SOCIAL INEQUALITIES IN PARTICIPATION IN CANCER SCREENING PROGRAMMES.

The state of the art of the research.

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EXECUTIVE SUMMARY

JUSTIFICATION OF THE STUDY

Social inequalities in cancer refer to health inequalities spanning the full cancer continuum, across the lifecourse. These cancer inequalities involve social inequalities in the prevention, incidence, prevalence, detection and treatment, survival, mortality, and burden of cancer and other cancer related health conditions and behaviours [1].

The implementation of population-based screening programmes for breast, cervical, and colorectal cancer (CRC) is recommended by the European Union [2]. In Europe, these programmes have become more widespread over the last few years, with different and more complex organisational strategies [3]. Equity is one of the key issues with regard to quality in cancer screening programmes [2] [4].

In principle, organised screening programmes, with a personalised invitation sent to the individuals who fulfil the established criteria, assure more equity in comparison with other health initiatives such as case finding or opportunistic screening programmes, for which the decision to attend is made solely by the individual [4]. However, social inequalities in access can still be observed in population-based programmes [5]. It is understood that population groups with a lower socioeconomic status participate less in breast and cervical cancer screening programmes [6] [7] but also in CRC screening programmes [8].

This study aims to analyse how social inequalities in participation in cancer screening programmes have been researched. This report offers a general overview of what has been studied and where with regard to social inequalities in participation in breast, cervical and colorectal cancer screening programmes in developed countries in Europe, North America, Oceania and Asia. It highlights the countries where the studies have been carried out, the type of methodology used, the population/scope of studies and the social determinants related to participation in cancer screening programmes that have been analysed (intermediary factors and inequality axes).
METHODOLOGY

A systematic review was conducted using the electronic databases PubMed and Embase. Articles published in both databases, between 1\textsuperscript{st} January 2001 and 1\textsuperscript{st} June 2011 were included. Items should aim to analyse social inequalities in participation in screening programmes for breast, cervical and colorectal cancer. The search strategy was defined using MeSH terms for the Pubmed database, and Emtree terms, for the Embase database.

The eligibility criteria of the articles were:

1. The articles must have been published in peer review journals.
2. The articles must have been original articles.
3. The articles must have been written in a European language.
4. In terms of methodology, the studies must have been observational studies.
5. The studies must have been conducted in Europe (all countries), North America (United States, Canada), Oceania (New Zealand, Australia) or Asia (Israel, North Korea and Japan).
6. The studies must have been conducted in the context of cancer (breast, cervical and colorectal) screening programmes (population-based, opportunistic and pilot programmes).
7. The studies must have analysed the social determinants (intermediary factors and inequality axes) influencing participation in cancer screening programmes, considering social health inequalities.

The studies were classified by the title and abstract using a Reading Guide with the following dimensions: continent and country of study; population/scope of study; methodology; intermediary determinants associated with participation; and inequality axes.

A descriptive analysis was performed using the “R” statistical programme, using the chi-square test and assuming a level of significance of 5%.
SYNTHESIS OF THE RESULTS

With regard to the continent on which the study was conducted, the majority of the valid articles were conducted in North America (80.69%) in comparison with Europe (15.59%). If we were to analyse each cancer separately, a similar distribution would be observed. For CRC, 85.02% are North American studies and 11.45% are European. For cervical cancer, 75.52% are North American studies and 21.35% are European. Finally, for breast cancer, 80.71% are North American studies and 15.00% are European.

If we look at the countries in which the studies are conducted, most of the North American studies were performed in the United States (94.86%), and most of the European studies were conducted in England (25.69%), followed by Spain (9.17%), France (9.17%), Italy (7.34%) and the Netherlands (7.34%).

If we analyse the distribution of all of the articles by type of cancer (CRC, cervical and breast), most of them explore inequality in access to breast cancer screening programmes (40.35%), followed by inequality in access to CRC screening programmes (32.04%) and thirdly, inequality in access to cervical cancer screening programmes (27.61%). Comparing the results by continent (Europe and North America), the studies focusing on breast cancer screening programmes still represent the majority, both in Europe and North America (41.96% and 39.27%). The second most analysed in Europe were cervical cancer studies (34.96%), however, in North America, CRC studies were the second most analysed (34.55%).

With regard to the methodology used, most of the studies were quantitative, representing 80.26% of the total. Only 14.16% of the studies were qualitative and 5.58% used a mixed methodology.

Turning now to population and scope of study, most of the studies focused on the general population (50.36%) followed by the vulnerable population (45.49%). But if we analyse the results by continent, significant differences can be observed (p<0.00) between North America and Europe. In North America the most frequent scope of
study was the vulnerable population (53.19%); but in Europe, this was the general population (85.32%). Moreover, irrespective of the continent on which the study was conducted, significant differences can be observed (p<0.05) between the different cancer screening programmes: the vulnerable population was analysed more frequently in breast cancer (50.36%) and cervical cancer studies (47.92%) than in CRC ones (37.44%).

In general, health professionals and geographical area as scopes of study were analysed to a lesser extent (3.86% and 7.73% respectively).

Concerning the intermediary determinants analysed, factors relating to the organisational aspects were analysed the most (34.62%), followed closely by the perceptions, beliefs, and attitudes (31.76%) and the reasons for participation (24.75%). Significant differences (p<0.05) can be observed between Europe and North America, with perceptions, beliefs and attititudes analysed to a greater extent in North America (33.51%) than in Europe (22.94%).

With regard to the inequality axes, the ethnic-cultural groups axis (62.23%) was analysed to the greatest extent, followed by the socioeconomic status axis (40.49%). Significant differences can be observed between North America and Europe, the ethnic-cultural groups axis (p<0.00) analysed to a greater extent in North America (70.74%) than in Europe (21.10%), and socioeconomic status (p<0.05) and territory (p<0.00) analysed in Europe to a greater extent (51.38% and 29.36%) than in North America (38.30% and 9.22%).

CONCLUSIONS

This study shows that research on social inequalities in cancer screening participation is scarce in Europe in comparison with the quantity of research carried out in North America (USA, Canada). In Europe, the majority of these studies have been carried out from a quantitative perspective, on breast cancer screening programmes, and with general population as the scope of study. These studies mainly analyse the barriers
relating to the organisational aspects of the programmes as an intermediate
determinant, and focusing on the socioeconomic status inequality axis as a structural
determinant of social inequalities in cancer screening participation.

On the other hand, the North American studies differ from European studies in
that they mostly use the vulnerable population as the scope of study, perceptions,
beliefs and attitudes as an intermediate determinant, and focus on the ethnic groups
inequality axis as a structural determinant.

Further studies are required to develop an understanding of how social
inequalities exert their effect on participation in cancer screening and to address those
issues, especially in Europe.
1. JUSTIFICATION OF THE STUDY

Cancer is a major public health issue. In developed countries, breast cancer is the first leading cause of cancer death, cervical cancer is the tenth amongst women, and colorectal cancer (CRC) is the second for both sexes [9].

The implementation of population-based screening programmes for breast, cervical, and CRC is recommended by the European Union (EU) [2]. In Europe, these programmes have become more widespread over the last few years, with different and more complex organisational strategies being introduced. These strategies aim to identify the target population and invite them to participate voluntarily in screening, after having made an informed decision [13]. Despite EU wide support for cancer screening programmes, the disparity in implementation is substantial: with regard to breast cancer screening programmes, in 2007 11 Member States had completed nationwide population-based programmes, 7 were ongoing population-based programmes, and 5 were non-population based programmes. With regard to cervical cancer, 7 countries had established national population-based programmes, 12 were non-population-based programmes and 4 were dual type programmes. Finally, regarding CRC screening programmes, 5 countries had population-based programmes and 7 were non-population-based programmes [13].

