CURTAIN

D2.1 - Mapping of the current state of cancer literacy facilitators and gaps report

2025

Co-funded by the European Union

Co-funded by the European Union's EU4Health programme under grant agreement No 101219448. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Health and Digital Executive Agency (HaDEA). Neither the European Union nor the granting authority can be held responsible for them.

Project number: 101219448
Project name: Beating Cancer Inequalities through Literacy in Europe
Project acronym: CURTAIN
Funding programme: EU4Health, EU4H-2024-PJ-02

Version number	
Status	Final
Dissemination level	Public
Due date of deliverable	31/12/2025
Actual submission date	31/12/2025
Project officer	Tomas Kniukšta
Work package	Mapping Cancer Literacy Resources, Stakeholders, Initiatives, relevant KPIs
Task name	T2.1: Mapping Cancer Literacy Inequalities and the methodologies/indicators to evaluate the effectiveness of cancer literacy programs
Lead partner	FPG
Partner(s) contributing	CUMO, BJCN, PU, DGAM, EURO, DSMU
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Statement of originality *This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.*

Version Tracker

Date	Version number*	Authors	Change
10/12/2025	0.1	Flavia Beccia (FPG)	First draft
17/12/2025	0.2	Flavia Beccia (FPG)	Content update
23/12/2025	0.3	Girvalaki (ENSP)	Review
26/12/2025	0.4	Ruxandra Schitea (INOMED)	Review
29/12/2025	0.5	Flavia Beccia (FPG)	Addressing comments
30/12/2025	1	Ruxandra Schitea (INOMED)	Final formatting for submission

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List of Abbreviations

- **BC** – Breast Cancer
- **BSE** – Breast Self-Examination
- **CAWI** – Computer-Assisted Web Interviewing
- **CATI** – Computer-Assisted Telephone Interviewing
- **CC** – Cervical Cancer
- **CL** – Cancer Literacy
- **CRC** – Colo-rectal cancer
- **CURTAIN** – Beating Cancer Inequalities through Literacy in Europe
- **EU** – European Union
- **FIT** – Faecal Immunochemical Test
- **FOBT** – Fecal Occult Blood Test
- **HLS-EU** – European Health Literacy Survey
- **HPV** – Human Papillomavirus
- **JBI** – Joanna Briggs Institute
- **OECD** – Organisation for Economic Co-operation and Development
- **PRISMA** – Preferred Reporting Items for Systematic Reviews and Meta-Analyses
- **PRISMA-ScR** – Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews
- **WHO** – World Health Organization

Executive Summary

Purpose
This deliverable aims to systematically map the current state of Cancer Literacy (CL), along with its associated facilitators and gaps, to inform targeted strategies for reducing cancer inequalities across Europe.

Objectives and Scope of the Deliverable
The study focused on assessing levels, barriers, and facilitators of CL in European countries and on examining how this evidence can inform the development of effective and equitable CL strategies for cancer prevention and care.

The scope covered CL levels, barriers, and facilitators in cancer prevention and care, with a specific focus on disparities across regions, vulnerable populations, and the consortium countries (Italy, Romania, Portugal, Belgium, Bulgaria, Montenegro, Ukraine, and Moldova).

Intended Audience
The primary audience includes European and national policymakers, public health bodies, cancer organizations (patient groups and leagues), healthcare professionals, and academic researchers involved in the EU-funded CURTAIN project.

Methodology
Two complementary scoping reviews were conducted following the Joanna Briggs Institute (JBI) methodology and PRISMA-ScR guidelines: one focused on CL levels and the other on barriers and facilitators.

The search strategy was comprehensive, integrating:

- **Scientific Literature**: systematic search on databases (e.g., PubMed) for articles published from January 2015 onwards.
- **Grey Literature & Desk Research**: review of reports, policy documents, and institutional publications from specialized repositories (e.g., OECD, IARC).
- **National Partner Collection**: gathering of country-specific documents and data in local languages by consortium partners.

Most Important Findings
The research, encompassing 37 scientific articles and numerous reports, indicates that persistent and wide inequalities in cancer outcomes across Europe are closely linked to inadequate levels of CL. Overall, CL levels were found to be low to moderate, with

pronounced deficiencies among vulnerable populations, including migrants, individuals from low socioeconomic backgrounds, and those living in rural areas. Marked geographic disparities emerged, with Romania exhibiting the lowest levels of CL and cancer screening participation, particularly for mammography (9%), alongside survival rates below the EU average (82%). In Italy, substantial internal variability was observed, together with a limited understanding of the purpose of screening programmes, reported by only 59% of the population.

The available evidence predominantly focuses on CL in the context of cancer prevention, while data addressing CL during treatment, survivorship, and palliative care remain scarce. Across settings, the most frequently reported barriers to adequate CL included low general literacy, misinformation, cultural and linguistic barriers, socioeconomic disadvantage, and limited trust in healthcare systems. Conversely, facilitators consistently identified in the literature included clear and proactive recommendations from healthcare professionals, culturally adapted communication strategies, and the availability of free, community-based screening programmes

Conclusions and Main Recommendations

CL represents a crucial determinant of cancer outcomes, and the uneven implementation of existing programmes across Europe underscores the urgent need for coordinated and strategic action. A key priority is the development of a cancer-specific CL assessment tool tailored to the European context, capable of overcoming the limitations of generic health literacy instruments and enabling more accurate measurement and comparison across settings. In parallel, there is a need to design, implement, and scale up culturally adapted educational interventions specifically targeting vulnerable and underserved populations, with the aim of addressing context-specific barriers and reducing inequities. Finally, strengthening organizational capacity within healthcare systems is essential to foster “cancer-literate environments,” supporting healthcare professionals and institutions in improving communication, shared decision-making, and patient engagement throughout the entire cancer care continuum.

Introduction

Deliverable objective and scope

This deliverable aims to provide a concise and systematic mapping of CL in Europe, addressing current evidence gaps across the cancer care continuum. The objectives and scope of Deliverable D2.1 are to:

- Map existing evidence on cancer literacy levels across cancer prevention, screening, diagnosis, treatment, survivorship, and palliative care.
- Identify key gaps, barriers, and facilitators influencing cancer literacy among citizens, patients, and caregivers.
- Examine disparities in cancer literacy across countries, regions, urban and rural settings, and vulnerable populations.
- Synthesize scientific and grey literature to capture both research and practice-based evidence on cancer literacy in Europe.
- Provide an evidence base to support the development of targeted interventions and the first cancer-specific tool for assessing cancer literacy in Europe within the CURTAIN project.

Relation to other WPs and deliverables

The present deliverable is linked with:

- **WP2 – Mapping Cancer Literacy Resources, Stakeholders, Initiatives, relevant KPIs**, as it constitutes the main output of Task 2.1 and contributes foundational evidence for Tasks 2.2, 2.3, 2.4 and 2.5.
- **D2.2 – Regional and platform-specific patterns of cancer-related disinformation report**, by providing contextual information on literacy gaps that may increase vulnerability to misinformation and disinformation.
- **D2.3 – Report on the needs, capacities and education/training programs in cancer literacy in Europe**, which builds on the gaps and facilitators identified in D2.1.
- **D2.4 – Interactive stakeholders map for cancer literacy in Europe**, as the identification of facilitators includes preliminary stakeholder mapping.
- **D2.5 – Comprehensive KPI Report for Cancer Literacy Programs**, as the findings of D2.1 inform the definition of relevant and meaningful KPIs.
- **WP4 and WP5**, by providing the analytical basis for identifying gaps to be addressed through citizen, patient, and healthcare professional focused interventions.

Content of the deliverable

This deliverable includes the following main components:

- An overview of the conceptual methodology used to assess cancer literacy across consortium countries.
- Identification of key facilitators and barriers influencing cancer literacy, and contextual gaps that shape the effective access, understanding, and use of cancer-related information.
- A comparative analysis of cancer literacy levels and determinants across participating countries.
- A specific focus on vulnerable and hard-to-reach populations, highlighting disparities in access to cancer-related information and services.
- Synthesis of cross-cutting findings relevant for future intervention design, stakeholder engagement, and capacity building.
- Evidence-based conclusions and recommendations to guide subsequent work packages and deliverables within the CURTAIN project.

Mapping of the current state of cancer literacy, facilitators and gaps report

Introduction

Cancer has been and remains a major public health challenge in Europe, with marked disparities in incidence, prevention, treatment outcomes, and mortality (1). In 2022, approximately 2.78 million new cancer cases were diagnosed across the 27 European Union (EU) Member States, as well as Iceland and Norway (2) Cancer is projected to become the leading cause of morbidity and mortality in Europe by 2035 (2). This burden is expected to fall disproportionately on individuals from low socioeconomic backgrounds, migrants, and racial and ethnic minorities (3).

Populations experiencing persistent inequalities in cancer incidence, prevention, and care are also those at higher risk of limited health literacy. Health literacy refers to the skills required to access, understand, and effectively use health information to navigate and engage with the healthcare system (4,5). It is increasingly recognized as a key determinant of disease prevention and control, particularly in oncological settings (6). Individuals' ability to understand and apply health information directly influences their capacity to adopt preventive behaviours, adhere to treatment regimens, and make informed health-related decisions (7). Across Europe, limited health literacy represents a major challenge for health policy and practice, although its severity varies considerably between countries (8). Evidence suggests that more than one-third of European adults may lack adequate health literacy to effectively manage their health, with older adults and socioeconomically disadvantaged groups being particularly affected (8).

While cancer literacy (CL) is closely related to general health literacy, it represents a distinct and more specific construct. General health literacy refers to individuals' overall capacity to access, understand, appraise, and apply health information across a broad range of health contexts, whereas CL focuses specifically on cancer-related information and decisions along the entire cancer care continuum, including prevention, screening, diagnosis, treatment, survivorship, and palliative care (9). CL encompasses not only knowledge of cancer and its risk factors, but also the skills needed to navigate complex oncology services, understand probabilistic and risk-based information, and engage in shared decision-making in emotionally and time-sensitive situations (10).

Moreover, CL has often been assessed indirectly through proxy measures (such as educational level, general health literacy scores, or self-reported knowledge) rather

than through cancer-specific, validated instruments (11) While proxy measures can provide useful contextual information, they may fail to capture the multidimensional and context-dependent nature of CL (12). This underscores the need for direct, cancer-specific measurement tools that can more accurately assess individuals' competencies, identify critical gaps, and inform the design of targeted interventions (13).

CL presents specific challenges compared with health literacy in other disease areas. In oncology, both patients and healthcare providers are required to make multiple time-sensitive decisions, and early screening, diagnosis, and treatment initiation can substantially influence survival outcomes (14) Adults with limited CL tend to obtain less information from cancer prevention and control materials and are less likely to participate in screening or vaccination programs, or to successfully manage their illness (15,16). Low CL has been associated with delayed diagnosis, increased hospitalization, suboptimal treatment, and poorer quality of life (4,17). Limited CL may also hinder meaningful participation in discussions on treatment risks and benefits and reduce understanding of informed consent procedures for medical interventions and clinical trials. In addition, it can contribute to psychosocial challenges, including anxiety, depression, and cancer-related misconceptions (4,18).

Strengthening CL through comprehensive programs and strategies is therefore essential to improve the quality of care and outcomes for people with cancer (19). European health policies increasingly acknowledge this need. The European Patients' Forum, the European Cancer Patient Coalition, and the Association of European Cancer Leagues jointly endorsed the statement *"Europe, Let's Do More for Health"*, which emphasizes patient empowerment through improved CL, self-management, and shared decision-making (20). This priority is further reinforced by Europe's Beating Cancer Plan, which aims to reduce cancer inequalities and the overall cancer burden across the continent. These initiatives adopt a multifaceted approach that integrates clinical interventions with actions designed to equip individuals with the knowledge and skills needed to navigate healthcare systems and adopt healthier lifestyles (3,21). Despite growing recognition of the importance of CL, the implementation of evaluated programs remains uneven across Europe. This highlights the need to strengthen both individual and organizational capacities through targeted educational interventions and training initiatives. Such efforts should support patients and healthcare professionals in critically assessing information and in fostering cancer-literate environments (3). Multiple stakeholders including patients, caregivers, clinicians, civil society organizations, educational and research institutions, and policymakers—play a crucial role in the development of effective and sustainable CL interventions (Marzorati et al., 2018; Sørensen et al., 2020) (14,22). The *Beating Cancer Inequalities through Literacy in Europe* (CURTAIN) project builds on existing initiatives by positioning the improvement

of CL as a central strategy to reduce inequalities in cancer care and outcomes across diverse European settings. CL can be strengthened through collaboration among healthcare professionals, patients, and caregivers, promoting timely, patient-centred, and value-based care. Achieving meaningful improvements in CL requires coordinated action at multiple levels, including organizational practices, provider competencies, patient engagement, and co-produced research initiatives (5,19). Further research is needed to improve understanding of CL across the entire cancer care continuum. Examining CL from the patient perspective at different stages of screening, diagnosis, treatment, survivorship, and palliative care can help identify critical informational gaps and decision-making challenges(23).At both European and multinational levels, cancer organizations play a key role in providing educational resources and tools for clinicians and other healthcare providers. Numerous frameworks and policy recommendations have been developed to support capacity building for cancer control and prevention across European countries (14) These efforts have contributed to strengthening the CL agenda among European governments (14).

However, current data on CL in Europe largely derives from the European Health Literacy Survey, which does not provide a specific or comprehensive assessment of CL or its underlying facilitators and barriers(24). This study, conducted as part of the EU-funded CURTAIN project, aims to systematically map existing gaps in CL among citizens, cancer patients, and caregivers across the Consortium Countries (Romania, Portugal, Belgium, Bulgaria, Montenegro, Ukraine, Italy, Ireland, Moldova). It will also identify key barriers and facilitators and examine disparities across regions, urban and rural settings, and vulnerable populations. The findings will inform the development of tailored interventions and support the creation and implementation of the first cancer-specific tool designed to assess CL in Europe.

Methods

Review Question

This study addressed the following overarching question: *What are the levels, barriers, and facilitators of CL in European countries, and how can this evidence inform the development of effective and equitable CL strategies for cancer prevention and care?* We conducted two complementary scoping reviews, one focused on CL levels and the other on barriers and facilitators, following the Joanna Briggs Institute (JBI) methodology and reporting in accordance with the PRISMA-ScR checklist.

A scoping review methodology was chosen as the most appropriate approach for this study, given the exploratory nature of the research questions and the emerging,

heterogeneous body of literature on CL. In addition, scoping reviews aim to map the extent, range, and characteristics of available evidence, clarify key concepts and definitions, and identify knowledge gap (25,26). The CL literature is characterized by variability in conceptual frameworks, study designs, populations, and measurement approaches, including the use of both direct and proxy measures. In this context, a scoping review enables a comprehensive overview of how CL has been defined, assessed, and operationalized across different settings and stages of the cancer care continuum, without restricting inclusion based on study design or outcome comparability. This approach is consistent with methodological guidance for scoping reviews and reporting recommendations outlined in the PRISMA-ScR(27).

An operational protocol was developed a priori to guide all stages of the review process, in line with the requirements of Milestone 2.1 of the CURTAIN project, ensuring methodological consistency and transparency.

The scoping reviews were based on the PCC framework, with a focus on disparities across regions and vulnerable populations (Table 1).

