sustainability of the digital health promotion intervention.

Recommendation 40: Consider the characteristics of potential end users to encourage continued use, with a special focus on health literacy and digital health literacy (e.g.: age, gender, health literacy, etc.).