The EU Council Recommendation on cancer screening programmes explicitly recognised the need to reinforce compliance by taking action to ensure equal access to screening, taking into account the possible need to target particular socioeconomic groups [2].

In principle, organised screening programmes, with a personalised invitation sent to the individuals who fulfil the established criteria, assure more equity in comparison with other health initiatives, such as case finding or opportunistic screening programmes, for which the decision to attend is made solely by the individual [4]. However, social inequalities in access can still be observed in population-
based programmes [5]. It is understood that population groups with a lower socioeconomic status participate less in breast and cervical cancer screening programmes [6] [7] but also in CRC screening programme [8]. An important issue that must be discussed further to preserve and improve equity is the unequal distribution of barriers in access to screening amongst different socioeconomic and cultural groups. This issue needs to be studied in depth with the aim of proposing and implementing methods to eliminate these barriers or reduce their effects, whereas assuring that elimination is equal for all social groups.

Equity is one of the key issues with regard to quality in cancer screening programmes [4], and it should be continuously monitored in order to reduce social inequalities and the occurrence of the “inverse care law”[10]. This law implies that the introduction of a prevention programme with equity objectives will end up producing more inequalities, as the population with a higher socioeconomic status will participate more, and therefore benefit to a greater extent compared with the population of lower socioeconomic status.

This study is framed in the European Partnership for Action Against Cancer (EPAAC), financed by DG SANCO, and within Work Package (WP) 6 on “Screening and Early Detection”. The general objective of this WP is to alleviate key barriers, to ensure cancer screening is of appropriate quality, according to the Council Recommendation on Cancer Screening.

This study aims to identify inequalities in participation in cancer screening programmes, which is a key issue when determining the quality of these programmes. In this report we first present a theoretical model of the social determinants of health, which serves as a base for the study of social inequalities in cancer. In addition we show some studies that support the existence of social inequalities in cancer in general, and some which deal with participation in cancer screening programmes in particular, which justifies the objective of our study. Secondly, we present the methodology we used to achieve the objectives defined. Thirdly the results of the
study are presented. And finally, the results, limitations, conclusions and recommendations are discussed.

1.1. The social determinants of health: social inequalities in health

The social determinants of health are, according to Krieger [11], the specific characteristics and the ways in which social conditions affect health. Some studies show that the contribution to health of the social and economic environment in which individuals live and work is approximately 50%, whilst that of the health care service is around 25% [12].

The concept of social inequalities in health refers to the differences in health, which are systematic, socially produced, unnecessary and avoidable, but in addition are considered unfair and unjust [13]. These inequalities in health are related to the different opportunities and resources available to individuals according to different structural axes. This generally results in poorer levels of health amongst lower socioeconomic groups [14].

Social epidemiology aims to overcome the biomedical conception of health (analysis of risk factors for certain diseases) in order to adopt a social vision of health (analysis of the social causes of risk factors). Attention thus moves from individuals to populations, from risk factors to vulnerability, and from lifestyles to the social production of health and disease.

Within the paradigm of the social production of disease [15], various theoretical models can be found. The social determinants of health models established by Dahlgren and Whitehead [16] and the Commission on Social Determinants of Health [17] of the World Health Organisation (WHO).

Dahlgren and Whitehead’s traditional model of social determinants in health is widely used in health research. It displays the determinants of health in concentric
layers, from individuals to structures, reserving the centre for personal characteristics that cannot be changed, such as age, sex or constitutional factors (see Figure 1).

Figure 1. Dahlgren y Whitehead’s model (1991)

![Dahlgren and Whitehead's Model](image)


The Commission on Social Determinants of Health model completes Dahlgren and Whitehead’s model, as you can see in Figure 2:

Figure 2. Commission on Social Determinants of Health’s model, WHO (2010)

![Commission on Social Determinants of Health Model](image)

The Commission on Social Determinants of Health’s model contains two main elements: a) structural factors and b) intermediate factors of inequalities in health. Intermediate factors, determined by structural factors, are those that lead to unequal exposure to risk factors. This is, on the one hand, due to biological, material, psychosocial factors and social cohesion; and on the other hand due to the response of health care services to the promotion, prevention and treatment of disease. Conversely, structural factors are those that determine social position (education, occupation, income, gender and ethnic group), which are in turn determined by the socio-political context (governance, economic and social policy and cultural norms and values).

1.2. Inequalities in cancer

Social inequalities (in the original article: “social disparities”\(^1\)) in cancer refer to health inequities spanning the full cancer continuum, across the lifecourse [1]. These cancer inequalities involve social inequalities in the prevention, incidence, prevalence, detection and treatment, survival, mortality, and burden of cancer and other cancer related health conditions and behaviours [1]. They arise from inequalities involving adverse working and living conditions and inadequate health care, linked to experiences and policies involving socioeconomic position (e.g., occupation, income, wealth, poverty, debt, and education) and discrimination. This discrimination, both institutional and interpersonal, can be based on race/ethnicity, socioeconomic position, gender, sexuality, age, language, literacy, disability, immigrant status, insurance status, geographical location, housing status, and other relevant social categories [1].

In this cancer continuum inequalities in exposure to cancer risk factors have been identified. For example, with regard to smoking tobacco, some studies showed that lower socioeconomic groups smoke more than higher socioeconomic groups [18].

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\(^1\) In the original article the author use the concept “disparities” instead of “inequalities”, but we prefer using inequalities because is more common in European context.
Other studies observed that manual workers are exposed to more carcinogens in the workplace compared to non-manual workers [19].

Evidence has also been gathered with regard to inequalities in access to health services, both for preventive programmes and health care services. With regard to primary care services, younger patients, women, and those belonging to ethnic minority groups were more likely to have had three or more consultations before they were referred to hospital with a suspected cancer compared to older patients, men, and white patients, respectively [20]. With regard to the delay in cancer diagnosis, female subjects experienced longer delays compared with male subjects. The same results can be observed in younger people compared to older people, in single and separated/divorced people compared to married people, in lower social class groups compared to higher social class groups, and in black and south Asian people compared to white people [21] [22].

Finally, regarding inequalities in treatment, a literature review concluded that there is increasing evidence that cancer patients in different socioeconomic groups receive different treatment. For example, it is significantly less likely that patients aged over 65 years and, those in the poorest postcode quartile are given adjuvant chemotherapy or radiotherapy following surgery for stage II or III colon cancer. Furthermore, affluent patients in South-East England are more likely to receive surgery for lung, CRC and breast cancer [23].

1.3. Inequalities in participation in cancer screening programmes

The expected outcome of cancer screening programmes is a decrease in mortality rates and the incidence of some types of cancer [2]. The decrease in the incidence of and mortality from cancer amongst the population significantly depends on the participation rate in screening programmes [24]. The Council of the European Union’s recommendation recognises the need to increase the participation rate in this
type of programme and ensure equal access [2]. The implementation of screening programmes is unequal in Europe, as are participation rates [25].

In an analysis of factors that influence participation in cancer screening programmes, it was observed that factors are related to both social inequalities axes such as age, gender, socio-economic status [26] and issues regarding the organisation of programmes and health care services, as well as knowledge, beliefs and attitudes towards the disease and the programme [27]. These factors, or barriers to participation identified include: lack of knowledge of how the programme works, health illiteracy, lack of knowledge about the risks and benefits of the test and/or treatments, fear and/or anxiety about screening or treatment, cultural health beliefs, access to health information, doctor-patient communication, availability of culturally sensitive materials, and health professional bias. These barriers have been shown to affect patient treatment recommendations and patient acceptance [28].