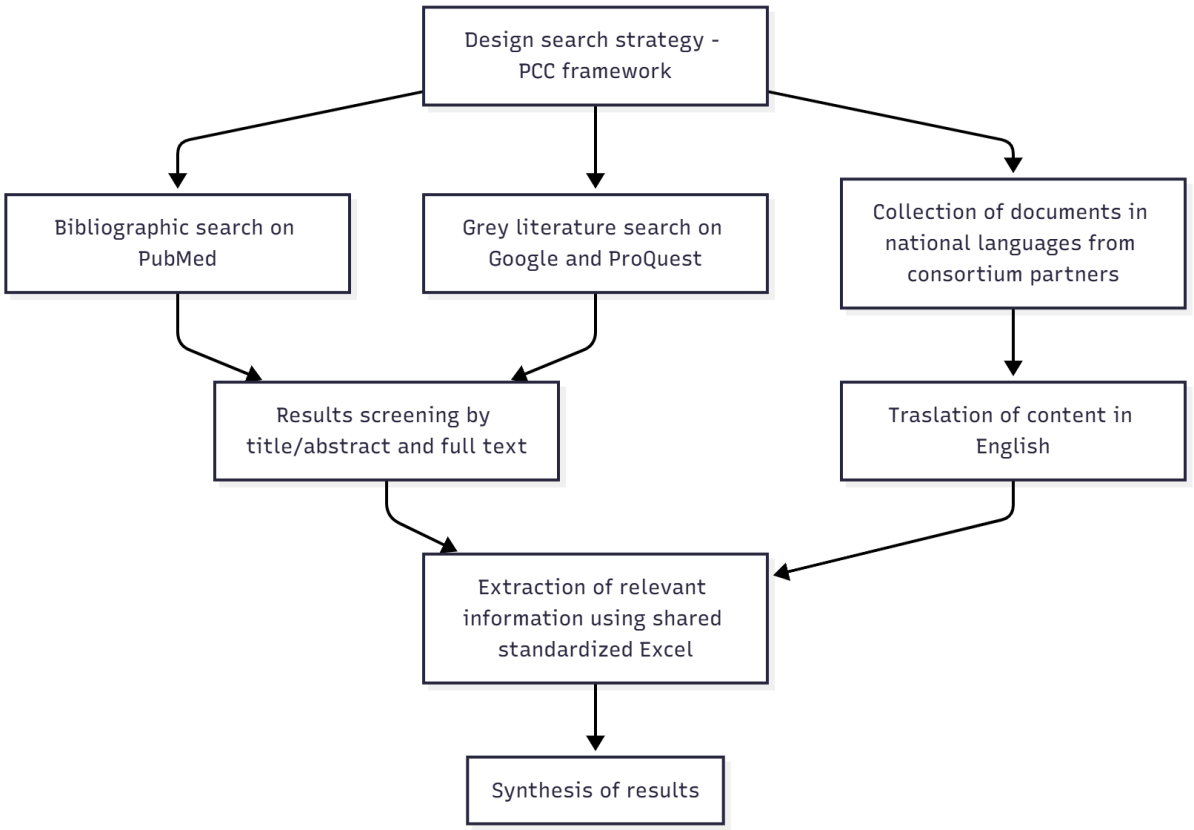
Table 1. PCC framework

PCC Element	Definition
Population (P)	European countries (consortium countries: Romania, Portugal, Belgium, Bulgaria, Montenegro, Ukraine, Italy, Ireland, Moldova), including the general population and vulnerable groups (e.g., migrants, elderly, rural communities, socioeconomically disadvantaged populations)
Concept (C)	Cancer literacy levels, barriers and facilitators
Context (C)	Cancer prevention and care

Search strategy, Eligibility Criteria, Study Selection, and Data Extraction

The search strategy was developed in collaboration with experts from the CURTAIN Consortium to ensure both sensitivity and specificity. We used a combination of controlled vocabulary (e.g., MeSH terms) and free-text keywords. The full search string is reported in the dedicated section and was structured following a modular PCC-based approach. The search strategy is depicted in Figure 1.

Figure 1. Search strategy flowchart



The literature and desk research included documents published from 1 January 2015 onward to capture evidence from the most recent decade and reflect current developments in cancer prevention and care. Only publications in English were considered, while documents provided by consortium partners in local languages were translated or summarized by native-speaking collaborators. All retrieved documents were screened for relevance according to predefined inclusion criteria. Eligibility criteria were defined as a priori and applied consistently across both the literature review and the desk research. Table 2 reports the detailed inclusion and exclusion criteria.

Table 2. Inclusion and exclusion criteria for the literature and desk research

Inclusion criteria	Exclusion criteria
• Studies reporting CL levels in the general population or specific subgroups, including disparities in CL levels by geography, age, gender,	• Studies not related to cancer (e.g., general health topics or other diseases). • Studies not addressing CL, education, or training in cancer, including interventions or programs unrelated to these topics.

migration status, or socioeconomic status. • Studies identifying obstacles to CL, including structural, personal, or communicative barriers • Studies or reports describing cancer-related education or training programs, including interventions targeting patients, the public, or healthcare professionals. • Evaluations of program outcomes, effectiveness, or impact. • Research documenting successful strategies, facilitators, or enabling conditions for improving CL. • Reports on national or local initiatives addressing CL gaps. • Reports or surveys from public health authorities measuring CL. • Documents published in English after 2015	• Studies focusing solely on clinical outcomes, treatment efficacy, biological mechanisms, molecular biology, or basic biomedical research without relevance to public understanding, communication, or behavioral impact. • Publications addressing only health professionals' knowledge or literacy without reference to the general population or lay subgroups. • Interventions not aimed at patients, the public, or healthcare professionals (e.g., caregivers without formal roles, administrative staff). • Non-original research: editorials, commentaries, opinion pieces, letters, narrative reviews, or conference abstracts without full data. • Duplicate publications or secondary analyses of the same dataset without new insights. • Reports lacking methodological transparency, intervention details, or public accessibility (e.g., internal documents or private industry reports without verifiable data). • Publications in languages other than English • Documents published before 2015 or with no full text • Studies conducted outside the consortium countries (Romania, Portugal, Belgium, Bulgaria, Montenegro, Ukraine, Italy, Ireland, Moldova).

For both reviews, all retrieved articles were imported into Rayyan (Qatar Computing Research Institute, Doha, Qatar) for screening. After removing duplicates, two reviewers independently and blindly screened titles and abstracts, classifying records as included or excluded. Disagreements were resolved through discussion with a third reviewer. Articles deemed potentially relevant underwent full-text assessment to confirm eligibility. In parallel, official documents identified through the desk research were collected and reviewed by two independent evaluators. The selection process is reported in a PRISMA-ScR flowchart (PRISMA, 2018). The flowcharts were made using the PRISMA interactive tool (28).

All documents meeting the inclusion criteria were uploaded to a shared project folder and labelled with the first author or institution and year of publication to ensure traceability. Following document selection, all retrieved documents were screened for

relevance according to predefined inclusion criteria, first through title and summary screening, followed by full-text review of webpages or documents when applicable. Data extraction was conducted using a structured form developed by the research team. For each source, we extracted information on publication type, year, country, target population, CL levels, and identified facilitators or barriers. Extracted data were then categorized according to their relevance to cancer prevention or care. To ensure consistency and reliability, the extraction form was piloted on a sample of five full-text articles before being applied to the full dataset.

Two authors extracted information from the included documents using a standardized Excel sheet. One author performed the initial extraction, and a second author verified all entries for accuracy. The following information was extracted from each document: country of origin, document type, publishing organization, aim/scope, and key messages.

In addition, consortium partners collected national and local documents in their respective languages using a standardized extraction form to ensure comparability. For each document, we recorded metadata (title, year, authorship or institution), source, language, and key content elements relevant to CL, barriers, and facilitators.

The grey literature search focused on identifying non–peer-reviewed materials addressing CL, cancer awareness, and associated barriers and facilitators across Europe and the consortium countries. Two authors conducted the search using multiple sources. The process began with a Google search employing a predefined set of keywords and their synonyms, including CL, CL levels, CL barriers, CL facilitators, cancer awareness, and cancer prevention information. The search was limited to the first 100 results and reviewed until saturation (29). Predefined keywords and browsing strategies guided the web screening, with flexibility to accommodate variations in terminology across countries.

A complementary search was conducted on ProQuest, also restricted to the first 100 results. Relevant materials including reports, policy documents, fact sheets, conference abstracts, and institutional publications were similarly collected for screening. In addition to general search engines, specialized repositories and institutional databases were explored to identify high-quality grey literature. These included the OECD databases, European cancer networks such as the European Cancer Inequality Registry, and the International Agency for Research on Cancer. All search results were assessed against predefined eligibility criteria, first through title and summary screening, followed by full-text review of webpages or documents.

The overall search strategy was structured into three modules. Module A focused on cancer literacy as the core concept. Module B explored specific dimensions of cancer literacy, including levels of CL and associated barriers or facilitators. Module C addressed the geographical focus on Europe and the selected consortium countries.
This combined approach, integrating a scientific literature search with desk research and partner-based document collection, ensured comprehensive coverage of both international and country-specific evidence.

Search query

Module A – Cancer Literacy (core concept)
((literacy OR awareness OR knowledge) AND (cancer OR oncology*))

Module B – Subsections

1. Level of Cancer Literacy

(disparities OR "vulnerable population" OR "social determinant" OR rural OR migrant OR "ethnic group" OR older OR inequality* OR refugee)

2. Barriers and Facilitators

(barrier OR facilitator OR enabler OR obstacle) AND (citizen OR patient)

Module C – Geographical Focus
(Europe* OR EU OR Romania OR Portugal OR Belgium OR Bulgaria OR Montenegro OR Ukraine OR Italy OR Ireland OR Moldova)

Data Analysis and presentation

The results are presented narratively, organized around the two main areas investigated: (1) levels of CL and (2) barriers and facilitators influencing CL. Findings are synthesized thematically and comparatively across countries, distinguishing between target populations (general population, vulnerable groups, patients, and healthcare professionals) and types of sources (scientific literature, institutional reports, and grey literature).

Given the nature of this study as scoping reviews, no risk-of-bias assessment was conducted. The synthesis concludes with an overarching overview highlighting country-specific patterns, cross-cutting themes, and contextual factors relevant to CL across Europe.

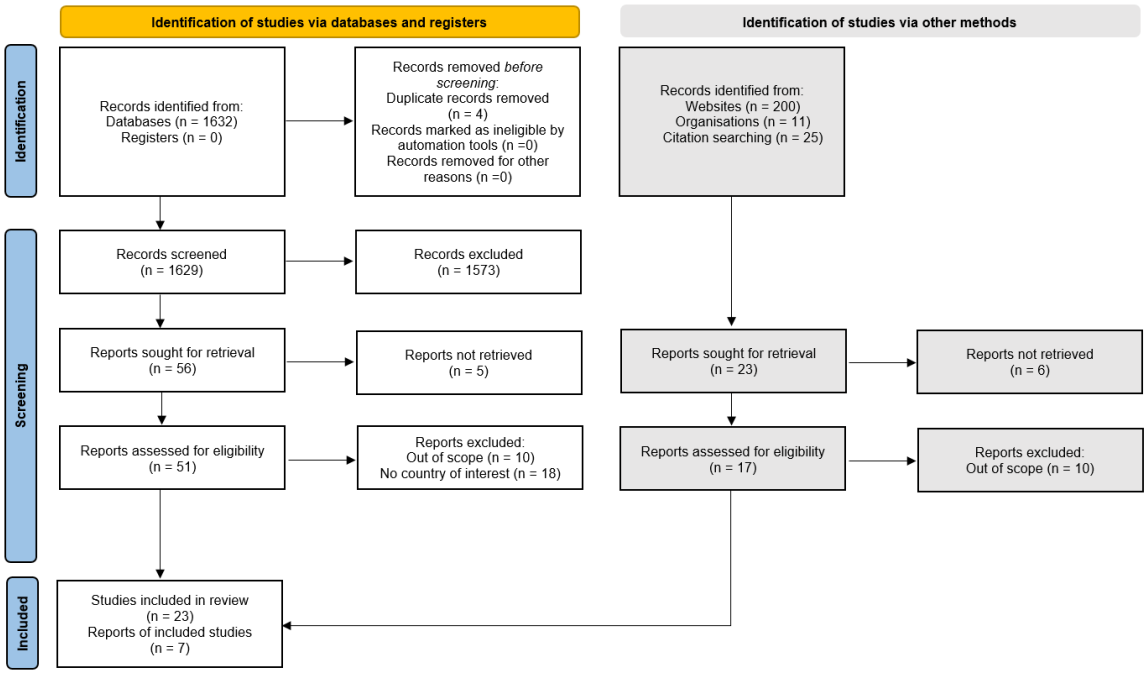
Results

The results are presented separately for the two thematic areas: CL, and barriers and facilitators in cancer prevention and care. Within each area, findings are reported in the following order: scoping review, desk research, and national searches in the respective national languages. Detailed numerical results for each methodological component are reported within the corresponding subsections of the Results section. A single PRISMA flowchart is provided for the scoping review and desk research, as described in the Methods section and in line with the tool used.

Cancer literacy

A total of 1,632 articles were identified through PubMed, 200 items through Google and ProQuest, 11 relevant references from institutional websites, and 25 additional items through snowballing. After removing duplicates, items were screened by title and abstract, resulting in a final assessment of 51 articles from PubMed and 17 items from the grey literature. The screening process is illustrated in Figure 2. Following the exclusion of articles not referring to consortium countries or not relevant to the two thematic areas of interest, 23 scientific articles and 7 reports were included in the analysis. The detailed results are presented in the following sections.

Figure 2. Screening process on cancer literacy in Consortium Countries.



Scoping review results

The CL scoping review identified 1632 records, of which 23 articles published between 2015 and 2025 were included. Italy accounted for 39.1% of single-country studies, followed by Romania (26.1%), Belgium (4.4%), Ireland (1%), and Portugal (4.4%), with 21.7% involving multi-country or broader European samples. All studies focused on cancer prevention, with none explicitly addressing cancer care. The most frequently investigated cancers were cervical (39%), breast (26%), skin (9%), HPV-related (13%), oropharyngeal (4%), and general cancer prevention (9%). Among the 23 studies, 12 involved women (52%), 3 adolescents (13%), 4 vulnerable populations such as ethnic minorities, immigrants, refugees, or people with intellectual disabilities (17%), 4 the general population (17%), 2 university or medical students (9%), and 1 adult men (4%).

Cross-country comparisons revealed distinct patterns. Italy showed the highest number of studies and substantial internal variability, with moderate knowledge in the general population but very low levels among migrants and incarcerated women. Romania consistently displayed the lowest CL and screening participation. Belgium and Portugal, although less represented, highlighted persistent inequalities among migrant and foreign-born women, whose knowledge and screening engagement were lower than native populations.