Regarding inequality axes, women from lower socioeconomic groups are generally less likely to attend cervical and breast cancer screening [29]. For CRC screening, there is significant evidence to show that men participate to a lesser extent than woman, even though they experience a high incidence and mortality rate from CRC cancer[30]. Inequalities in participation have also been observed amongst individuals in ethnic minority groups[31].

Taking into account the type of programme, some studies have observed that inequality in participation arises to a greater extent in countries with opportunistic screening programmes and/or population-based screening programmes that are partially implemented or in the pilot phase [32]. However, other studies carried out for example in Denmark [33], the United Kingdom [34] [35] and the Netherlands [36], which all have national population-based programmes, show a socioeconomic gradient with regard to participation.
2. OBJECTIVE

2.1. Objective of the Joint Action European Partnership for Action Against Cancer (EPAAC) and Work Package (WP) 6: Screening and Early Diagnosis.

As stated in the justification of this report, the results we are presenting are within the framework of the Joint Action EPAAC. The main objective of the EPAAC is to contribute to reducing the burden of cancer in the EU by taking action in the areas of health promotion and prevention, screening and early diagnosis, cancer related health care, coordination of cancer research and cancer information and data.

The EPAAC has 10 Work Packages (WP), and this report is based on the work we have been doing on WP6 (Screening and Early Diagnosis). WP6 has the general objective of alleviating key barriers in order to offer cancer screening of an appropriate quality, in keeping with the Council Recommendation on Cancer Screening. The specific objectives of WP6 are:

1. To establish an intensive comprehensive training course in the management of cancer screening programmes.
2. To identify inequalities in cancer screening programmes.
3. To facilitate the provision of expert advice to regions seeking to implement or improve cancer screening programmes, as recommended by the Council of the EU.
4. To develop a pan-European consensus on quality criteria for health checks.

This report has focused on the second objective, which is to identify inequalities in cancer screening programmes.
2.2. Objective of identifying inequalities in cancer screening programmes

To achieve the specific objective of identifying inequalities in cancer screening programmes the following action must be taken:

1. Review the literature on determinants associated with social inequalities in participation in breast, cervix and colorectal cancer (CRC) screening programmes.
2. Design a questionnaire to analyse whether European cancer screening programmes take inequalities into account and whether any action has been taken to reduce these.

With this action, we aim to contribute to the improvement of participation rates of all social groups in cancer screening programmes, and ensure the equal distribution of benefits amongst all social groups in cancer screening programmes that have already been established. This proposal is in accordance with the interests of the EU Council Recommendation on cancer screening programmes [2] that explicitly recognises the need to reinforce compliance by taking action to ensure equal access to screening, whilst taking into account the possibility of needing to target particular socioeconomic groups.

2.3 Objective of this report

This report focuses on the first point of action, with the specific objective of identifying social inequalities in cancer screening programmes by reviewing the literature on determinants associated with social inequalities in participation in breast, cervical and CRC screening programmes.

This study aims to analyse how social inequalities in participation in breast, cervical and CCR cancer screening programmes have been researched in developed countries in Europe, North America, Oceania and Asia, using an observational approach (excluding interventions).
The report offers a general overview of what has been studied and where, with regard to social inequalities in participation in breast, cervical and colorectal cancer screening programmes. It shows:

1. Which countries have studied social inequalities in cancer screening participation.
2. Which type of methodology was used to analyse participation inequalities.
3. The scope of study.
4. Which kind of determinant was analysed (intermediary determinants and inequality axes) in relation with social inequalities in participation in cancer screening programmes.
3. METHODOLOGY

A systematic review was conducted using the electronic databases PubMed and Embase. Articles published in both databases, between 1st January 2001 and 1st June 2011, were included.

Items should aim to analyse social inequalities in participation in screening programmes for breast, cervical and colorectal cancer. The search strategy was defined through MeSH terms for the Pubmed database, and Emtree terms for the Embase database. The strategy is detailed below:

3.1. Search strategy

The search for and selection of MeSH and Emtree terms and their combination with Boolean terms, was conducted by the research team with the support of two documentalists with experience in conducting searches for literature using electronic databases.

Firstly, the key concepts and objectives of the search were defined, and then a search for the MeSH terms and Emtree terms which were closest to the selected and defined concepts was carried out. Key concepts and associated terms included:

- **"Participation"**: refers to the participation or non-participation of the population in health-related activities. The following MeSH terms were selected: "patient compliance", "patient participation" and "refusal to participate"; and the Emtree terms included: "patient participation", "patient compliance" and "refusal to participate".

- **"Social inequality"**: refers to the social, economic and cultural factors that characterise individuals or groups, and generate social inequalities. The selected MeSH terms were: "insurance coverage", "sex factors", "ethnic groups" and "socioeconomic factors"; and the selected Emtree terms were: "insurance", "sex difference", "ethnic group" and "socioeconomics".
"Cancer screening programmes for breast, cervical and CRC": refers to the methods and procedures offered to the population for the early detection of cancer. The MeSH terms were: "Early detection of cancer" and "Mass screening"; and the Emtree terms were: "early diagnosis" and "mass screening". The MeSH terms used to identify the three types of cancer were: "breast neoplasm" for breast cancer, "cervical neoplasm" for cervical and "colorectal neoplasm" for CRC; the Emtree terms were: "breast tumour", "cervical tumour "and" colorectal cancer ".

All selected terms were combined using the Boolean terms AND and OR, so we had 6 combinations (A to F) for each of the cancers (see Table 1 for CRC, Table 2 for breast cancer and Table 3 for cervical cancer).

The search strategy we used with the Pubmed database for CRC programmes (Consulted on 10/07/2011) is offered as an example:

Firstly, all articles referring to CRC screening programmes were identified individually using the MeSH terms:

"Colorectal Neoplasm"[MeSH]: 56.121 articles.
"Early Detection of Cancer"[MeSH]: 2.243 articles.
“Mass Screening”[MeSH]: 41.805 articles.

Then we proceeded to combine these search terms with the Boolean term AND:

Then we searched for MeSH terms referring to participation in the programme:

"Patient Compliance"[MeSH]
"Refusal to Participate"[MeSH]
"Patient Participation"[MeSH]

as well as to factors of social inequality:

"Insurance Coverage"[MeSH]
"Sex Factors"[MeSH]
"Ethnic Groups"[MeSH]
"Socioeconomic Factors"[MeSH]

And we combined these MeSH terms with the Boolean term OR:


We incorporated combinations A and C with the Boolean term AND:


We repeated the same process with combinations B and C:

Combination E (B+C): ("Colorectal Neoplasm"[MeSH] AND "Mass Screening"[MeSH]) AND ("Patient Compliance"[MeSH] OR "Refusal to

Finally we added the combinations D and E (Combination F) to obtain a total of 665 articles. The search strategy using the Embase database was the same but we used Emtree terms. As you can see in Table 1, for CRC, 665 articles were found using Pubmed and 29 using Embase, making a total of 694 articles.

The same search process was used for the other cancer screening programmes (cervical and breast) (see Tables 2 and 3). For breast cancer (Table 2), 764 articles were obtained using Pubmed and 295 using Embase. The total number of articles from both databases was thus 1059. For cervical cancer, 444 articles were obtained using Pubmed and 161 using Embase. The total number of articles from both databases was thus 605.
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<td><em>'patient participation'/exp</em></td>
</tr>
<tr>
<td></td>
<td>&quot;Patient Compliance&quot;[MeSH]</td>
<td>&quot;Patient Compliance&quot;[MeSH]</td>
</tr>
<tr>
<td></td>
<td>&quot;Refusal to Participate&quot;[MeSH]</td>
<td>&quot;Refusal to Participate&quot;[MeSH]</td>
</tr>
<tr>
<td></td>
<td>&quot;Patient Participation&quot; [MeSH]</td>
<td>&quot;Patient Participation&quot; [MeSH]</td>
</tr>
<tr>
<td><strong>Social inequalities</strong></td>
<td><em>'insurance'/exp</em></td>
<td><em>'insurance'/exp</em></td>
</tr>
<tr>
<td></td>
<td><em>'sex difference'/exp</em></td>
<td><em>'sex difference'/exp</em></td>
</tr>
<tr>
<td></td>
<td><em>'ethnic group'/exp</em></td>
<td><em>'ethnic group'/exp</em></td>
</tr>
<tr>
<td></td>
<td><em>'socioeconomics'/exp</em></td>
<td><em>'socioeconomics'/exp</em></td>
</tr>
<tr>
<td></td>
<td>&quot;Insurance Coverage&quot;[MeSH]</td>
<td>&quot;Insurance Coverage&quot;[MeSH]</td>
</tr>
<tr>
<td></td>
<td>&quot;Sex Factors&quot;[MeSH]</td>
<td>&quot;Sex Factors&quot;[MeSH]</td>
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<tr>
<td></td>
<td>&quot;Ethnic Groups&quot;[MeSH]</td>
<td>&quot;Ethnic Groups&quot;[MeSH]</td>
</tr>
<tr>
<td></td>
<td>&quot;Socioeconomic Factors&quot;[MeSH]</td>
<td>&quot;Socioeconomic Factors&quot;[MeSH]</td>
</tr>
<tr>
<td></td>
<td>&quot;colorectal tumour'/exp AND 'mass screening'/exp AND [1-1-2001]/sd NOT [1-6-2011]/sd: 915 articles.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*'patient compliance'/exp OR 'refusal to participate'/exp OR 'patient participation'/exp OR 'insurance'/exp OR 'sex difference'/exp OR 'ethnic group'/exp OR 'socioeconomics'/exp AND [1-1-2001]/sd NOT [1-6-2011]/sd: 244.896 articles.</td>
<td></td>
</tr>
<tr>
<td><strong>Combinations with booleans AND Y OR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination A</td>
<td>&quot;Colorectal Neoplasm&quot;[MeSH] AND &quot;Early Detection of Cancer&quot;[MeSH]: <strong>444 articles.</strong></td>
<td></td>
</tr>
<tr>
<td>Combination B</td>
<td>&quot;Colorectal Neoplasm&quot;[MeSH] AND &quot;Mass Screening&quot;[MeSH]: <strong>2.868 articles.</strong></td>
<td></td>
</tr>
<tr>
<td>Combination F (D+E)</td>
<td><strong>665</strong></td>
<td><strong>29</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>694 articles</strong></td>
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</tr>
<tr>
<td>Table 2. SEARCH STRATEGY FOR BREAST CANCER</td>
<td>PUBMED</td>
<td>EMBASE</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>MeSH/EMTREE terms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast screening programmes</td>
<td>&quot;Breast Neoplasm&quot;[MeSH]</td>
<td>'breast tumour'/exp</td>
</tr>
<tr>
<td></td>
<td>&quot;Early Detection of Cancer&quot;[MeSH]</td>
<td>'early diagnosis'/exp</td>
</tr>
<tr>
<td></td>
<td>&quot;Mass Screening&quot;[MeSH]</td>
<td>'mass screening'/exp</td>
</tr>
<tr>
<td>Participation</td>
<td>&quot;Patient Compliance&quot;[MeSH]</td>
<td>'patient compliance'/exp</td>
</tr>
<tr>
<td></td>
<td>&quot;Refusal to Participate&quot;[MeSH]</td>
<td>'refusal to participate'/exp</td>
</tr>
<tr>
<td></td>
<td>&quot;Patient Participation&quot;[MeSH]</td>
<td>'patient participation'/exp</td>
</tr>
<tr>
<td>Social inequalities</td>
<td>&quot;Insurance Coverage&quot;[MeSH]</td>
<td>'insurance'/exp</td>
</tr>
<tr>
<td></td>
<td>&quot;Sex Factors&quot;[MeSH]</td>
<td>'sex difference'/exp</td>
</tr>
<tr>
<td></td>
<td>&quot;Ethnic Groups&quot;[MeSH]</td>
<td>'ethnic group'/exp</td>
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<tr>
<td></td>
<td>&quot;Socioeconomic Factors&quot;[MeSH]</td>
<td>'socioeconomics'/exp</td>
</tr>
<tr>
<td>Combination B</td>
<td>&quot;Breast Neoplasm&quot;[MeSH] AND &quot;Mass Screening&quot;[MeSH]: <strong>3.583 articles.</strong></td>
<td>'breast tumour'/exp AND 'mass screening'/exp AND 1-1-2001/sd NOT 1-6-2011/sd: <strong>8.388 articles.</strong></td>
</tr>
<tr>
<td>Combination F (D+E)</td>
<td>764</td>
<td>295</td>
</tr>
<tr>
<td>Total</td>
<td>1059 articles</td>
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</tr>
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### Table 3. SEARCH STRATEGY FOR CERVICAL CANCER

<table>
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<tr>
<th>Cervical screening programmes</th>
<th>PUBMED</th>
<th>EMBASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MeSH/EMTREE terms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Uterine Cervical Neoplasm&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Early Detection of Cancer&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Mass Screening&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Patient Compliance&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Refusal to Participate&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Patient Participation&quot;[MeSH]</td>
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</tr>
<tr>
<td>Social inequalities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Insurance Coverage&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Sex Factors&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Ethnic Groups&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Socioeconomic Factors&quot;[MeSH]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combinations with booleans AND and OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination A</td>
<td></td>
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<tr>
<td>Combination B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination D (A+C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combination E (B+C)</td>
<td></td>
<td></td>
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<tr>
<td>Combination F (D+E)</td>
<td>444</td>
<td>161</td>
</tr>
<tr>
<td>Total</td>
<td>605 articles</td>
<td></td>
</tr>
</tbody>
</table>
3.2. Eligibility Criteria

The articles identified were selected as valid or not valid depending on the eligibility criteria defined a priori. The eligibility criteria were:

1. **The articles must have been published in peer review journals.** This criterion was fulfilled for all of the articles that had been identified in the search as the databases used (PubMed and Embase) only include articles published in "peer review journals".

2. **The articles must have been original articles.** Only original articles were included, excluding reviews, editorials, records, letters and comments.

3. **The articles must have been written in a European language.** This criterion was defined due to accessibility and translation resources.

4. **With regard to methodology, the studies must have been observational studies**, such as cross-sectional studies, cohort studies, and case-control studies. Review articles and intervention studies were excluded.

5. **The studies must have been conducted in Europe** (all European countries), **North America** (United States, Canada), **Oceania** (New Zealand, Australia) or **Asia** (Israel, North Korea and Japan).

6. **The studies must have been conducted in the context of cancer screening programmes.** Studies performed in the context of cancer screening programmes were selected, including not only population-based programmes, but also opportunistic and pilot programmes. We focused on breast, CRC and cervical cancer screening programmes. The screening tests used were, mammography for breast cancer screening, Pap smear for cervical cancer screening, and faecal occult blood test (FOBT), sigmoidoscopy and colonoscopy for CRC screening.

7. **The studies must have analysed the determinants influencing participation in cancer screening programmes, taking social determinants of health into consideration.** The studies that were included analyse, according to the Social Determinants of Health Model [17], on the one hand, intermediary
determinants that may influence participation, such as knowledge and information barriers, health beliefs and perceptions, organisational aspects, social support, personal reasons for participation barriers, previous health experience and on the other, include in their analysis, at least, one Structural Determinant, such as the following inequality axes: sex/gender, cultural/ethnic minorities, territory, socioeconomic status and disability.