The analysis highlights broad and persistent inequalities in cancer prevention related to education, migration status, ethnicity, gender, geographic location, and socio-economic conditions, resulting in low participation in screening and vaccination, limited literacy, and greater mistrust of the healthcare system, emphasizing the need for targeted, culturally adapted interventions. In Romania, only 9% of eligible women underwent mammography in 2020, and the 5-year breast cancer survival rate is 75%, below the EU average (82%); adolescent HPV awareness is just 20%. In Italy, participation in preventive campaigns is higher among those with easy access to services, but knowledge varies only 59% understand the purpose of screening, while among incarcerated women, 70% had never heard of the HPV vaccine and only 11.2% had correct composite knowledge. In Belgium and other Western countries, screening is lower among non-European migrant women, while in Portugal sociocultural factors reduce uptake among African and older women. Adults with intellectual disabilities in Nordic and Anglo-Saxon countries, such as Ireland, face logistical and communication barriers.

Cancer prevention literacy was low across studies, particularly in vulnerable populations. In Romania, only 51.3% knew HPV can cause cervical cancer, 28.8% among never-tested women, and adolescent awareness was 20.2%, with only 6.6% achieving high knowledge. In Italy, HPV-related knowledge varied: 93.3% knew of HPV

infection, but only 51.4% understood its protective role; awareness of non-cervical HPV-related cancers was low (penile 35.1%, oral 30.7%, anal 22.8%), while knowledge of cervical cancer prevention was higher (HPV vaccine 79.1%, Pap tests needed after vaccination 82.4%), with general awareness moderate (males 39.7%, females 60.3%). Only 59% of adults understood screening prevents cancer early, and just 26% of Italian adolescents correctly identified risk factors, with 83% reporting the need for more information. Breast CL was also limited: 82% of Chinese women in Italy considered themselves "little informed," compared with 70% of Italian women who felt "sufficiently informed." Across 23 European countries, knowledge of skin cancer risk was lowest in Italy (16%), higher in Portugal (38%), Ireland (45%), and Belgium (34%). In Ireland, 44% of men over 40 had inadequate CL, with those more literate relying on Internet, social media, and radio.

The most frequent barriers across contexts were low literacy, misinformation, cultural and linguistic obstacles, socio-economic disadvantage, limited trust in the healthcare system, and restricted access to prevention services. Facilitators included clear recommendations from healthcare professionals, brief educational interventions, culturally adapted communication, and free or community-based screening and vaccination initiatives, which improved knowledge and, in some settings, increased uptake, though impacts varied across countries and populations. The main characteristics of the 23 included studies, including study design, country, target population, cancer type, cancer prevention literacy levels, identified inequalities, and reported barriers and facilitators, are summarized in Table 3.

Table 3. Characteristics of included studies on cancer prevention literacy in Consortium Countries

First author and year	Study type	Country	Target population	Cancer type	Intervention described	Literacy Level	Inequalities	Barriers (B) or Facilitators (F)
Achimaș-Cadariu T, 2025 (30)	Cross-sectional	Romania	Children (n=199, ethnic minorities, low SES, high vulnerability index)	Cervical cancer	knowledge and attitude	Before the intervention, 44.7% knew that HPV can be asymptomatic; 51.3% that it causes cervical cancer; after the intervention, 79.9% recognized HPV as an STD; 64.8% knew its link to genital warts	Healthcare access, socioeconomic and ethnic inequalites	B: Low awareness, cost, parental consent, peer uncertainty, cultural beliefs. F: Brief education, doctor advice, free/low-cost vaccine, school delivery, positive vaccine beliefs.
Derveeuwet S,	Cross-sectional	Belgium	Women, migrants (n=6,247,	Cervical cancer	screening partecipation	Comprehensive health literacy (CHC):	Ethnic inequalities;	B: Poor continuity, perceived

2025 (31)			age=25–64)			knowledge, skills, behaviours, empowerment, provider interaction	healthcare access	discrimination, system complexity, socioeconomic disadvantage, low trust. F: Preventive behaviours, check-ups, provider engagement, higher CHC (less effective in non-EU migrants).
Saveliev GM, 2025 (32)	Narrative review	Europe (focus on Romania)	Women (n=NA, age=11–64)	Cervical cancer	knowledge	Low health literacy in Romania; limited HPV/screening/vaccine knowledge; misinformation	Geographic, socioeconomic, cultural inequalities	B: Low screening uptake, poor awareness, weak rural infrastructure, referral gaps, no registry, hesitancy, poverty. F: Free/partial reimbursement, EU support, self-sampling pilots, NGO/school campaigns, digital tools.
Savoia P, 2025 (33)	Cross-sectional	Italy	General population (n=1,773, age=6–91)	Skin cancer	knowledge	High education but knowledge gaps in photoprotection and skin cancer	Socioeconomic, ethnic inequalities; healthcare access	B: Misconceptions, incorrect sunscreen use, dissatisfaction, low inclusion of disadvantaged groups, language/integration issues. F: Free visits, public campaigns, family/personal history awareness.
Conte L, 2025 (34)	Qualitative study	Italy	Women, Chinese (n=230, age=50–69)	Breast cancer	knowledge	Self-perceived literacy: Chinese women “little informed” (82%), Italian women “sufficient” (70%) on breast cancer prevention	Socio-cultural and socioeconomic inequalities	B: Low awareness, access barriers, cultural beliefs, low education.
Silva J, 2024 (35)	Qualitative study	Portugal	Women, migrants (n=23, age=25–64); Healthcar	Cervival cancer	attitude	Low knowledge and misperceptions on cervical cancer/screening	Ethnic inequalities; healthcare access	B: Cultural norms, structural barriers, lack of culturally/linguistically appropriate info,

			e professionals (n=12, age=25–45); Community workers (n=10, age≥25)					psychosocial barriers (shame).
Conte L, 2023 ((36)	Qualitative study	Italy	Women (n=338, age=50–69)	Breast cancer	screening participation	Italian women feeling "sufficiently informed" (70%)	Healthcare, education, age, geographic inequalities	B: Low screening adherence, psychological barriers, limited awareness.
Klara S, 2024 (37)	Systematic Review	UK, USA, Canada, Ireland and Scotland	Caregivers of adults with intellectual disabilities (n=NA, age>18)	Breast cancer	prevention literacy	Caregiver knowledge low; limited understanding of cancer prevention in adults with intellectual disabilities	Healthcare access inequalities	B: Communication issues, low awareness, logistical barriers (transport, accessibility, sedation).
Mihai AM, 2024 (38)	Qualitative study	Romania	Women (n=1,705, age>18)	Breast cancer	prevention literacy	Low health literacy as key screening barrier; 5-year survival 75% vs EU 82%; mammography 9% vs EU 60%; urban concentration (43.5%)	Healthcare, geographic, urban/rural inequalities	B: Low screening adherence, low awareness, socioeconomic/ cultural barriers, low trust. F: Organized screening, doctor–patient relationship, family/personal history, clear advice.
Voidăzan S, 2023 (39)	Cross-sectional	Romania	Women (n=759, age=16–64)	Cervical cancer	knowledge and attitude	Low literacy: HPV-tested 63%; never-tested 28.8%	Socioeconomic, ethnic, rural–urban, education/income inequalities	B: Low awareness of programs, distrust in free screening, costs, fear, poor access, low vaccine uptake.
Paduano G, 2023 (40)	Cross-sectional	Italy	Women (n=446, age>18)	Oropharyngeal cancer (HPV-related)	knowledge and attitude	Low–moderate literacy; HPV infection knowledge 93.3%, protective role 51.4%	Age-related (lower in older women), urban/rural inequalities	B: Low perceived risk, safety concerns, low usefulness perception, limited dentist information.
Sharp L, 2023 (4)	Qualitative study	Multi-country Europe (Romania, Portugal,	Vulnerable people (n=40, intellectual disabilities, immigran	General cancer prevention	knowledge	Low cancer prevention literacy in vulnerable groups (immigrants, intellectual disabilities)	Socioeconomic, ethnic, disability, age inequalities	B: Communication barriers, inaccessible info, low relevance, limited screening/vacci

		Moldova, etc.)	ts, young adults, young cancer survivors, aged 18–29)					nation access, digital divide.
Di Giuseppe G, 2022 (41)	Cross-sectional	Italy	Women, detained (n=214, age=18–77)	HPV-related cancers	knowledge and attitude	Very low literacy; 48.6% did not know HPV is an STD; 36.4% knew HPV can cause cervical cancer; 16.8% knew HPV can cause oral cancer; 39.7% knew HPV can cause abnormal Pap smears; 29.4% knew HPV can cause genital warts; 70% never heard of HPV vaccine; only 11.2% had correct composite HPV knowledge.	Incarceration, education and socioeconomic inequalities	B: Lack of medical information, poor access, embarrassment, low risk perception, prison structural barriers.
Condon L, 2021 (42)	Qualitative study	Lithuania, Portugal, Italy, Romania, Serbia	General population (n=41, age=18–74)	General cancer prevention	knowledge	Cancer prevention literacy generally low; misconceptions, unreliable online sources	Disability, informational, socioeconomic, ethnic inequalities	B: Misinformation, complex content, language/cultural barriers, low relevance. F: Simple, visual, tailored communication, trusted sources, community support.
Di Giuseppe G, 2020 (43)	Cross-sectional	Italy	Adolescents (n=871, age=13–20)	General cancer prevention	knowledge and attitude	26.1% good knowledge of cancer risk factors; 97% correct cancer definition; 83.4% want more info	Socioeconomic and informational inequalities	B: Insufficient physician education, unhealthy behaviours.
Mereu A, 2019 (44)	Cross-sectional	Italy	General population (n=270, age=18–75)	Breast, Cervical, Colorectal cancer	knowledge	59.3% aware of screening purpose	Educational inequalities	B: Gender and education gaps (men OR=2.01; low education OR=2.18; Pap awareness OR=7.15)
Drummond FJ, 2019 (45)	Cross-sectional	Ireland	Men (n=259, age≥40)	General cancer prevention	prevention literacy	Inadequate health literacy 44%; active info-seeking ~50%; information	Gender inequalities (men lower literacy)	B: Low education/confidence, discomfort. F: Marriage, higher

						channels differ by literacy level, 2.9 times more likely to actively seek cancer information 4.7 times more likely to passively acquire cancer information, Inadequate literacy: General practitioners (53.3%) and television Adequate literacy: Internet (57%), social media, radio		education, higher cancer concern.
Mascaro V, 2019 (46)	Cross-sectional	Italy	Medical students (n=517, age=18–30)	HPV-related cancers	vaccination uptake	Low knowledge of non-cervical HPV-related cancers; 37.9% correct knowledge of HPV-related diseases; 79.1% knew HPV vaccine protects against cervical cancer; 82.4% knew Pap tests still needed after vaccination; 47.4% knew vaccine available for both sexes; 51.5% knew antibiotics do not treat HPV; 8.4% knew infection often clears without treatment; 35.1% knew HPV can cause penile cancer; 30.7% oral cancer; 22.8% anal cancer.	Gender, education, age inequalities	B: Feeling not at risk (37.8%), older age, poorly informed. F: High willingness 60.5%, knowledge both sexes at risk (OR=3.46), knowledge vaccine protects cervical cancer (OR=2.82), younger age.
Baldovin T, 2019 (47)	Cross-sectional	Italy	Students (n=9,988, age=18–25)	HPV-related cancers	knowledge and attitude	Low HPV/vaccine knowledge; males 39.7%, females 60.3%, vaccinated 26.7%	NA	B: Low knowledge, fears, low awareness. F: Perceived usefulness, trust in healthcare, positive attitudes.
Napolitano F,	Cross-sectional	Italy	Vulnerable people (n=427,	HPV-related cancers	screening participation	Low health literacy in vulnerable	Urban/rural; survival gap	B: Low screening participation

2018 (48)			immigrants and refugees or parents of children, age=12–26)			populations; HPV knowledge 15.9%, transmission 83.8%, vaccine protection 47.1%, vaccine availability 44.1%	vs Western Europe	(9%), low awareness, socioeconomic barriers, rural residence, cultural factors, lack of female doctors, time/mobility limits. F: Organized screening, education, doctor–patient relationship, prior/family history.
Grigore M, 2017 (49)	Cross-sectional	Romania	Women, urban and rural (n=454, age=25–64)	Cervical cancer	screening participation	Lower literacy in rural/low-education groups; awareness of cervical cancer 95%, Pap role 71.2%	Rural–urban and socioeconomic inequalities	B: Cost, embarrassment, fear, misconceptions, fatalism.
Seité S, 2017 (50)	Cross-sectional	Multi-country Europe (Belgium, Ireland, Italy, Portugal, etc.)	General population (n=19,569, age=15–65)	Skin cancer	knowledge	Lower literacy younger people, men, lower education, lower socioeconomic groups; skin cancer knowledge Italy 16%, Portugal 38%, Ireland 45%, Belgium 34%	Geographical, socioeconomic, gender, education inequalities.	B: Low protective behaviours, limited self-exam, low medical consultation, lower awareness in men/young/low-SES.
Maier C, 2015 (51)	Cross-sectional	Romania	Adolescents (n=524, age=16–18)	Cervical cancer	knowledge and attitude	Very low HPV literacy; 20.22% heard of HPV, 6.6% high knowledge	Income, family structure, sexual behaviour inequalities	B: Lack of information (80.69%), parental safety concerns (11%), fear of pain (5.59%), not sexually active (2.7%), schools not used.

Desk research results

The desk research led to the inclusion of three reports and four articles on CL. Table 4 summarizes the findings from the reports, while Table 5 presents the results from the articles.

Table 4. Cancer literacy in consortium countries: evidence from national and international reports

Country (study population)	Document title [REF]	Author, Year	Cancer literacy
Moldova (1,142 women)	Post-Intervention KAP Survey on Assessment of Knowledge, Attitudes and Practices on Cervical Cancer Prevention in the Republic of Moldova (52)	Ministry of Health of the Republic of Moldova, 2020	51% know about the cervical screening service. 38% know about HPV vaccine. 34% would vaccinate their daughter.
Bulgaria (1,000 adults)	Bulgaria: Symptom Awareness and Attitudes to Lung Cancer – Findings from a Global Study (53)	Global Lung Cancer Coalition, 2017	64% could not name a single symptom of lung cancer.
Ireland (2,874 adults)	National Survey on Cancer Awareness and Attitudes (54)	National Cancer Control Programme and Ipsos Ireland, 2022	87% believe that cancer patients can have normal lives. 86% believe cancer is curable. 90% believe that cancer risk can be modified. 27% have incorrect knowledge about smoking and lung cancer. 10% believe that second-hand smoke doesn't increase cancer risk. 50% recognize the role of alcohol as a risk factor for cancer; 45% have incorrect knowledge on the entity of the relation. 95% report that they use at least one sun protection measure.

In Moldova, the national report revealed significant gaps in CL, with many respondents demonstrating limited knowledge of HPV transmission, cervical cancer risk factors, and the purpose of Pap testing. Notably, no statistically significant differences were observed between urban and rural areas.

In Bulgaria, on average, adults could name only one symptom of lung cancer, highlighting low recognition of early signs.

In Ireland, the national survey showed that the majority of adults are aware that tobacco smoking and unprotected sun exposure can cause cancer. However, there are lower levels of awareness of the cancer risk associated with alcohol consumption, dietary factors, physical activity, body weight, breastfeeding, infection and medication. The survey also reported that only a small share of respondents reports barriers to consulting a GP when experiencing possible cancer signs or symptoms. The most frequently mentioned obstacles include difficulty in getting an appointment with a specific doctor (16%) or at a suitable time (14%), as well as the financial cost of the visit (13%). Notably, respondents under 35 are more likely than older age groups to report such barriers.