3.3. Reading Guide

The valid articles were classified by title and abstract, and using a Reading Guide, with the following dimensions: continent and country of study; population/scope of study; methodology; intermediary determinants associated with participation; and inequality axes. The variables included in each dimension are list below:

- **Continent and country of study**: the studies were classified by continent (Europe, North America, Asia and Oceania) and by country (**Europe**: Germany, Andorra, Austria, Belgium, Cyprus, Croatia, Denmark, Slovak Republic, Slovenia, Spain, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Norway, Netherlands, Portugal, Czech Republic, Poland, United Kingdom, San Marino, Sweden, Switzerland, Romania, Turkey, Serbia; **North America**: United States, Canada; **Oceania**: Australia, New Zealand; **Asia**: Japan, South Korea, Israel)

- **Population/scope of study**: studies were classified according to the characteristics of the population and/or scope of study:
  - **General population**: all users or potential users of the cancer screening programmes.
  - **Vulnerable population**: subgroups of users or potential users, defined by any of the inequality axes (specific ethnic groups, low socioeconomic status groups etc) [37].
- **Health professionals**: socio-health professionals directly or indirectly related to cancer screening programmes (technical public health, primary care physicians, medical specialists etc).
- **Geographical area**: if the scope of study was a region, a territory, or a comparison of them.

- **Methodology**: studies were classified according to the methodology used, whether it was quantitative, qualitative or mixed (use of quantitative and qualitative techniques simultaneously)
  - **Quantitative methodology**: cross-sectional studies, cohort studies and case-control studies.
  - **Qualitative methodology**: focus groups, interviews or life histories.

- **Intermediary Determinants associated with participation**: which are those that lead to unequal exposure to risk factors [17]. The variables included were:
  - **Previous health-experiences**: All health experiences, of both individuals and those in their immediate environment, which may affect participation and/or willingness to participate. They include: participation in other types of cancer screening programme, a family history of cancer or close friends with cancer, healthy habits (physical activity, diet), use of health services in general, etc.
  - **Reasons to participate**: all reasons for participation or non participation, that are personally expressed such as fear, lack of time, lack of interest in personal health awareness, etc.
  - **Social support**: factors associated with the family and social support-networks, social integration, etc.
  - **Organisational aspects**: factors related with the organisational aspects of the programme itself, such as the invitation strategy, the characteristics of the screening test and/or diagnosis test, but also factors related with the type of health insurance or the general practitioner’s recommendations.
- **Perceptions, beliefs and attitudes**: beliefs about disease severity, and susceptibility, and the benefits and barriers to participation in the programme.
- **Information and knowledge**: all factors related with knowledge about the disease and the programme, such as the accessibility and understanding of information, etc.

- **Inequality axes (Structural Determinants)**: which are those that determine social position [17]: sex/gender, ethnic/cultural groups, socioeconomic status, territory and disability.

### 3.4. Data analysis

Two independent researchers carried out the classification of the studies. They were trained to read and classify the articles according to the Reading Guide. Some meetings were held with the research group in order to deal with any queries during the classification process. The discordances were solved through a third reviewer. The classification process took place between December 2011 and April 2012.

The articles were classified and compiled into a Microsoft Access database. The variables related with the continent/country of study, and the methodology dimensions had only one option (e.g.: for continent the possibilities were “Europe” or “North America” or “Asia” or “Oceania”); but the ones related with population/scope of study, intermediary determinants associated with participation, and inequality axes had various options (e.g.: for population/scope of study the possibilities were “Geographical Area” and/or “Health Professionals” and/or “Vulnerable Population” and/or “General Population”, so one article could focus both on the “General Population” and “Health Professionals” at the same time, or on a “Geographical Area” and the “Vulnerable Population” and so on).

A descriptive analysis was performed using the “R” statistical programme, using the chi-square test and assuming a level of significance of 5%. The data was analysed
as a whole (the three cancers together) and separately, by type of cancer screening programme (breast, cervical or CRC). Each of the dimensions of the study was analysed, stratified by the continents that had a greater proportion of studies, which in this case were Europe and North America.

The results of the study will be presented firstly, as a whole, (including all of the articles) and secondly, by type of cancer screening (CCR, cervical and breast). All of the data will be presented according to the dimensions of the study and shown in tables and graphs with percentages.
4. RESULTS

4.1. Three cancers together (colorectal, cervical and breast)

As can be seen in Algorithm 1, for 49 of the 2358 articles identified, the abstracts were not available. Moreover, 1610 were classified as “not valid” for various reasons, taking into account the eligibility criteria:

- 101 were not original articles, but editorials, letters, commentaries, records, and others.
- 1244 did not analyse inequalities in screening programme participation.
- 249 were intervention studies or bibliographic reviews rather than observational studies.
- 16 referred to other cancers.

699 articles were selected as “valid” (see Annex 3).
Algorithm 1. Number of valid and non-valid articles and reasons for exclusion (three types of cancer)

No Abstract
- 49 articles

Not valid
- 1610 articles

Reasons to exclude:
- No articles: 101
  - 27: Editorials
  - 11: Records
  - 25: Letters
  - 38: Comments
- No aim of the study: 1244
  - 417: no screening
  - 424: no participation and/or adherence
  - 403: no inequalities
- No observational studies: 249
  - 56: Reviews
  - 193: Study intervention
- Other cancer: 16

Valid
- 699 articles

Nº articles
- 2358
The distribution of all of the valid articles concerning the three cancers together (CRC, cervical and breast) (Graphic 1) has shown that the majority of the articles explored inequality in access to breast cancer screening programmes (40.35 %), followed by inequality in access to colorectal cancer screening programmes (32.04%) and thirdly, access to cervical cancer screening programmes (27.61%).

Graphic 1. Classification of the studies by type of cancer (Three types of cancer).

If we analyse the results by continent (Graphic 2), no significant differences can be found, being the studies that focused on breast screening programmes mainly represented in both Europe (41.96%,) and North America (39.27%) as well.
Graphic 2. Classification of the studies by type of cancer in Europe and North America (Three types of cancer).

If we analyse the continents on which the study was conducted (Graphic 3) it can be observed that, most of them are from North America (80.69%), followed by Europe (15.59%).

Graphic 3. Classification of the studies by continent (Three types of cancer).
The results by **country** (Table 4) show that the majority of the North American studies are from the United States (94.86%), and the majority of the European studies are from the United Kingdom (25.69%), followed by Spain and France (9.17% respectively).

**Table 4. Classification of the studies by country (Three types of cancer).**

<table>
<thead>
<tr>
<th>Country</th>
<th>Total</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North America</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td>29</td>
<td>5.14</td>
</tr>
<tr>
<td>United States</td>
<td></td>
<td>535</td>
<td>94.86</td>
</tr>
<tr>
<td>Total general</td>
<td></td>
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</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td></td>
<td>1</td>
<td>0.92</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>4</td>
<td>3.67</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td>4</td>
<td>3.67</td>
</tr>
<tr>
<td>Croatia</td>
<td></td>
<td>2</td>
<td>1.83</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td>5</td>
<td>4.59</td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td>10</td>
<td>9.17</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>10</td>
<td>9.17</td>
</tr>
<tr>
<td>Greece</td>
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<td>Hungary</td>
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<td>Ireland</td>
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<td>2.75</td>
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<td>Italy</td>
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<td>7.34</td>
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<tr>
<td>Lithuania</td>
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<td>0.92</td>
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<td>8</td>
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</tr>
<tr>
<td>Poland</td>
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<td>4.59</td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td>28</td>
<td>25.69</td>
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<td>Romania</td>
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<tr>
<td>Serbia</td>
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<td>Sweden</td>
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<td>Switzerland</td>
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<td>5</td>
<td>4.59</td>
</tr>
<tr>
<td>Turkey</td>
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<td>3</td>
<td>2.75</td>
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<td>Japan</td>
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<tr>
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<tr>
<td>Total general</td>
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<td>14</td>
<td>100.00</td>
</tr>
</tbody>
</table>
With regard to the **population/scope of study** (Graphic 4), 50.36% of the articles, focus on the general population, 45.49% on the vulnerable population, 7.73% on geographical area, and 3.86% on health professionals.

**Graphic 4. Classification of the studies by population/scope of study (Three types of cancer).**

If the results are analysed **by continent** (Graphic 5), some significant differences ($p<0.00$) can be observed. In Europe more studies focused on the General Population (85.32%) than in North America (42.73%), and fewer studies focused on the Vulnerable Population (9.17%) than in North America (53.19%).
Graphic 5. Classification of the studies by population/scope of study, in Europe and North America (Three types of cancer).

**EUROPE**

- Geographic Area: 9.17%
- Health Professionals: 3.67%
- Vulnerable Population: 9.17%
- General Population: 85.32%

**NORTH AMERICA**

- Geographic Area: 7.80%
- Health Professionals: 4.08%
- Vulnerable Population: 53.19%
- General Population: 42.73%
With regard to the **methodology** used (Graphic 6), it can be seen that most of the studies were quantitative, representing 80.26% of the total. Only 14.16% were qualitative studies and 5.58% used a mixed methodology.

**Graphic 6. Classification of the studies by methodology (Three types of cancer).**

Regarding the **Intermediary Determinants associated with participation** (Graphic 7), it can be observed that most of the studies analysed factors concerning organisational aspects (34.62%). The second most analysed factor was perceptions, beliefs and attitudes (31.76%), thirdly was reasons for participation (24.75%), followed by previous health experiences (13.59%), information and knowledge (13.16%), and social support (6.58%).
Graphic 7. Classification of the studies by Intermediary determinants analysed associated with participation (Three types of cancer).

Significant differences (p<0,05) can be seen between continents (Graphic 8), with the Intermediary Determinants perceptions, beliefs and attitudes studied to a greater extent in North America (33,51%) than in Europe (22,97%).
Graphic 8. Classification of the studies by intermediary determinants associated with participation in Europe and North America (Three types of cancer).

**EUROPE**

- **Previous health experiences**: 9.17% YES, 90.83% NO
- **Reasons for participation**: 25.36% YES, 74.64% NO
- **Social support**: 8.42% YES, 91.58% NO
- **Organizational aspects**: 39.45% YES, 60.55% NO
- **Perceptions, beliefs and attitudes**: 22.94% YES, 77.06% NO
- **Information and knowledge**: 11.01% YES, 88.99% NO
- **Others**: 0% YES, 100% NO

**NORTH AMERICA**

- **Previous health experiences**: 14.54% YES, 85.46% NO
- **Reasons for participation**: 24.29% YES, 75.71% NO
- **Social support**: 1.03% YES, 98.97% NO
- **Organizational aspects**: 34.22% YES, 65.78% NO
- **Perceptions, beliefs and attitudes**: 33.51% YES, 66.49% NO
- **Information and knowledge**: 13.48% YES, 86.52% NO
- **Others**: 42% YES, 58% NO
Taking into account the **inequality axes** analysed (**Structural Determinants**) (Graphic 9), more than half of the studies (62.23%) focused on ethnic-cultural group and 40.49% analysed socioeconomic status. These were followed by sex-gender (13.02%) and territory (12.59%).

**Graphic 9. Classification of the studies by inequality axes (Three types of cancer).**

Significant differences can be seen between **continents** (Graphic 10) with regard to the ethnic-cultural groups axis, territory (p<0.00) and socioeconomic status (p<0.05). In Europe there are more studies focusing on socioeconomic status and territory (51.38% and 29.36% respectively) than in North America (38.30% and 9.22%),
where there are more studies focusing on ethnic-cultural groups (70.74%) than in Europe (21.10%).

**Graphic 34. Classification of the studies by inequality axes, in Europe and North America (Three types of cancer).**
4.2. Colorectal cancer

As can be seen in Algorithm 2, for 33 of 694 articles identified, the abstracts were not available. Moreover 434 were classified as “not valid” for various reasons, taking into account the eligibility criteria:

- 39 were not original articles, but editorials, letters, commentaries, records, or others.
- 313 did not analyse inequalities in screening programme participation.
- 75 were intervention studies or bibliographic reviews rather than observational studies.
- 7 referred to other cancers.

227 articles were selected as “valid” (see Annex 1).
Algorithm 2. Number of valid and non-valid articles and reasons for exclusion (colorectal cancer)

No Abstract
33

Not valid
434

Reasons to exclude:

No articles: 39
12: Editorials
2: Records
15: Letters
10: Comments

No aim of the study: 313
51: no screening
59: no participation
203: no inequalities

No observational studies: 75
16: Reviews
59: Study intervention

Valid
227

Other cancer: 7

Nº articles
694
If we analyse the CHARACTERISTICS of the valid articles by continent (Graphic 11) the vast majority of the studies were conducted in North America (85.02%). The percentage of European studies was 11.45%.

Graphic 11. Classification of the studies by continent (colorectal cancer).
The results by country (Table 5) showed that 95.85% of the North American studies were from the United States (US), and 50% of the European studies were from the United Kingdom, followed by Italy (11.54%) and the Netherlands (7.69%).

Table 5. Classification of the studies by country (colorectal cancer).

<table>
<thead>
<tr>
<th></th>
<th>Colorectal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N   %</td>
</tr>
<tr>
<td><strong>North America</strong></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>8  4.15</td>
</tr>
<tr>
<td>United States</td>
<td>185 95.85</td>
</tr>
<tr>
<td>Total general</td>
<td>193 100.00</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Germany</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Belgium</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Croatia</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Denmark</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Spain</td>
<td>1   3.85</td>
</tr>
<tr>
<td>France</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Greece</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Hungary</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Ireland</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Italy</td>
<td>3   11.54</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2   7.69</td>
</tr>
<tr>
<td>Poland</td>
<td>0   0.00</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>13  50.00</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Romania</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Serbia</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Sweden</td>
<td>1   3.85</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Turkey</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Total general</td>
<td>26  100.00</td>
</tr>
<tr>
<td><strong>Asia</strong></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>1   33.33</td>
</tr>
<tr>
<td>South Korea</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Japan</td>
<td>2   66.67</td>
</tr>
<tr>
<td>Total general</td>
<td>3   100.00</td>
</tr>
<tr>
<td><strong>Australia</strong></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>5   100.00</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0   0.00</td>
</tr>
<tr>
<td>Total general</td>
<td>5   100.00</td>
</tr>
</tbody>
</table>
With regard to the **population and/or scope of study** (Graphic 12), the majority (58.15%) of the articles focused on the general population, 37.44% on the vulnerable population, 3.96% studied health professionals, and 5.73% of the studies focussed on a geographical area.

Graph 12. Classification of the studies by population/scope of study (colorectal cancer).

If we analyse these results **by continent** and compare the results for **Europe** and **North America** (Graphic 13), significant differences can be observed in the variable general population (p<0.00) and the vulnerable population (p<0.00). On the one hand, more studies in Europe than in North America focused on the general population (96.15% and 51.81% respectively). On the other hand, more studies in North America focus on vulnerable population than in Europe (43.01% and 3.85% respectively).
Graphic 13. Classification of the studies by population/scope of study in Europe and North America (colorectal cancer).