Table 5. Cancer literacy in consortium countries: evidence from journal articles

Country (study population)	Article title [REF]	First author, Year	Cancer literacy
Bulgaria (64 adult female parents of female children)	Attitudes and Awareness Related to Cervical Cancer Vaccine (55)	Ruschukova DN, 2024	70.32% are aware of cervical cancer; 71.88% are aware of risk factors; 78.12% know about HPV.
Portugal (170 students)	Assessing Cancer Knowledge among Health Students in Portugal (56)	Barros A, 2025	45.9% don't know how to reduce a woman's risk of getting breast cancer; 50% had partial knowledge of lung cancer; 13.5% don't know the role of sun in skin cancer.
Romania (106 cancer patients and 84 caregivers)	Health Literacy and its Impact on Cancer Care for Patients and Caregivers in Romania (57)	Sumanu SA, 2023	Among cancer patients: 13.2% had low health literacy,61.3% had moderate health literacy, and 25.5% had high health literacy. For caregivers: 17.9% had low health literacy, 57.1% had moderate health literacy, and 25.0% had high health literacy.
Romania (71 cancer patients)	Knowledge, Attitudes and Practices Related to Prevent Oral Complications During Chemotherapy Among Patients Attending an	Padure A, 2024	8.3% had knowledge that the preventive orodental treatment was an integral part of the oncological pathway; 2.7% followed preventive dental treatments before the cancer therapy.

	Oncology Clinic in Romania (58)		

In Romania literacy is influenced by socioeconomic factors, education, and the limited preventive culture in the country. The authors conclude that health literacy significantly affects patient outcomes, such as adherence, satisfaction, and overall well-being, and that insufficient CL may contribute to delayed diagnosis, poor understanding of treatment options, and difficulties navigating the healthcare system. The prevalence of low literacy is particularly concerning in light of findings from Padure and colleagues, who report that 79.1% of patients experienced at least one adverse effect in the oral cavity, yet only 2.7% had undergone preventive dental treatment before starting cancer therapy, despite the fact that orodental care is an integral component of the oncological pathway.

In the Bulgarian study, respondents demonstrated relatively good awareness of cervical cancer, HPV infection, and related risk factors. Awareness varied by age and marital status, with younger and unmarried women showing higher knowledge levels. However, many participants lacked a full understanding of vaccine effectiveness, and more than half expressed distrust due to concerns about side effects, the belief that the vaccine does not replace screening, and the perception that it does not protect against all HPV types. Awareness levels also shaped attitudes toward perceived infection risk and vaccination effectiveness. Low HPV vaccination uptake aligns with the country's overall low national vaccination coverage.

Despite generally satisfactory levels of cancer knowledge, the Portuguese study highlighted the need for more engaging campaigns targeting students, especially those that emphasize prevention as a strategy to reduce cancer incidence.

Documents in national languages

Hereinafter, we present a synthesis of the documents provided by the consortium country partners, organized by country and focusing on the availability of data on CL. This overview maps existing evidence across participating countries and highlights gaps where data are currently lacking.

The partners initially provided 75 documents. After applying the inclusion and exclusion criteria, 30 documents were retained for analysis. The detailed breakdown, including the number of documents per country, reasons for exclusion, and characteristics of the included documents, is presented below.

ROMANIA

Romanian partners provided seven documents addressing CL in prevention and care in Romania. Table 6 summarizes these documents, detailing the type of publication, authors, year, population, and key findings related to CL.

The Romanian studies cover the period from 2020 to 2025. Most of the documents are survey-based reports, while one is longitudinal, allowing analysis of changes in attitudes and knowledge over time. Data were collected using structured questionnaires administered via digital and printed formats, CATI (Computer-Assisted Telephone Interviewing), and CAWI (Computer-Assisted Web Interviewing) to assess CL.

The studies primarily focused on population-level knowledge, attitudes, and behaviours related to cancer prevention, including health information consumption, awareness of preventive measures, and HPV-related knowledge. CL was assessed through self-reported understanding of risk factors, participation in screening, preventive behaviours, and attitudes toward vaccination and early detection, revealing overall limited and uneven levels of literacy across the population. The thematic focus is largely on cancer prevention, with very limited attention to treatment, and the most explicitly addressed cancer type is HPV and cervical cancer, while the remaining studies focus on breast cancer and cancer in general. Overall, literacy levels were low to moderate, with higher awareness related to HPV and cervical cancer prevention compared to other cancers, and pronounced gaps in knowledge regarding risk factors, screening programs, and early detection. Key gaps identified across studies include limited understanding of preventive behaviours, uneven access to information between urban and rural populations, which continue to undermine effective cancer prevention efforts. Treatment was rarely addressed.

Table 6. CL in Romania: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Analysed population	Cancer literacy
Studiu despre consumul de informație și alfabetizare în sănătate în România (Study regarding the patterns of information consumption and the levels of health literacy in Romania)(59)	Asociația CREDU, 2025, Report	General population (n=2350)	65% seek health information when dealing with personal or family health issues, 58% for prevention.
Aproape jumătate dintre români nu și-au făcut niciodată un test de screening, deși 93% se tem de cancer (Almost half of Romanians have never had a screening test, although 93% fear cancer(60)	Medisprof, 2023, Report	General population (n=1500)	61% engage with the healthcare system only when ill 40% have never undergone a screening exam. 33% would prefer not to know if they had cancer.
Cunoștințe, atitudini, practici (CAP) ale populației privind prevenția și depistarea precoce a cancerului (Knowledge, attitudes, practices (KAP) of the population regarding cancer prevention and early detection) (61)	National Institute of Public Health - National Center for Surveillance and Control of Communicable Diseases, 2023, Report	General population (n=1523, representative for Romania, aged 25-74)	25% undertook preventive measures in the past three years. 30% have heard of "EU Code Against Cancer" (more often women and older adults).
Comportamentul, atitudinile și percepția cu privire la vaccinarea anti-HPV în România (Behaviors, attitudes and perceptions regarding HPV vaccination in Romania)(62)	Asociația Eurocomunicare (EUROC), Centre for Innovation in Medicine (INOMED) - as part of the project: "ReThinkHPVaccination", 2023, Reportand project deliverable	General population (n=1100, representative for Romania, aged 18+)	79% have heard about HPV infection (mostly young women in urban areas). 67% have not received recommendations regarding HPV-vaccination. The main reason for not being vaccinated is the lack of recommendation (90%).

			70% are aware of the association between HPV and cervical cancer. 50% believe that HPV vaccination prevents cervical cancer.
Atitudini și percepții despre cancer în rândul populației României (Perceptions and Attitudes toward Cancer in an Eastern European Country: Longitudinal study) (63)	Centre for Innovation in Medicine (INOMED), 2024, Longitudinal study	General population (n=3030, representative for Romania, aged 18+)	78% believe in cancer prevention. 71% believe in cancer curability.
Cunoștințe, atitudini și practici ale femeilor cu privire la cancerul de col uterin (Women's knowledge, attitudes and practices regarding cervical cancer)(64)	The National Institute of Public Health-Health Ministry, 2024, Report	General population, Women (aged 24-64), HCPs (total n=1605)	50% have heard of cervical cancer and know its risk factors. 60% know of cervical cancer symptoms. 80% believe that cervical cancer can be cured and prevented. 75% of respondents believe that there is a treatment 25% of women have heard of HPV and 50% of them are aware of HPV vaccination.
Cunoștințe, atitudini și practici ale femeilor cu privire la screening-ul cancerului de sân (Women's knowledge, attitudes and practices regarding breast cancer screening)(65)	The National Institute of Public Health - Health Ministry, 2020, Report	Women (n=1119, aged 50-69)	88% have heard of mammography. 58% have incorrect or no information about screening eligibility. 78% have never performed a mammogram.

MONTENEGRO

Montenegrin partners provided one document addressing CL in prevention and care in the country. Table 7 summarizes the content of this document.

The study aimed to assess women's knowledge, awareness, and practices related to reproductive health, with a particular focus on attitudes toward prevention, participation in preventive examinations, gynecological check-ups, self-examination, and sources of information. The study was conducted via a survey administered in English to 1,104 women from nine municipalities in Montenegro. The results document the frequency of preventive practices, including Pap tests, mammography, breast ultrasound, and self-examination, reflecting levels of knowledge and self-reported awareness. Although the sample included women of varying ages, employment status, and both urban and rural backgrounds, it may not be fully representative of Montenegro's female population.

Table 7. Cancer Literacy in Montenegro: evidence from a national search

Title [REF]	Author, Year, Document format	Analyzed population	Cancer literacy
Results of the survey on knowledge and habits in the area of reproductive health (66)	FORS Montenegro, 2019, Report	Women (18+, from nine municipalities at North of Montenegro)	44% have never had a preventive examination; 32% have never done a self-examination; 47% have never had an ultrasound breast examination; 60% have never had a mammography examination; 49% have never had a PAP test.

UKRAINE

Ukrainian partners provided 17 documents. Eight of these were excluded because they focused on general health literacy without reference to CL, addressed only healthcare professionals, or did not include information on CL levels. Nine documents were included in the analysis. Table 8 summarises these documents, detailing the type of publication, authors, year, and key findings related to CL. All documents targeted the general population, although none reported the sample size.

The Ukrainian documents, published between 2016 and 2025, include national reports, policy frameworks, and scientific studies. They address all cancers in general, with specific attention to cervical cancer and lung cancer, and primarily focus on prevention and early detection, rather than treatment. Overall, the findings indicate low levels of CL. Significant gaps were observed in awareness of risk factors, participation in screening programmes, and adoption of preventive behaviours. Inequalities in access to information were also noted.

Table 8. Cancer Literacy in Ukraine: evidence from a national search

Title [REF]	Author, Year, Document format	Cancer literacy
Order of the Cabinet of Ministers of Ukraine dated August 2, 2024 No. 730-p. On approval of the National Strategy for the Control of Malignant Neoplasms for the period until 2030 and approval of the action plan for its implementation for the period until 2025 (67)	Cabinet of Ministers of Ukraine, 2024, Order	Low level of awareness among the population and a certain number of medical professionals regarding the prevention of malignant neoplasms. Insufficient level of awareness among the general population about the symptoms of malignant neoplasms
Bulletin of the National Cancer Registry of Ukraine, Vol. 24. Kyiv – 2023 (68)	National Cancer Registry of Ukraine, 2023, Analytic report	Low level of cancer awareness
Analytical report on the results of the assessment "Improving indicators on non-communicable diseases: barriers and opportunities for the healthcare system in Ukraine" (69)	Ukrainian Swiss project "Acting for health", 2023, Analytic report	Low level of awareness about dangers of non-communicable diseases. Low level of awareness of the symptoms of malignant neoplasms among the population. Insufficient level of awareness among the female population about the importance of undergoing mammography.
Oncology in Ukraine: results of 2021(70)	Medical newspaper "Heatlh of Ukraine", 2022, Analytical report	48% believed that confession helps in curing cancer; 40% ever searched for cancer information less than 50% were informed about cancer screening (mostly women); 65-72% believed that stress causes cancer;

		18-59% believed that negative emotions cause cancer.
Report on the results of the public opinion survey of the population of Ukraine on lung cancer(71)	Ukrainian office of the international research agency IFAK Institut, 2020, Report	16% didn't know/couldn't respond who they should contact in case of lung cancer suspicion; 10% knew/heard about state programs of lung cancer treatment or social programs aimed at informing people about lung cancer. 59% suggested that the most prevalent cancer in women is breast cancer; 49% suggested that the most prevalent cancer in men is lung cancer; 40% knew/heard about the symptoms of lung cancer

Analysis of the survey on cancer in the Odessa region(72)	Odessa Regional Center for Disease Control and Prevention, 2025, Report	97% could define what is cancer 100% understood at least partially terms "primary prevention", "screening" and "diagnosis" 15% didn't know what is oncoscreening 76% suggested that cancer is a prevalent problem in their geographical area 90% claimed that they would seek family doctor or oncologist consultation in case of cancer suspicion 23% didn't know if there are healthcare centers capable to diagnose cancer nearby
Sociological research on the awareness and involvement of women in Vinnytsia city in breast cancer screening(73)	Journal "Reports of Vinnytsia National Medical University", 2025, Scientific paper	Low level of awareness and medical activity of women regarding secondary prevention of breast cancer.
Assessment of awareness of women in Uzhhorod about cervical cancer and their motivation for cytological screening (74)	Journal "Ukraine. Nation's Health", 2016, Scientific paper	30% don't know anything about cervical cancer 47% don't know about Pap-test
Analysis of awareness and attitudes of the adult population towards diseases of the genitourinary system (75)	Journal "Intermedical journal", 2025, Scientific paper	Insufficient level of awareness among men about diseases of the genitourinary system

PORTUGAL

Portuguese partners provided 33 documents. Twenty-nine of these were not included in this report because they focused on general health literacy without reference to CL or did not include information on CL levels. Four documents were included in the analysis. Table 9 summarises these documents, detailing the type of publication, authors, year, analysed population and key findings related to CL.

The Portuguese documents, published between 2021 and 2024, include three master's theses and one research paper. Two studies address cancer in general, while the remaining two focus specifically on oral and breast cancer. Overall, the findings indicate suboptimal levels of CL, with notable gaps in awareness of risk factors, preventive behaviours, and participation in screening activities.

Table 9. Cancer Literacy in Portugal: evidence from a national search

Title [REF]	Author, Year, Document format	Analysed population	Cancer literacy
Assessment of the quality of life and health literacy in oncologic patient submitted to radiotherapy (76)	Silva C, 2021, Master's thesis	Cancer patients (n=84)	58.3% have limited literacy
Assessment of knowledge about oral cancer in a population observed within the scope of a cancer screening program in Portuga(77)	Andrade M, 2023, Master's thlesis	General population (n=2374)	83.1% had heard of oral cancer. Tobacco and alcohol were identified as the main risk factors by 86.0% and 58.6% of the participants, respectively. Non-healing ulcers (62.6%), red or white spots (45.7%) and increases in volume (37.9%) were recognized by the participants as early signs of oral cancer.
From knowledge to prevention – Breast Cancer (78)	Paraíso R et al, 2022, Research paper	General population (n=29)	90% have adequate literacy on breast cancer, namely risk factors/protectors of the disease and warning signs.
CL among young university students and motivation for volunteering (79)	Rosa As et al, 2024, master's thesis	Students (n=308, aged 18+)	22.4% of respondents recognized that reducing alcohol consumption is a key factor in lowering the risk of developing breast cancer. 29.2% correctly identifying "having fair skin" as the factor associated with the highest risk of developing skin cancer. 31.5% answered correctly regarding the relationship between regular physical exercise and the reduction of colon cancer risk.

			92.9% correctly identified that breast cancer mainly affects women. 96.8% answered correctly regarding the mammogram exam.

BELGIUM

Belgium partners provided five documents. Three were excluded from the present analysis as they focused on general health literacy without specific reference to CL or did not report information on CL levels. Two documents met the inclusion criteria and were therefore included in the analysis. Table 10 summarizes these documents, detailing the type of publication, authors, year, analysed population and key findings related to CL.

Table 10. Cancer Literacy in Belgium: evidence from a national search

Title [REF]	Author, Year, Document format	Analysed population	Cancer literacy
Belgian Health Survey HL Indicators(80)	Sciensano, 2024, National report	Belgian population (15+)	55.4% excellent literacy, 31.1% sufficient literacy, 10.7% problematic literacy, 2.8% inadequate literacy.
Flemish Colorectal Cancer Screening Reports(81)	Vlaamse Overheid / Bevolkingsonderzoek, 2023, Programme evaluation report	General population (aged 50-70)	50–70% colorectal cancer screening uptake by municipality.

IRELAND

Irish partners provided seven documents. Four were excluded from this report because they focused on general health literacy without reference to CL, or they did not include data on CL levels. Three documents met the inclusion criteria and were included in the analysis. Table 11 summarizes these documents, providing the type of publication, authors, year, study population, and key findings related to CL. Overall, the Irish evidence reported high levels of CL, while highlighting persistent gaps in knowledge regarding lung cancer risk factors and of the bowel cancer screening program.

Table 11. Cancer Literacy in Ireland: evidence from a national search

Title [REF]	Author, Year,	Analysed population	Cancer literacy

	Document format		
Cancer awareness among adolescents in Irish schools (82)	Lawrence SM et al, 2025, Scientific article	Adolescents (n=474, aged 10-19)	93.7% recognize smoking as a cancer risk factor. 14.8% recognize eating less than five portions of fruit and vegetables a day as a` 70.3% were aware of the national breast screening program. 59.1% were aware of the national cervical screening program. 35% were aware of the national bowel screening program.
National Survey on Cancer Awareness and Attitudes(83)	National Cancer Control Programme and Ipsos Ireland, 2022, National report	General population (n=2874)	87% believe that cancer patients can have normal lives. 86% believe cancer is curable. 90% believe that cancer risk can be modified. 27% have incorrect knowledge about smoking and lung cancer. 10% believe that second-hand smoke doesn't increase cancer risk. 50% recognize the role of alcohol as a risk factor for cancer; 45% have incorrect knowledge on the entity of the relation. 95% report that they use at least one sun protection measure.
Health literacy, eHealth literacy and outcomes for cancer caregivers in Ireland(84)	Moore C et al, 2024, Scientific article	Cancer caregivers (n=208, aged 20-77)	7% of cancer caregivers were in the inadequate health literacy category.

BULGARIA

Bulgarian partners provided two documents. One document was included in the analysis and is summarized in Table 12, while the second was excluded because it fell outside the predefined inclusion period, having been published in 2013. According to the first European Health Literacy Survey (HLS-EU, 2012), Bulgaria ranked last: 61.4% of respondents exhibiting limited health literacy. This finding implies that approximately two out of three individuals have difficulties understanding health- related information, which may contribute to low levels of preventive behaviours and poor adherence to

prescribed treatments. Moreover, higher proportions of limited health literacy were observed among population subgroups characterized by financial deprivation, low social status, low educational attainment, and older age. These disparities indicate a social gradient in health literacy, as confirmed by both bivariate analysis and multivariate linear regression model (85).

Table 12. Cancer Literacy in Bulgaria: evidence from a national search

Title [REF]	Author, Year, Document format	Analysed population	Cancer literacy
Knowledge, screening history and satisfaction among eligible for cancer screening people in Bulgaria(86)	Panayotova et al, 2019, Scientific article	General population (n=300)	93% have heard the term "PAP smear" and 93% have adequate knowledge. 86% have heard about mammography and 71% have adequate knowledge. 71% have heard about faecal blood test and 25% have adequate knowledge. 33% are aware of cervical cancer screening program. 20% are aware of breast and colorectal cancer screening program.

MOLDOVA

Moldovan partners provided three documents, summarized in Table 13.

The analysis of the documents highlights substantial gaps in cancer-related literacy, with Moldova consistently showing the lowest levels of knowledge in cross-country comparisons. Limited and insufficient information on cancer prevention and screening emerges as a key barrier, alongside long waiting times, negative attitudes of medical staff, and superficial medical consultations, all of which negatively affect patient understanding and engagement. Awareness of free screening services remains low, and widespread misconceptions persist regarding the purpose of screening tests, as well as eligibility criteria and access pathways. The documents also report pronounced inequalities, with women living in southern regions and those with lower socio-economic status being significantly less informed. Persistent urban–rural disparities further exacerbate differences in knowledge and access to cancer prevention and care services.

Table 13. Cancer Literacy in Moldova: evidence from a national search

Title [REF]	Author, Year, Document format	Analysed population	Cancer literacy
Exploring dental students' knowledge on oral cancer prevention: a cross-sectional study in Moldova, Armenia, and Belarus (87)	Golburean O et al, 2025, Journal article	Students (n=642)	45% scored below mean; 58.9% identified alcohol as oral cancer risk factor; 56.9% recognized older age as risk factor; students who smoke have lower knowledge scores
Studiul KAP 2020 post-intervenție: Cunoștințele, atitudinile și practicile în domeniul prevenirii cancerului de col uterin în R. Moldova(88)	UNFPA Moldova, SDC, Ministerul Sănătății (Magenta Consulting), 2020, Research study report (follow-up)	Women (n=1142, aged 25-61)	62% were aware of screening programmes
Studiul pentru evaluarea cunoștințelor, atitudinilor și practicilor în domeniul prevenirii cancerului de col uterin în R. Moldova (Studiu KAP 2018 - Baseline) (89)	UNFPA Moldova, SDC, Ministerul Sănătății (Magenta Consulting), 2018, Research study report	Women (n=1226, aged 25-61)	59% had never undergone a Pap smear; 25% were aware of the possibility of being tested; 47% had heard of the test; 47% knew that the test is free of charge

ITALY

Italian partners provided two documents, summarized in Table 13. The Italian data indicate generally low levels of cancer literacy, with notable differences across age groups. Communication emerges as a key facilitating factor, particularly when it supports patient engagement and involvement in decision-making processes. At the same time, the findings highlight a risk of misinformation, which may further affect understanding of cancer prevention, diagnosis, and care.

Table 14. Cancer Literacy in Italy: evidence from a national search

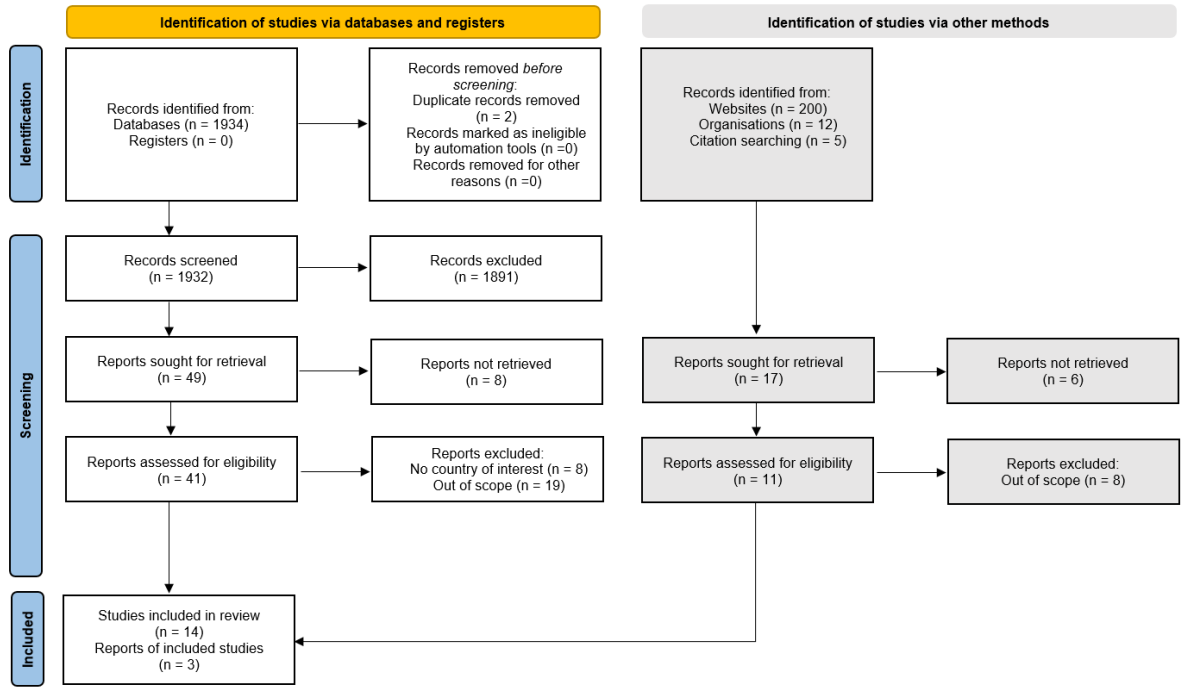
Title [REF]	Author, Year, Document format	Analysed population	Cancer literacy
Investigation of the association between	Epicentro – ISS, 2022, Report	Onco-hematological	Evidence of higher digital health

digital health literacy and satisfaction with the treatment received in onco-hematological patients. (90)		patients undergoing treatment (sample from the IT-eHEALS study)	literacy among younger patients and higher satisfaction among younger patients; an association between nursing communication and digital health literacy level
Instructions for safe navigation(91)	AIRC, 2023, webpage	General population	23% of the population has 'inadequate' health literacy and 35% 'problematic' health literacy

Barriers and facilitators

A total of 1,934 articles were identified through PubMed, 200 items through Google and ProQuest, 12 relevant references from institutional websites, and 5 additional items through snowballing. After removing duplicates, items were screened by title and abstract, resulting in a final assessment of 41 articles from PubMed and 11 items from the grey literature. The screening process is illustrated in Figure 3. Following the exclusion of articles not referring to consortium countries or not relevant to the two thematic areas of interest, 14 scientific articles and 3 reports were included in the analysis. The detailed results are presented in the following sections.

Figure 3. Screening process on barriers and facilitators in cancer prevention and care in Consortium Countries.



Scoping review results

The search yielded 1,934 items, of which 14 studies were included in the final analysis, all focusing on cancer prevention interventions, while no study addressed cancer care initiatives. Overall, the studies showed high heterogeneity in healthcare contexts, characteristics of the populations involved, and the preventive strategies considered. Regarding geographical distribution, Italy and Romania were the most represented countries, with 3 studies each (21.4% each), followed by Portugal and Ireland with 2 studies each (14.3% each). The remaining 4 studies came from European multicentre initiatives with broad geographic coverage (28.6%).

The populations studied varied: most studies (50%) involved general adult populations, while specific studies included vulnerable groups such as sex workers, HIV-positive individuals, or people with disabilities (1 study; 7.1%), adolescents and young adults aged 14–25 (1 study; 7.1%), LGBTQ+ individuals and testicular cancer survivors (1 study; 7.1%), healthcare and community workers (1 study; 7.1%), parents of children aged 10–14 (1 study; 7.1%), and migrant women (2 studies; 14.3%).

The described interventions focused on cancer prevention, with 7 studies (50%) targeting cancer screening (e.g., FOBT/colonoscopy, breast and cervical cancer screening, faecal immunochemical tests [FIT], Pap tests), 4 studies (28.6%) addressing HPV vaccination and related awareness, and the remaining 3 studies (21.4%) investigating educational campaigns (1 study; 7.1%), preventive pharmacological therapies (1 study; 7.1%), and 1 study (7.1%) examining only barriers without a specific type of intervention.

The studies focused on cancers preventable through screening or vaccination with 8 studies (57.1%) addressing cervical cancer, 2 studies (14.3%) on breast cancer, 2 studies (14.3%) on colon cancer, 1 study (7.1%) on testicular cancer, and 1 study (7.1%) examining multiple cancer types (bowel, breast, and/or cervical cancer).

Barriers to cancer prevention involve individual, socio-cultural, and systemic obstacles, such as difficulties in accessing services, lack of information, risk perception, fear of procedures or side effects, stigma, and distrust in institutions. In Romania, 55.8% feared side effects of the HPV vaccine, and 13.2% considered it unnecessary due to the absence of sexual activity, whereas in Italy the risk of non-vaccination was higher among those who perceived the vaccine as too new (adjOR = 21.08; 95% CI = 2.57–172.97) or potentially harmful (adjOR = 4.36; 95% CI = 1.26–15.07). Other barriers included socio-demographic differences (e.g., Chinese women in Italy), logistical difficulties, psychological issues, and religious or fatalistic factors.

Facilitators included both individual factors and educational or organizational interventions. In Portugal, younger age ($p < 0.001$), active employment ($p = 0.002$), family history of colorectal cancer ($p = 0.044$), absence of previous invitations ($p = 0.009$), higher perceived need for screening ($p < 0.001$), lower perceived negative consequences of colonoscopy ($p < 0.001$), and fewer time constraints ($p = 0.010$) increased intention to undergo colorectal cancer screening. In Italy, educational interventions included translation of materials into Mandarin for Chinese migrant women, community workshops, online campaigns, collaboration with local associations, and cultural competence training for healthcare professionals, while information from a pediatrician or general practitioner reduced the risk of non-vaccination against HPV (AOR = 0.40; 95% CI = 0.24–0.68). At the multicountry level, facilitators included family and social support, acculturation for mammography screening, self-testing for cervical cancer, use of media and influencers in Ireland, and continuity of care, culturally adapted information, and self-sampling in Portugal.

The results highlight inequalities in access to and participation in screening: in Italy, Chinese women showed low engagement in clinical checkups, with many attending

rarely or never, while Italian women participated regularly. In Romania, HPV awareness was higher in urban areas (185/242 women, 76.5%) than in rural areas (129/212 women, 60.8%), and higher education was associated with greater knowledge of infection and vaccination, with better access to information among those registered with a general practitioner and among 26.4% of parents actively seeking information ($p = 0.0001$). Across European countries, differences emerge between Eastern and Western Europe in approaches to sexually transmitted infections, while in Portugal migrant women participate less in cervical cancer screening compared to non-migrant women, although proactive healthcare professionals can improve adherence. In Ireland, gender, perceptions of screening consequences, and social influences affect men's and women's participation differently.

Data on CL show generally low or incomplete knowledge. In Portugal, 64% (n = 253) of participants did not know any colorectal cancer symptoms, and 68% (n = 271) were unaware of its risk factors; 58% (n = 230) did not know colonoscopy complications, and 86% (n = 341) were unaware of related risk factors. In Italy, 82% of Chinese women considered themselves "poorly" informed about breast cancer, compared to 70% of Italian women who considered themselves "sufficiently" informed ($p < 0.001$); 93% of Chinese and 88% of Italian women considered breast self-examination (BSE) useful. In Romania, 69.2% of women were aware of HPV, but with incomplete knowledge; 243 women (53.5%) knew it causes cervical cancer, 62.3% had heard of the vaccine, and only 50.7% viewed it positively. While 85.8% had heard of the infection and 82.9% linked it to cervical cancer, misconceptions about transmission were common (toilets 43.7%, public bathrooms 47.4%, blood 68.9%). In Italy, 96.3% knew it is sexually transmitted and 83.4% recognized its link to cervical cancer, but only 12.3% knew it causes genital warts, and about 70% of girls knew the vaccine does not guarantee safe sex. Table 14 summarizes the main characteristics of the studies included in the analysis of barriers and facilitators of CL across Consortium Countries.