**EUROPE**

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>7,69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Professionals</td>
<td>0,00</td>
</tr>
<tr>
<td>Vulnerable Population</td>
<td>3,85</td>
</tr>
<tr>
<td>General Population</td>
<td>96,15</td>
</tr>
</tbody>
</table>

**NORTH AMERICA**

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>5,70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Professionals</td>
<td>4,66</td>
</tr>
<tr>
<td>Vulnerable Population</td>
<td>43,01</td>
</tr>
<tr>
<td>General Population</td>
<td>51,81</td>
</tr>
</tbody>
</table>

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
With regard to the **methodology** used (Graphic 14), it can be observed that most of studies (79.74%) were quantitative, 12.78% were qualitative and 7.49% used both methodologies.

**Graphic 14. Classification of the studies by methodology (colorectal cancer).**
With regard to the intermediary determinants associated with participation (Graphic 15), it can be seen that most of the studies analysed factors relating to organisational aspects (40.97%). The second most analysed factor was perceptions, beliefs and attitudes (35.24%), the third was reasons for participation (16.74%), followed by previous health experiences (15.86%), and information and knowledge (13.22%).

**Graphic 15. Classification of the studies by Intermediary determinants analysed associated with participation (colorectal cancer).**

No significant differences could be seen in the analysis by continent (Graphic 16).
Graphic 16. Classification of the studies by Intermediary determinants analysed associated with participation in Europe and North America (colorectal cancer).

**EUROPE**

- Previous health experiences: 7.69%
- Reasons for participation: 23.08%
- Social support: 11.54%
- Organisational aspects: 30.77%
- Perceptions, beliefs and attitudes: 42.91%
- Information and knowledge: 7.69%
- Others: 3.55%

**NORTH AMERICA**

- Previous health experiences: 16.56%
- Reasons for participation: 16.06%
- Social support: 7.35%
- Organisational aspects: 43.01%
- Perceptions, beliefs and attitudes: 35.23%
- Information and knowledge: 13.47%
- Others: 2.59%
Taking into account the inequality axes analysed (Graphic 17), more than half of the studies (59.47%) analysed ethnic-cultural groups, followed by socioeconomic status (55.51%) and sex-gender (29.96%).

**Graphic 17. Classification of the studies by inequality axes (colorectal cancer).**

Significant differences can be seen between continents. Comparing Europe and North America (Graphic 18), North America has a higher percentage (66.32%) than Europe (19.23%) on the “ethnic-cultural group” axis (p<0.00).
Graphic 18. Classification of the studies by inequality axes, in Europe and North America (colorectal cancer).
4.3. Cervical cancer

As can be seen in Algorithm 3, for 7 of the 605 articles identified, the abstracts were not available. Moreover 406 were classified as “not valid” for various reasons, taking into account the eligibility criteria:

- 24 were not original articles, but editorials, records, letters and comments.
- 307 did not analyse inequalities in screening programme participation.
- 75 were intervention studies or bibliographic reviews rather than observational studies.

192 articles were selected as “valid” (see Annex 2).
Algorithm 3. Number of valid and non-valid articles and reasons for exclusion (cervical cancer)

No Abstract
- 7

Not valid
- 406

Reasons to exclude:

- No articles: 24
  - 6: Editorials
  - 7: Records
  - 3: Letters
  - 8: Comments

- No aim of the study: 307
  - 117: no screening
  - 113: no participation
  - 77: no inequalities

- No observational studies: 75
  - 16: Reviews
  - 59: Study intervention

Valid
- 192

No articles
- 605
If we analyse the **CHARACTERISTICS** of the valid articles by **continent** (Graphic 19), the vast majority of the studies have been carried out in North America (75.52%). The percentage of European studies was 21.35%.

**Graphic 19. Classification of the studies by continent (cervical cancer).**

The results by **country** (Table 6) have shown that most North American studies are from the US (91.03%). In Europe the higher percentages are from the United Kingdom (19.51%), followed by Italy (12.20%), Spain and France (9.76%).
Table 6. Classification of the studies by country (cervical cancer).

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North America</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>13</td>
<td>8.97</td>
</tr>
<tr>
<td>United States</td>
<td>132</td>
<td>91.03</td>
</tr>
<tr>
<td>Total general</td>
<td>145</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Germany</td>
<td>2</td>
<td>4.88</td>
</tr>
<tr>
<td>Belgium</td>
<td>2</td>
<td>4.88</td>
</tr>
<tr>
<td>Croatia</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Denmark</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Spain</td>
<td>4</td>
<td>9.76</td>
</tr>
<tr>
<td>France</td>
<td>4</td>
<td>9.76</td>
</tr>
<tr>
<td>Greece</td>
<td>2</td>
<td>4.88</td>
</tr>
<tr>
<td>Hungary</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Ireland</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Italy</td>
<td>5</td>
<td>12.20</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
<td>7.32</td>
</tr>
<tr>
<td>Poland</td>
<td>2</td>
<td>4.88</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>8</td>
<td>19.51</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Romania</td>
<td>2</td>
<td>4.88</td>
</tr>
<tr>
<td>Serbia</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Sweden</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Turkey</td>
<td>1</td>
<td>2.44</td>
</tr>
<tr>
<td>Total general</td>
<td>41</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Asia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>1</td>
<td>25.00</td>
</tr>
<tr>
<td>South Korea</td>
<td>2</td>
<td>50.00</td>
</tr>
<tr>
<td>Japan</td>
<td>1</td>
<td>25.00</td>
</tr>
<tr>
<td>Total general</td>
<td>4</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Australia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>1</td>
<td>50.00</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1</td>
<td>50.00</td>
</tr>
<tr>
<td>Total general</td>
<td>2</td>
<td>100.00</td>
</tr>
</tbody>
</table>
With regard to the **population and/or scope of study** (Graph 20), 48.96% of the articles focused on the general population, 47.92% on the vulnerable population, 10.94% on geographical area and 4.69% on health professionals.

**Graphic 20. Classification of the studies by population/scope of study (cervical cancer).**

An analysis of the results **by continent**, comparing Europe and North America (Graphic 21) highlights some significant differences ($p<0.00$) in the variables general population and vulnerable population as the population of the study. Regarding the general population, there are more studies with this variable as the population of study in Europe (90.24%) than in North America (35.86%). With regard to the vulnerable population, we can see more studies analysing this type of population in North America (59.31%) than in Europe (12.20%).
Graphic 21. Classification of the studies by population/scope of study, in Europe and North America (cervical cancer).
With regard to the **methodology** used, (Graphic 22) it can be observed that most of the studies were quantitative (79.69%), 15.63% were qualitative and 4.69% used both methodologies.

**Graphic 22. Classification of the studies by methodology (cervical cancer).**
With regard to the intermediary determinants associated with participation (Graphic 23), it can be observed that most of the studies focused on organisational aspects (31.77%). The second most analysed factor is related to the reasons for participation in screening programmes (30.21%). The third was the evaluation of perceptions, beliefs and attitudes towards the programme and the disease (28.65%). Furthermore, 11.46% of studies analysed previous health experiences, 10.94% evaluated information and knowledge and 3.13% of the studies analysed social support.

Graphic 23. Classification of the studies by Intermediary determinants analysed associated with participation (cervical cancer).

If we analyse the intermediary determinants by continent, comparing Europe and North America, significant differences (p<0.005) can be observed in the determinant perceptions, beliefs and attitudes (Graphic 24). There were more studies focusing on this determinant in North America (33.10%) than in Europe (9.76%).
Graphic 24. Classification of the studies by Intermediary determinants analysed associated with participation in Europe and North America (cervical cancer).