Table 15. Characteristics of included studies on barriers and facilitators of cancer literacy in consortium countries

First author, Year [REF]	Study type	Country	Population	Cancer type - intervention	Barriers	Facilitators	Inequalities	Cancer Literacy
Silva JC, 2025 (92)	Cross-sectional	Portugal	General population (n=397)	CRC – screening program adherence	perceived financial burden, time constraints, and access limitations	younger age, active work status, CRC in second-degree relatives or acquaintances, no prior screening invitation, higher perceived testing need score, lower perceived negative health consequences of colonoscopy screening and lower perceived time constrain to colonoscopy screening	NR	64% did not know any CRC symptom; 68% did not know any risk factor. 58% did not know of any possible complications of CRC; 86% did not know of complications' risk factors
Conte L, 2025 (34)	Cross-sectional	Italy	Women (n=568)	BC - screening program adherence	Lack of awareness, challenges in accessing healthcare	overcoming language and cultural barriers; creating community-based educational workshop	Migrant women exhibited lower engagement	82% of migrant women have low literacy

					services, or cultural beliefs that influence their perceptions of breast health, socio-demographic characteristics (educational level, occupational status, family history of tumors, and previous breast pathology)	opportunities; creating online educational campaigns; collaborating with local organizations; periodic surveys and focus groups to assess changes in awareness and behaviour, and to refine educational strategies; training healthcare providers on cultural competence and communication	in clinical checkups than Italian women	about breast cancer prevention
Bøje RB, 2025 (93)	Qualitative study	Bulgaria, Denmark, Estonia, France, Italy, Portugal and Romania	Vulnerable women	CC - screening program adherence	NR	Education for healthcare professionals; involvement of cultural mediators; training of general practitioners, professional caregivers, cultural mediators; use of existing outreach teams; involvement of community leaders; focus on vulnerable women's needs;	NR	NR

						adoption of a holistic approach to healthcare services; creation of a screening registry and a centralized invitation system; implementation of supporting administrative tools; fundings; increasing awareness at schools and communities; translation in multiple languages.		
Çevik SH, 2025 (94)	Qualitative study	Romania, Germany, Italy, Spain, Portugal, UK, Ukraine, Cyprus, Belgium, Slovenia, Croatia, Montenegro, Lithuania	Adolescents (n=37, aged 14-25)	CC - HPV vaccination	Having no or minimal vaccine literacy; Insufficient knowledge and limited understanding of HPV and its role in cancer; Low awareness of the methods through which vaccination can prevent cancer in	Having access to HPV education materials; Having the knowledge that HPV is sexually transmitted; Having the knowledge that HPV vaccine prevents HPV-related cancers; Gender-neutral HPV vaccination programmes and being aware that vaccination is provided for free for	Difference between eastern and western European countries in approaching STIs	NR

		, Georgia, Turkey and Malta			men; Considering the subject of HPV a taboo. Lack of access to health services and vaccination programmes; Having to travel long distances in order to reach vaccination sites; Having to set appointments and having to register to receive the vaccine; Having to take time off from school or work for vaccine uptake. Having to pay for the cost of the vaccine. Being worried about injection; Existing stigma around STIs; Requiring parent's consent in order to	certain age groups; Being aware of screening programmes		

					vaccinate •Insufficient consideration given to preventive health measures at a young age			
Prowse SR, 2024 (95)	Umbrella review	Multicountry (Europe)	General population	CRC, BC, CC - screening program adherence	Inadequate knowledge of the screening program (CRC); Scheduling issues (BC); Fear of the unknown (CC)	Support provided by family members and/or social networks; acculturation; recommendation of a healthcare provider; knowledge of options for procedural self-testing.	NR	NR
Saab MM, 2024 (96)	Qualitative study	Ireland	General population (n=20)	Testicular cancer - CL	Using overly explicit phrases and over using catchphrases; using non-inclusive campaign logos	Diffusion through classical and newer media most used by the target population; involvement of influencers; physically sharing the campaign in places where there is greater population reach; adding personal stories of testicular cancer	NR	NR

						survivors to the campaign's Instagram page; creating partnerships with local advocacy groups; sharing summary leaflets; creating informative exhibition stands; adding thematic minigames and free merchandise to the aforementioned stands		
Marques P, 2021 (97)	Qualitative study	Portugal	Healthcare (n=12) and community workers (n=5)	CC - screening program adherence	Individual factors: Lack of information and perceptions; older age. Sociocultural factors: Language and communication difficulties; Religion and culture-related barriers; Female genital mutilation. Health System-Related factors: Procedural	Continuity of care, culturally tailored information, and self-sampling methods	NR	NR

					difficulties in accessing the healthcare services; Healthcare workers characteristics and relationship with patients; Irregular status; Outdated patient information			
Marques P, 2020 (98)	Scoping review	Multicountry (Europe)	Migrant women	CC - screening program adherence	Sociodemographic factors: Older and younger age groups, being unmarried, low educational level. Healthcare system-related factors: lack of access to healthcare services. Migration-related factors: country of birth, short length of stay in the country	Healthcare system-related factors: having had a recent medical appointment, Providing information leaflets/invitation letters in women's mother languages	There is contradictory evidence on the association between country of birth and CCS participation among studies. Immigrant women from low and middle income countries	NR

							showed a lower screening participation when compared with immigrant women from high income countries in an Italian study. Asian women, particularly those coming from China, were the ones with the lowest participation rates.	
Grigore M, 2018 (99)	Cross-sectional	Romania	Women (n=454)	CC - literacy on HPV infection and vaccination	Fear of side effects, low perceived risk of infection, financial concerns, fear of needles, lack of	NR	The awareness regarding HPV was different in urban area compared	69.2% were aware about HPV but their knowledge was minimal and

					time, not knowing where the vaccine is available		with rural one	incomplete. 53.5% reported that HPV is one of the causes of CC. 62.3% had heard about HPV vaccine; 50.7% had a positive attitude toward it
Clarke N, 2016 (100)	Qualitative study	Ireland	General population (n=47, aged 50-74)	CRC - Screening program adherence	Psychology domain: Feeling indifferent about taking the test, embarrassment or disgust of the test, Poor trust in the local clinic, hospital or healthcare system, Fear associated with the responsibility of taking the test, subsequent colonoscopy,	Psychological domain: fear of having cancer. Logistics domain: raising awareness through media campaigns. Environmental domain: Social encouragement for participation, Acquaintance with someone diagnosed with CRC	differences according to gender for perceived barriers and facilitators, response to materials and resources, perceived consequences of screening and diagnosis	NR

					creation of a colostomy, mental or emotional problems. Religion domain: fatalism. Logistics domain: not recalling receiving the invitation, technical problem with the test kit, recent bowel examinations before the screening invitation. Health-related issues domain: Other physical problems, functional limitations, low self perceived health status and mental health problems were additionally		and social influences	

					reported as participation barriers. Knowledge and awareness domain: Perceived relevance, Health perception, Absence of bowel-related symptoms			
Voidăzan S, 2016 (39)	Cross-sectional	Romania	Parents of children 10-14 (n=918)	CC - literacy on HPV infection and vaccination	Fear of side effects of vaccination, mistrust in vaccine efficacy, beliefs that vaccination is not the best method of prevention, lack of information about HPV vaccination	Knowledge of side effects and contraindications of the vaccine; Information on infection and vaccination	Differences in knowledge according to gender, education and marital status. Higher level of knowledge in parents addressing GPs.	85.8% have heard of the infection; 85–91.4% know about at least one way of transmission. Up to 68.9% report incorrect ways of infection transmission. 82.9% know that

								the infection caused cervical cancer; 30.5% know that the infection caused genital warts
De Censi A, 2015 (101)	Narrative review	Italy	Women	BC - preventive pharmacological interventions	Physicians' lack of knowledge/prejudices; Individual's lack of knowledge; Individual's fear of side effects; Underestimation of benefits and/or overestimation of harms; Adverse effects of agents; fear of medication abuse	Increasing physician awareness and countering prejudices; Improving physician–patient communication and information sharing; educational interventions; Exploring re-purposing of commonly used agents with well-documented safety profile; Refining risk prediction and risk communication; Development of biomarkers that can be frequently monitored by non-	NR	NR

						invasive means; Exploring strategies to reduce adverse effects; Increased focus on preventive research, particularly in academia; Policy engagement		
Firenze A, 2015 (102)	Cross-sectional	Italy	Women(n= 350)	CC - HPV vaccination	Belief that the vaccine was too new and that it may cause cervical cancer, along with having friends as a source of information on the vaccine	Having Pediatrician/General practitioner as a source of information	NR	96.3% knew that HPV was a sexually transmitted infection; 83.4% knew its association to cervical cancer; 12.3% knew that HPV causes genital warts. 70% knew that HPV vaccine alone did not

								guarantee for safe sex.
Pop CA, 2015 (103)	Qualitative study	Romania	Women (n=43)	CC - screening program adherence	Mistrust of state healthcare and corruption; Religious perspectives on cancer and prevention; Passive and fatalistic perception of cancer; Limited knowledge of the pap test	NR	NR	NR

Abbreviations: CL – Cancer Literacy; CC – Cervical Cancer; BC – Breast Cancer; CRC – Colo-rectal cancer; GP – General practitioners

Desk research results

The desk research led to the inclusion of three reports on barriers and facilitators in cancer prevention and care (Table 16).

Table 16. Barriers and facilitators in consortium countries: evidence from national reports

Country	Document title [REF]	Author, Year	Barriers and facilitators
Ukraine	Cervical Cancer in Ukraine: The Continuum of Care and Implications for Action (104)	The World Bank Group, 2019	Structural barriers such as absence or weakness of organized screening programs, regional inequities, and fragmentation of services
Belgium	Improving Cancer Care in Belgium – Policy Priorities 2024–2028 (105)	All.Can Belgium, 2024	Literacy-related obstacles such as fragmented communication, socioeconomic disparities, and inconsistent messaging
Montenegro	Strengthening Cancer Screening in Montenegro (106)	Institute of Health Metrics and Evaluation, 2016	Barriers such as inadequate information routes, lack of outreach, and low engagement with preventive services

Across the studies from Ukraine, Belgium and Montenegro, a consistent picture emerges regarding gaps in cancer-related literacy and prevention. The Ukrainian study reveals very low and uneven coverage of cervical cancer screening and HPV-related prevention, reflecting substantial barriers in awareness, access and follow-up. Late presentation and under-diagnosis further suggest limited public understanding of symptoms and insufficient provider-driven education, compounded by structural issues such as weak or absent organized screening programs and regional inequities.

The Belgian study similarly underscores the need to strengthen cancer-related health literacy within the general population. It highlights the importance of providing evidence-based and culturally adapted information, improving communication on early symptoms, and addressing literacy-related obstacles such as fragmented messaging and socioeconomic disparities. Initiatives like the JUVENTAS youth project are cited as promising examples for improving cancer knowledge and prevention awareness among younger populations.

Findings from Montenegro reinforce this pattern, showing that citizens are not proactively seeking screening, a clear indication of low cancer-prevention literacy.

Barriers identified include inadequate information pathways, limited outreach, and low engagement with preventive services. The study points to both structural and behavioral obstacles that hinder the effectiveness of screening programmes and highlights the need for more targeted communication and education.

Together, these studies illustrate how weaknesses in CL, shaped by systemic, social and behavioral factors, significantly limit the reach and impact of prevention initiatives across diverse European contexts.

Documents in national languages

Hereinafter, we present a synthesis of the documents provided by the consortium country partners. The material is organized by country and includes all relevant sources identified, with particular attention to the availability of data on barriers and facilitators in cancer prevention and care. This overview serves to map existing evidence in national languages across participating countries and to highlight gaps where such data is currently missing.

The partners initially provided 115 documents. After applying the inclusion and exclusion criteria, 45 documents were retained for analysis. The detailed breakdown, including the number of documents per country, reasons for exclusion, and characteristics of the included documents, is presented below, organized by country.

ROMANIA

Romanian partners provided seven documents addressing barriers and facilitators in prevention and care in Romania. Table 17 summarizes these documents, detailing the type of publication, authors, year, and key findings related to CL. All the documents referred to the general population.

The Romanian studies cover the period from 2020 to 2025. Romania has strengthened its cancer control framework through the National Cancer Plan, EU-funded investments, and participation in EU4Health joint actions. Pilot screening programmes, expansion of the HPV vaccination program, access to advanced therapies (e.g. CAR-T and genetic testing), and a mandatory health insurance system support cancer prevention, diagnosis, and treatment. Frameworks for quality assurance, monitoring, and equitable access to services are in place.

However, major gaps persist. Primary prevention remains fragmented, with high levels of smoking, alcohol consumption, obesity, and limited public awareness. Screening programmes are underdeveloped, with low participation, workforce shortages, regional

inequities, and disruptions during COVID-19. The lack of a fully functional national cancer registry and weak monitoring systems limit reliable data on cancer burden and quality of care. Access to diagnostic and treatment services is uneven due to infrastructure deficits, staff shortages, socioeconomic inequalities, and service concentration in urban centers. Palliative care services remain insufficient.

Cancer-related inequalities in Romania are pronounced across risk exposure, access to services, quality of care, and health outcomes. Most cancer risk factors remain more prevalent than the EU average, disproportionately affecting socioeconomically disadvantaged groups.

Significant geographic inequalities persist in the distribution of diagnostic and therapeutic equipment and in the quality of cancer care. Oncology centers in major university cities generally follow international protocols, while non-university centers show variable practices and lack officially approved clinical guidelines.

Access to primary healthcare is limited, particularly in rural areas, contributing to delayed diagnosis and reduced uptake of screening and early detection services. Inequalities are evident between regions, between urban and rural areas within the same region, and between university and non-university cities.

Marked outcome inequalities are observed by sex and place of residence. Cancer incidence and mortality are substantially higher among men and are higher in urban areas, largely reflecting greater testing and better access to healthcare services.
Socioeconomic disparities further affect participation in screening, early detection, and treatment, with lower-income and lower-educated populations facing barriers to information, prevention, and care.

Table 17. Barriers and facilitators in cancer prevention and care in Romania: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers	Facilitators
Profil de țară privind cancerul 2025 (Cancer Country Profile 2025) (107)	European Cancer Inequalities Registry, 2025, Report	Lack of integration in primary prevention policies. Lack of coherence in practice and accessibility of screening programs. Low rates of participation in screening programmes and vaccination (HPV). Lack of a national cancer registry. Scarce data on the quality of cancer care. Suboptimal palliative care services.	Development of policies for cancer prevention and control. Pilot screening programmes for breast and colorectal cancer. Plans to expand screening at regional and national levels. Access to CAR-T cell therapy and tumor genetic testing.
Campania Un stil de viață sănătos și controlul factorilor de risc comportamentali cresc șansele de a nu deveni pacient oncologic! Ai grijă de sănătatea ta! (Campaign: A healthy lifestyle and controlling behavioral risk factors increase the chances of not becoming an oncology patient! Take care of your health) (108)	Health Ministry, 2022, Report	Levels of smoking, alcohol consumption and obesity.	NR
Document de poziție privind Planul European de Luptă	Centre for Innovation in Medicine, 2020,	Social exclusion based on criteria related to financial status. Poor healthcare	Mandatory health insurance system, which covers the costs of diagnosis,

împotriva Cancerului (Position Paper regarding EU's Beating Cancer Plan) (109)	Position Paper	infrastructure and unequal access to treatments and services. Delays in diagnosis, lack of specialized medical personnel and a reduced capacity to provide long-term medical care. The absence of national cancer registries and solid monitoring programs. Deficits related to patient information and education. Absence of health policies on palliative care.	treatment and follow-up care.
Profil de țară privind cancerul (Country Profile regarding Cancer) (110)	Public Health National Institute, 2023, Report	Uneven distribution of services across the country and lack of continuity between different service providers Shortage of health professionals nationwide Public expenditure on cancer has increased steadily in recent years, yet gaps remain between population needs and fund allocation Significant reduction in screening activities during the two-month lockdown in 2020 and subsequent restrictions throughout 2020 and 2021 High and steadily increasing rates of overweight, obesity, and smoking among adolescents over the past two decades Lack of data on the prevalence of vaping and use of other smoking devices, which remain insufficiently regulated.	Investments in infrastructure and qualified human resources through the Health Program financed by the EU Cohesion Fund, with substantial allocations for oncology, as well as through the National Recovery and Resilience Plan. Participation in European Commission joint actions funded by the EU4Health Programme, enabling the exchange of experience and best practices with other Member States and the identification of solutions to shared challenges
Planul Național de Combatere și Control al Cancerului	Health Ministry, 2022, National strategy	Absence of a national cancer registry. Chronic underfunding and suboptimal implementation	The national HPV vaccination program has been expanded. Cervical cancer national screening

(National Cancer Plan)(111)		of the tobacco control and prevention subprogram. Lack of an integrated strategy to combat alcohol consumption. Fragmented and non-integrated approach to overweight and obesity, resulting in ineffective measures with no added value. Isolated public policies to promote physical activity, with urban development plans failing to support activity-friendly environments. Lack of validated data on workers' exposure to pollutants, carcinogens, and mutagens, and absence of an occupational disease registry to identify potential occupational cancers. Absence of systematic cancer screening practices and low investment in preventive measures. Highly variable and inequitable access to cancer diagnostic services.	programme ACTIVE but low participation rates.
Cancerul mamar în România, o patologie ce necesită campanii de informare şi educare – factori de risc şi profilaxie (Breast cancer in Romania, a pathology that requires information and education campaigns – risk factors and	Sanda NA et al, 2021, Journal article	Lack of mass campaigns addressing risk factors. Not all HCPs have comprehensive knowledge regarding the risk factors.	NR

prophylaxis) (112)			
Cervical cancer screening methodology (113)	Health Ministry, 2024, National Programme	NR	Ensuring the quality and safety of medical testing, diagnostic confirmation, and treatment services. Providing a framework for the implementation, management, monitoring, and evaluation of screening services. Establishing a monitoring and evaluation framework to ensure equal and fair access for all eligible women to services of consistent quality and safety.

MONTENEGRO

Montenegrin partners provided eight documents, but only four, published after 2015, contained information on barriers and facilitators in cancer prevention and care in the country. Table 18 summarizes the content of this document.

Montenegrin documents cover from 2015 to 2025. The analysis identified several barriers and facilitators in cancer prevention and care in Montenegro. Barriers included incomplete programs, low uptake of services, poor communication, weak coordination between care levels, limited capacity, insufficient infrastructure, inactive equipment, low awareness, and the absence of cancer registry. Facilitators included intersectoral and strategic planning, alignment with WHO recommendations, HPV vaccination, involvement of primary care, engagement of hospitals and clinical centres, continuous training for healthcare workers, infrastructure investment, government and EU support, improved laboratory and diagnostic capacity, and integrated information systems.

The documents reported persistent inequalities in cancer prevention and care. Higher mortality and lower uptake of services were observed among rural populations, women in northern areas, and groups with lower socioeconomic status or education. Regional differences in service availability and geographic disparities in access and participation were also noted.

Table 18. Barriers and facilitators in cancer prevention and care in Montenegro: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers	Facilitators
Report for National Programme for Early Detection of Cervical Cancer(114)	Institute for Public health, 2025, Report	Weak coordination between primary care and secondary/tertiary levels	Inclusion of general hospitals and the Clinical Centre to increase access to colposcopy and biopsy. Continuous training for healthcare workers: updated algorithms, educational materials, regular professional meetings. Strengthening awareness and invitation systems. Improving laboratory and diagnostic capacity and integrating all institutions into a unified information system.
Strategy for Health System Development 2023-2027 (115)	Ministry of Health, 2023, National strategy	NR	Strategic planning, infrastructure investment
Strategy for Prevention and Control of Chronic Noncommunicable Diseases 2019–2023 (116)	Ministry of Health, 2019, National strategy	Incomplete programs	Intersectoral planning, alignment with WHO
Master Plan of Healthcare Development (2015–2020) (117)	Ministry of Health, 2015, Master plan	NR	Strategic planning, infrastructure investment

PORTUGAL

Portuguese partners provided five documents. Four were excluded from this report because they focused on CL without reference to barriers and facilitators. One document met the inclusion criteria and was included in the analysis. Table 19 summarizes this document. Overall, the Portuguese evidence reported as facilitators of

cancer prevention and education partnerships between schools, patient associations, and local agents, which supported continuity of health education activities.

Table 19. Barriers and facilitators in cancer prevention and care in Portugal: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers	Facilitators
Prevenção do Cancro em Contexto Escolar-O Papel da Liga Portuguesa Contra o Cancro (Núcleo Regional do Norte)(118)	Da Fonseca C et al, 2016, Master thesis	Limited human and financial resources; Reliance on primarily informational strategies; Influence of family behaviors, such as smoking	Collaboration with schools, patient associations (e.g., LPCC), and local agents supports continuity of prevention and health education; Technicians' experience and direct contact with cancer patients enhance credibility and quality of communication; Motivated and engaged teachers, particularly within the LPCC network, facilitate health education activities; Use of brochures, ready-to-implement projects, and educational materials expands the reach of CL initiatives.

BELGIUM

Belgium partners provided five documents. Table 20 summarizes these documents. Several health literacy-related barriers affecting cancer prevention and care were identified. These included misconceptions, fear, and low awareness among the population; literacy-linked obstacles to participation in screening programs; communication challenges between patients and healthcare providers; and systemic barriers within the healthcare system that limited access to information and services.

Table 20. Barriers and facilitators in cancer prevention and care in Belgium: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers
Sciensano — Belgian Health Survey HL Indicators(80)	Sciensano, 2024, National report	HL barriers affecting cancer behaviours

Belgian Cancer Barometer (119)	Belgian Cancer Registry / Stichting tegen Kanker, 2021, Survey report	Misconceptions, fear, and awareness barriers
Flemish Colorectal Cancer Screening Reports (120)	Vlaamse Overheid, 2023, Programme evaluation	Barriers to screening participation (literacy-linked)
Cultures & Santé Literacy Guide(121)	Cultures & Santé, 2024, Guidance document	Communication and system barriers
HealthNest Whitepaper (122)	HealthNest, 2023, Whitepaper	Systemic barriers to HL

BULGARIA

Bulgarian partners provided ten documents, eight of them addressed barriers and facilitators in prevention and care in Bulgaria. Table 21 summarizes these documents, detailing the type of publication, authors, year, and key findings related to barriers and facilitators.

The Bulgarian studies cover the period from 2018 to 2025. Multiple barriers affect access to cancer prevention and care. Structural and systemic obstacles include referral quotas, uneven distribution of healthcare services and workforce, late implementation of screening programs, and limited or opportunistic screening. Financial and administrative barriers, such as out-of-pocket costs, lack of health insurance, restrictive eligibility rules, and the need to travel long distances for services, disproportionately affect rural and low-income populations. Psychosocial and cultural barriers, including low health literacy, misconceptions about medical care, cancer-related stigma, fear of diagnosis, and cultural differences, further limit engagement in preventive behaviours and screening. These barriers collectively affect the entire population, though certain groups (such as rural residents, low-income households, and women in underserved areas) face heightened challenges.

The analysis highlighted persistent inequalities in cancer prevention and care across countries. Regional disparities affect accessibility, with some areas lacking organized prevention programs. Low-income households experience substantially higher unmet healthcare needs, driven by out-of-pocket costs, insurance gaps, referral quotas, and uneven distribution of healthcare resources. Workforce shortages, including low nurse-to-population ratios and challenges related to ageing, emigration, and working conditions, further threaten access and system sustainability. High social inequalities in access to cancer screening are linked to education, income, and urbanization, while variations exist between countries in the availability and organization of prevention programs. Bulgaria, for example, remains among the highest-burden countries in Europe, where screening has been largely opportunistic, though a nationwide cervical

screening program was announced in 2024. Additional barriers include financial, political, and systemic constraints, as well as issues of awareness, literacy, and potential discrimination.

Table 21. Barriers and facilitators in cancer prevention and care in Bulgaria: evidence from a national search

Title (english traslation) [REF]	Author, Year, Document format	Barriers
State of Health in the EU Bulgaria Country Health Profile 2023(123)	OECD European Observatory of Health Systems and Policies, 2023, Report	Referral quotas by GPs and specialists limit access to specialist and diagnostic care. Out-of-pocket costs and lack of health insurance (≈12% of the population) reduce affordability of care. Uneven distribution of services and workforce, with physicians and facilities concentrated in urban areas
What are the barriers towards cervical cancer screening for vulnerable women? A qualitative comparative analysis of stakeholder perspectives in seven European countries (93)	Bøje RB et al, 2024, Journal article	Lack of continuous screening programs; Absence of mechanisms to identify eligible women; Barriers affect all women, not only those in vulnerable groups
Next Level for Cancer Screening: From Commitments to Continued Action for Early Cancer Detection (124)	European Cancer Organisation, 2025, Report	Late implementation of screening programs; Limited access to screening for rural residents; Need to travel long distances or incur high costs to reach screening facilities; Cancer-related stigma and fear of diagnosis; Financial barriers and emotional impact of cancer, particularly in low-income populations
Closing the Gaps: The Status of Cervical Cancer Screening Programmes in Europe (125)	European Cancer Organization, 2025, Report	Structural and psychosocial barriers; Screening limited to opportunistic programs
"Taking responsibility for my health": Health system barriers and women's attitudes toward cervical cancer	Crăciun IC et al, 2018, Journal article	Systemic barriers; Cultural perceptions and meanings

screening in Romania and Bulgaria (126)		
Exploring health literacy of medical students: a cross-sectional study (127)	Pesheva P et al, 2024, Journal article	Cultural differences; Geographical disparities
The role of health awareness for participation in screening for breast cancer (128)	Pavlova G et al, 2025, Journal article	Lack of healthy habits due to limited knowledge of benefits; Underestimation of the effectiveness of medical care; Low health literacy affects participation in screening programs
Bridging Barriers: Expanding Health Navigation for Marginalised Communities in Europe (129)	European Public Health Alliance, 2025, Position paper	Affordability barriers; Administrative hurdles; Cultural obstacles; Restrictive eligibility rules; Fears of discrimination and systemic biases

UKRAINE

Ukrainian partners provided nine documents addressing barriers and facilitators in prevention and care in Romania. Table 22 summarizes these documents, detailing the type of publication, authors, year, and key findings related to barriers and facilitators.
The Ukrainian studies cover the period from 2019 to 2025. Barriers to cancer prevention and care include individual, organizational, and structural factors. Individual-level barriers involve insufficient awareness of cancer symptoms, knowledge gaps, and misconceptions, including doubts about vaccine safety and limited understanding of available treatment programs. Organizational barriers include inadequate counselling on risk factor modification and the absence of a well-established routing system for cancer patients. Structural barriers involve poor coordination of medical services, which limits timely access to care. Limited availability of accessible information about cancer further constrains population engagement in preventive behaviours and screening.

Facilitators include multiple strategies to enhance awareness, access, and quality of care. Communication campaigns involving medical and educational professionals, patient communities, public representatives, media, and digital resources support population engagement in cancer prevention and HPV vaccination. Primary healthcare institutions contribute by promoting healthy lifestyles, preventive services, and continuous care for cancer patients. Improvements in clinical pathways, information on early detection programs, self-examination, and available free medical services increase patient access and empowerment. Additional support includes providing information to patients and families and ensuring access to details on medical service providers for oncological care.

Table 22. Barriers and facilitators in cancer prevention and care in Ukraine: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers	Facilitators
Order of the Cabinet of Ministers of Ukraine dated August 2, 2024 No. 730-p. On approval of the National Strategy for the Control of Malignant Neoplasms for the period until 2030 and approval of the action plan for its implementation for the period until 2025 (130)	Cabinet of Ministers of Ukraine, 2024, Order	Individual-level barrier: insufficient awareness among the general population about symptoms of malignant neoplasms Organizational barrier: absence of a well-established routing system for cancer patients	Conducting communication campaigns on cancer prevention with broad involvement of medical and educational professionals, patient communities, public representatives, media, and online resources; Involvement of primary healthcare institutions in promoting healthy lifestyles, cancer prevention, and continuous care for cancer patients Improvement of clinical pathways for patients with cancer; Increasing patient awareness of free medical services, medicines, materials, and devices available under the state health care guarantee program; Informing the population about early detection programs and self-examination for malignant neoplasms; Providing information support to cancer patients and their families; Ensuring patient access to information on medical service providers treating oncological and

			oncohematological diseases under the state health care guarantee program
Exploring awareness, attitudes and clinical practices of Ukrainian health professionals regarding human papillomavirus and vaccination: a qualitative study (131)	Tatarchuk T et al, 2025, Journal article	Individual-level barriers: knowledge gaps and misconceptions (e.g., belief in natural immunity, doubts about vaccine safety), especially among non-gynecological specialists, and low public awareness of the HPV–cancer link	NR
Report on the results of the public opinion survey of the population of Ukraine on lung cancer(71)	Ukrainian office of the international research agency IFAK Institut, 2020, Report	Individual-level barriers: knowledge gaps, including 16% unaware of whom to contact for suspected lung cancer and 10% aware of state or social programs on lung cancer treatment and information	NR
Analytical report on the results of the assessment "Improving indicators on non-communicable diseases: barriers and opportunities for the healthcare system in Ukraine" (132)	Ukrainian-Swiss project "Acting for health", 2023, Analytic report	Structural barrier: poor coordination of medical services for patients with malignant neoplasms	NR
Regarding information and educational events on the basics of medical knowledge for citizens with the involvement of Ukrainian and foreign teachers	Ministry of Health of Ukraine, 2024, Report	NR	Information campaigns to raise population awareness about cancer

and leading health care specialists, organized and conducted by the State Institution "Center for Public Health of the Ministry of Health of Ukraine" (I quarter of 2024) (133)			
Public awareness of risk factors as an aspect of health literacy in Ukraine (134)	Ryngach NO, 2019, Journal article	Organizational barrier: insufficient counseling on risk factor modification (only 25.3% of individuals received advice from a family/district doctor or nurse in the past 12 months)	NR
"Barrier-free": implementation of the National Strategy for Creating a Barrier-Free Space (135)	Municipal Non-Profit Enterprise "Regional Clinical Oncology Center of the Kirovograd Regional Council", NA, Report	NR	Provision of information and digital support to centre visitors
A study of public awareness about human papillomavirus and vaccination has been launched in Ukraine (136)	State Institution "Center for Public Health of the Ministry of Health of Ukraine", 2025, Publication	NR	Campaign to assess and improve awareness of HPV vaccination benefits
Analysis of the survey on cancer in the Odessa region (72)	Odessa Regional Center for Disease Control and Prevention, 2025, Report	Individual-level barrier: lack of accessible information about cancer	NR

IRELAND

Irish partners provided five documents addressing barriers and facilitators in prevention and care in Ireland. Table 23 summarizes these documents, detailing the type of publication, authors, year, and key findings related to barriers and facilitators.

The Irish studies cover the period from 2022 to 2025. Barriers include individual, literacy, and system-level factors. At the individual level, low symptom recall, misconceptions about risk, fear, embarrassment, and fatalism limit engagement in prevention and care. Low literacy, jargon-heavy communications, rigid appointments, and mistrust further impede understanding and participation. System-level barriers include difficulty finding, appraising, and using cancer information, poor staff awareness, and gaps in communication and navigation within healthcare services.

Facilitators include education, outreach, and communication strategies at multiple levels. School-based programs and structured cancer awareness initiatives support early education. Community-led outreach with culturally adapted materials, oral/visual communication, and trusted link workers enhances engagement. Peer support, flexible appointments, and transport assistance improve access and participation. Higher eHealth literacy, training, and digital skills support facilitate use of online resources, while plain language tools, staff training, co-produced videos, and patient-centred communication strengthen understanding and interaction with healthcare services.

Table 23. Barriers and facilitators in cancer prevention and care in Ireland: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers	Facilitators
Cancer awareness among adolescents in Irish schools(137)	Lawrence SM et al, 2025, Journal article	Low spontaneous recall of symptoms, misconceptions on risk, embarrassment, fear of wasting GP time	School-based education, structured cancer awareness programmes
National Traveller Cancer Awareness & Attitudes Report (138)	HSE / NCCP, 2025, National report	Low literacy, jargon-heavy letters, embarrassment, fear, discrimination, transport barriers, fatalism	Community-led outreach, culturally adapted materials, oral/visual communication, trusted link workers
Barriers to breast screening among Irish Traveller women (139)	Keane E et al, 2022, Journal article	Low literacy, fear of pain/diagnosis, embarrassment,	Peer support, trusted outreach workers, flexible

		rigid appointments, mistrust	appointments, transport support
Health literacy, eHealth literacy and outcomes among cancer caregivers in Ireland (84)	Moore C et al, 2024, Journal article	Difficulty finding, appraising and using cancer information; low system navigation skills	Higher eHealth literacy, training, digital skills support
Health Literacy Awareness Campaign for Cancer Patients (140)	NALA / Irish Cancer Society, 2023, institutional production	Complex written materials, poor staff awareness, system-level communication gaps	Plain language tools, staff training, co-produced videos, patient-centred communication

MOLDOVA

Moldavian partners provided fifty-six documents, six of them addressed barriers and facilitators in prevention and care in Moldova. Table 24 summarizes these documents, detailing the type of publication, authors, year, and key findings related to barriers and facilitators.

Limited health literacy contributes to low public awareness of cancer risk factors, poor participation in screening programs, and delayed access to care. Fragmented information systems, language barriers, and the digital divide further restrict access to reliable and understandable cancer-related information, particularly for vulnerable populations. Insufficient patient advocacy and persistent misconceptions, such as stigma and fear surrounding opioid use, undermine informed decision-making, adherence to treatments, and equitable access to evidence-based cancer care.

Moldovan policy and strategic documents highlight marked disparities between urban and rural areas, with significant differences in cancer-related knowledge and access to health services.

Facilitating factors for cancer prevention and care in Moldova include the implementation of specific population-based screening programs supported by standardized testing methods, as well as a solid legal framework ensuring access to services and financial protection. The existence of a functioning National Cancer Registry and clearly defined institutional responsibilities between the Ministry of Health and the National Health Insurance Company provide a strong governance structure. Policy documents also highlight ongoing health system reforms, planned legislative updates, and the development of a new National Cancer Control Program, aligned with EU policies and best international practices. Government commitment, coupled with a

dedicated action plan, supports the expansion of screening programs, decentralization of oncology services, and improvements in public information and health data systems.

Table 24. Barriers and facilitators in cancer prevention and care in Moldova: evidence from a national search

Title (English translation) [REF]	Author, Year, Document format	Barriers	Facilitators
Youth Cancer Europe High-Level Roundtable in Parliament of Republic of Moldova (141)	Youth Cancer Europe, 2025, Policy document	Limited system interoperability; underdeveloped patient advocacy; regional crises impact; language barriers; digital divide; health literacy gaps	NR
Ordin MS Nr. 191/2025 Cu privire la unele măsuri de depistare precoce a cancerului colorectal prin testarea iFOB (FIT) și a cancerului mamar în anul 2025 (142)	Health ministry, 2025, Ministerial Order	NR	Specific screening program implementation, standardized testing methods
National Programme for the Accession of the Republic of Moldova to the EU 2025-2029(143)	Government of the Republic of Moldova (Government Decision No. 306/2025), 2025, National programme	Systemic barriers: data collection systems underdeveloped; organized population-based screening programmes to be implemented; limited public awareness; fragmentation of information; limited decentralization of oncology services.	Existence of a strong legal basis guaranteeing access and financial protection, a functioning National Cancer Registry, and clearly defined institutional responsibilities of the Ministry of Health and the National Health Insurance Company; ongoing reforms, planned legislative updates, and the development of a new National Cancer Control

			Programme; alignment with EU policies, expansion of screening programmes, decentralization of services, and improved public information and data systems
Managing cancer pain for a better life: a story from the Republic of Moldova(144)	WHO Regional Office for Europe, 2024, Case study	Opiophobia (fear of "narcotics") among patients and families; stigma attached to opioid medicines; first cancer pain treatment protocol only implemented in 2010; doctors concerned about using opioids; difficult transition from injections to opioid patches	NR
Planul de acțiuni pentru perioada 2024-2025 privind implementarea Programului Național de Control al Cancerului (145)	Health Ministry – Government, 2024, Government action plan	Rising morbidity and mortality indices, ~10,000 new cases annually	Government commitment, specific action plan, best international practices
Implementing an organised cervical screening programme in the Republic of Moldova - Stakeholder identification and engagement(146)	Davies P et al, 2017, Journal article	Initial stakeholder disinterest; education needs; coordination challenges	NR

ITALY

Italian partners provided four documents, summarized in Table 25. Findings indicate barriers linked to lower education, older age, socio-economic status, complex medical language, and suboptimal doctor–patient communication. System-level obstacles related to access, organization, and misinformation were also noted, alongside policy-level needs for improved communication and integrated care. Facilitators included clear

communication, staff education, accessible information, and systemic approaches such as health promotion programs, counselling, and patient empowerment.

Table 23. Barriers and facilitators in cancer prevention and care in Italy: evidence from a national search

Title [REF]	Author, Year, Document format	Barriers	Facilitators
Validation of the digital health literacy questionnaire in patients with onco-hematological diseases: San Martino Hospital of Genoa (147)	Epicentro – ISS, 2024, Report	Low education and advanced age	Validated tool for measuring digital health literacy in onco-hematology
National Oncology Plan: 2023–2027 (148)	Health Ministry, 2023, Strategic plan	Policy-level needs for communication, information, and integrated care	Systemic approach: health promotion programs, counseling, and patient empowerment/engagement
16th Report on the Care Conditions of Oncology Patients (149)	FAVO Observatory, 2024, Annual report	System-level barriers often related to access and organization, with misinformation also emerging as a concern	System-level recommendations focusing on strategies and communication to improve outcomes and care pathways
Measurement of health literacy levels in oncology (150)	Baldari M, 2024, Master thesis	Education level, socio-economic status, complexity of medical language, and doctor–patient communication	clear communication, staff education, and accessible information

Conclusions

The findings of this review and of our work reveal a markedly uneven landscape of CL across Consortium Countries (Romania, Portugal, Belgium, Bulgaria, Montenegro, Ukraine, Italy, Ireland, Moldova), characterized by persistent deficits in foundational knowledge, prevention awareness, decision-making capacity, and navigation skills. These shortcomings are not isolated informational gaps; they represent structural weaknesses in national CL ecosystems that amplify existing inequalities in cancer prevention, access, and outcomes. Consistent with previous studies showing substantial cross-country variation in health and CL in Europe (4,14), our data confirm that many individuals struggle to understand risk factors, interpret symptoms, grasp the rationale for vaccination, or follow screening recommendations.

Across the populations included in the project, we observed substantial variability in CL levels, with a clear gradient linked to age, education, socioeconomic status, and prior experience with cancer. Participants with higher educational attainment and greater familiarity with the healthcare system demonstrated stronger abilities to interpret risk information, navigate services, and understand treatment options. By contrast, groups with lower educational backgrounds or limited exposure to health services performed markedly worse across all literacy domains, particularly in numeracy, evaluation of online information, and comprehension of complex treatment regimens. These findings mirror broader European trends showing that individuals with inadequate literacy are less likely to participate in screening programmes, less aware of modifiable risk factors, and more likely to delay help-seeking (8,151).

Importantly, the review indicates that deficits in CL are not uniformly distributed across topics. Awareness of modifiable lifestyle-related cancer risks was generally low, even among individuals with medium literacy levels, suggesting persistent challenges in risk perception and preventive knowledge acquisition. Misinterpretation of screening guidelines (starting ages, intervals, eligibility criteria) was particularly widespread and may contribute to suboptimal uptake of screening across several consortium countries. These patterns are consistent with evidence showing that prevention messages often lack salience or clarity and are inconsistently framed across national communication strategies (152,153).

The consequences of limited CL are profound. Cancer care often requires rapid and complex decision-making, and individuals with inadequate literacy report greater difficulty following medical recommendations, recognizing the purpose of diagnostic tests, understanding side effects, and adhering to follow-up schedules. Psychosocial

effects also emerged as critical: participants with low literacy reported heightened anxiety when confronted with medical terminology, uncertainty about treatment choices, and diminished participation in shared decision-making. These findings align with literature documenting that limited literacy undermines patient empowerment, erodes trust, and reduces satisfaction with care (17,154–156).

The review also highlights how socio-cultural, organizational, and informational barriers intersect to hinder CL. Weak educational infrastructures, limited visibility of prevention campaigns, and inconsistent or technical communication contribute to fragmented understanding. Linguistic and cultural mismatches, especially affecting migrants, ethnic minorities, and marginalized groups, further impede engagement long before structural barriers to healthcare access emerge. This is consistent with evidence showing that migrants and low-income groups in Europe face disproportionate challenges in accessing understandable, culturally relevant cancer information(157–159).

Several initiatives identified across countries, however, demonstrate the potential effectiveness of culturally anchored, co-produced, and audience-specific interventions. Youth-focused programmes that adapt prevention messages to linguistic, cultural, or digital preferences illustrate how relevance and representation enhance both comprehension and motivation. Literacy-sensitive initiatives for older adults, who exhibit disproportionately low CL, show that improvements in provider communication and supportive environments can substantially increase engagement and preventive behaviours.

Despite the growing body of evidence on CL in Europe, several critical gaps remain. First, all studies have focused on prevention, leaving a lack of data on cancer care and patient experiences during treatment, which limits understanding of literacy needs throughout the entire cancer continuum. Second, there is limited representation of certain vulnerable populations, including refugees, rural communities, and individuals in low-resource settings, which hampers the generalizability of findings and risks overlooking the most at-risk groups. Finally, the absence of standardized, cancer-specific literacy assessment tools tailored to the European context constrains the ability to compare results across countries and populations, and to design interventions that accurately address identified gaps. Addressing these gaps is essential for advancing evidence-based strategies to improve CL and reduce inequalities.

The European policy landscape increasingly recognizes these issues, and the findings underscore the need for robust policy action to translate literacy goals into effective practice. Initiatives such as the European Patients' Forum, the European Cancer Patient Coalition (160), and the Association of European Cancer Leagues (161) have called for

stronger investment in health and CL as tools to empower citizens and reduce inequalities. Europe's Beating Cancer Plan (162) positions literacy as a cross-cutting pillar, yet there remains a gap between policy ambitions and the implementation of accessible, impactful interventions. Despite this strong policy commitment, evidence consistently points to persistent implementation gaps at national and local levels.

Evidence indicates that improving CL requires culturally adapted, multilingual, and co-designed strategies that actively involve adolescents, migrants, older adults, and institutionalized populations (4,157) Policies should promote interventions embedded in trusted environments, integrate provider engagement as a key facilitator, and ensure that resources are relevant, understandable, and accessible to all, particularly vulnerable groups, to foster equitable participation in prevention, screening, and cancer care. Despite these promising examples, a major gap persists between policy aspirations and the implementation of effective, accessible literacy interventions.

At the same time, important potentialities and enabling factors emerged. Across consortium countries, several initiatives demonstrate that culturally adapted, co-produced, and audience-specific interventions can effectively improve CL. Youth-focused programmes tailored to linguistic and digital preferences enhance comprehension and motivation, while literacy-sensitive approaches for older adults show that improved provider communication and supportive environments can increase engagement and preventive behaviours.

Despite these promising examples, important limitations and gaps remain. The existing evidence base remains disproportionately focused on cancer prevention, with limited data addressing literacy needs during diagnosis, treatment, survivorship, and palliative care. Vulnerable populations such as refugees, rural communities, and individuals in low-resource settings remain underrepresented, limiting generalizability. In addition, the lack of standardized, cancer-specific CL assessment tools adapted to the European context constrains cross-country comparability and intervention design. From a policy perspective, the findings reinforce the need to translate European commitments on cancer literacy into effective practice. Evidence suggests that progress requires multilingual, culturally adapted, and co-designed strategies embedded in trusted healthcare and community settings.

Within this landscape, the CURTAIN project positions CL as a central strategy for reducing inequalities in cancer outcomes across Europe. By mapping existing evidence, identifying barriers and facilitators, and highlighting disparities across countries and vulnerable groups, the project provides the first comprehensive, cross-national synthesis of CL in Europe. The project also supports the development of the first

cancer-specific literacy assessment tool tailored to the European context, an essential step given that general health literacy measures fail to capture the complexity of cancer-related understanding, navigation, and decision-making.

This review contributes to filling critical knowledge gaps by systematically synthesizing evidence from scientific and grey literature, complemented by documents provided by national partners. Nonetheless, limitations remain. Methodological limitations of this review include heterogeneity in study designs and reliance on English-language sources, although national partner contributions helped mitigate these constraints.
Future research should prioritize standardized reporting of cancer literacy outcomes, cross-linguistic data collection, and the inclusion of underrepresented populations, especially migrants, rural communities, refugees, and individuals in low-resource settings.

Taken together, the findings demonstrate an urgent need to strengthen CL through targeted, culturally sensitive, and equity-driven strategies. Developing cancer-specific literacy tools, expanding multilingual and visual communication materials, and involving vulnerable groups as co-designers rather than passive recipients will be key to dismantling entrenched informational and structural barriers. Improving CL is not only fundamental for empowering individuals but also indispensable for achieving equitable cancer prevention, care, and survivorship across Europe.

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