**EUROPE**

- Previous health experiences: 17.20%
- Reasons for participation: 29.27%
- Social support: 7.32%
- Organizational aspects: 49.90%
- Perceptions, beliefs and attitudes: 9.76%
- Information and knowledge: 12.20%
- Others: 4.00%

**NORTH AMERICA**

- Previous health experiences: 11.72%
- Reasons for participation: 30.34%
- Social support: 17%
- Organizational aspects: 29.00%
- Perceptions, beliefs and attitudes: 33.11%
- Information and knowledge: 1.02%
- Others: 3.67%
Taking into account the inequality axes analysed (structural determinants) (Graphic 25), more than half of the studies focus on ethnic-cultural group (62.50%) and socioeconomic status (56.77%), followed by territory (17.71%) and sex-gender (4.17%).

Graphic 25. Classification of the studies by inequality axes (cervical cancer).

A significant difference can be observed between continents (Graphic 26) with regard to the ethnic-cultural group axis as well as the territory axis (p<0.05). More studies in North America (73.79%) focused on an ethnic-cultural group as a structural determinant than in Europe (26.83%). On the other hand, more European studies (34.15%) focused on territory as a structural determinant than in North America (12.41%).

### EUROPE
- **Sex-Gender**: 0% (YES), 100% (NO)
- **Ethnic-Cultural Groups**: 9.76% (YES), 90.24% (NO)
- **Socioeconomic Status**: 26.83% (YES), 73.17% (NO)
- **Territory**: 34.15% (YES), 65.85% (NO)
- **Disability**: 0% (YES), 100% (NO)

### NORTH AMERICA
- **Sex-Gender**: 2.76% (YES), 97.24% (NO)
- **Ethnic-Cultural Groups**: 73.79% (YES), 26.21% (NO)
- **Socioeconomic Status**: 53.10% (YES), 46.90% (NO)
- **Territory**: 12.41% (YES), 87.59% (NO)
- **Disability**: 2.07% (YES), 97.93% (NO)
4.4. Breast cancer

As can be seen in Algorithm 4, for 9 of the 1059 articles identified, the abstracts were not available. Moreover, 770 were classified as “not valid” for various reasons, taking into account the eligibility criteria:

- 38 were not original articles, but editorials, letters, commentaries, records, and others.
- 624 did not analyse inequalities in screening programme participation.
- 99 were intervention studies or bibliographic reviews rather than observational studies.
- 9 referred to other cancers.

280 articles were selected as “valid” (see Annex 3).
Algorithm 4. Number of valid and non-valid articles and reasons for exclusion (breast cancer)

Nº articles 1059

No Abstract
9

Not valid
770

Reasons to exclude

No articles: 38
9: Editorials
2: Records
7: Letters
20: Comments

No aim of the study: 624
249: no screening
252: no participation
123: no inequalities

No observational studies: 99
24: Reviews
75: Study intervention

Other cancers: 9

Valid
280
Analysing the **CHARACTERISTICS** of the valid articles by **continent** (Graphic 27), the vast majority of the studies were carried out in North America (80.71%). The percentage of European studies was 15%.

**Graphic 27. Classification of the studies by continent (breast cancer).**

The results by **country** (Table 7) showed that the majority of the North American studies (96.46%) are from the US. Regarding the European studies, the majority (16.67%) are from the United Kingdom, followed by Spain and France (11.90% respectively).
Table 7. Classification of the studies by country (breast cancer).

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>North America</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>8</td>
<td>3.54</td>
</tr>
<tr>
<td>United States</td>
<td>218</td>
<td>96.46</td>
</tr>
<tr>
<td>Total general</td>
<td>226</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>Belgium</td>
<td>2</td>
<td>4.76</td>
</tr>
<tr>
<td>Croatia</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>Denmark</td>
<td>3</td>
<td>7.14</td>
</tr>
<tr>
<td>Spain</td>
<td>5</td>
<td>11.90</td>
</tr>
<tr>
<td>France</td>
<td>5</td>
<td>11.90</td>
</tr>
<tr>
<td>Greece</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Hungary</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Ireland</td>
<td>2</td>
<td>4.76</td>
</tr>
<tr>
<td>Italy</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Lithuania</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3</td>
<td>7.14</td>
</tr>
<tr>
<td>Poland</td>
<td>3</td>
<td>7.14</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>7</td>
<td>16.67</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>Romania</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Serbia</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>4.76</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4</td>
<td>9.52</td>
</tr>
<tr>
<td>Turkey</td>
<td>2</td>
<td>4.76</td>
</tr>
<tr>
<td>Total general</td>
<td>42</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Asia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Israel</td>
<td>4</td>
<td>80.00</td>
</tr>
<tr>
<td>South Korea</td>
<td>1</td>
<td>20.00</td>
</tr>
<tr>
<td>Japan</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Total general</td>
<td>5</td>
<td>100.00</td>
</tr>
<tr>
<td><strong>Australia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>4</td>
<td>57.14</td>
</tr>
<tr>
<td>New Zealand</td>
<td>3</td>
<td>42.86</td>
</tr>
<tr>
<td>Total general</td>
<td>7</td>
<td>100.00</td>
</tr>
</tbody>
</table>
With regard to the **population and/or scope of study** (Graphic 28), 50.36% of the articles focused on the vulnerable population, 45% on the general population, 7.14% on a geographical area, and 3.21% on health professionals.

**Graphic 28. Classification of the studies by population/scope of study (breast cancer).**

Some significant differences (p<0.00) have been found in the analysis of results **by continent** (Graphic 29), comparing North America and Europe and with the scope of study as the general population and the vulnerable population. There were more studies focusing on the general population in Europe (73.81%) than in North America (39.38%). On the other hand, there were more studies focusing on the vulnerable population in North America (57.96%) than in Europe (9.52%).
Graphic 29. Classification of the studies by population/scope of study, in Europe and North America (breast cancer).

**EUROPE**

- Geographic Area: 9.52%
- Health Professionals: 71.4%
- Vulnerable Population: 5.52%
- General Population: 73.81%

**NORTH AMERICA**

- Geographic Area: 7.08%
- Health Professionals: 2.66%
- Vulnerable Population: 57.98%
- General Population: 30.38%
With regard to the methodology used, (Graphic 30) it has been observed that most of the studies were quantitative (81.07%), 14.29% were qualitative and only 4.64% used both methodologies.

Graphic 30. Classification of the studies by methodology (breast cancer).
With regard to the **intermediary determinants associated with participation** (Graphic 31), it can be seen that most of the studies analysed organisational aspects (31.43%), closely followed by perceptions, beliefs and attitudes (31.07%). The third most analysed intermediary determinant in the studies was reasons for participation (27.50%), followed by information and knowledge (14.64%), previous health experiences (13.21%), and social support (7.14%).

**Graphic 31. Classification of the studies by Intermediary determinants analysed associated with participation (breast cancer).**

No significant differences between **continents** were observed (Graphic 32).
Graphic 32. Classification of the studies by Intermediary determinants analysed associated with participation in Europe and North America (breast cancer).

**EUROPE**

- **Previous health experiences**: 7.14%
- **Reasons for participation**: 33.33%
- **Social support**: 22.69%
- **Organizational aspects**: 40.44%
- **Perceptions, beliefs and attitudes**: 23.81%
- **Information and knowledge**: 11.90%
- **Others**: 2.00%

**NORTH AMERICA**

- **Previous health experiences**: 14.60%
- **Reasons for participation**: 27.13%
- **Social support**: 2.52%
- **Organizational aspects**: 29.65%
- **Perceptions, beliefs and attitudes**: 35.30%
- **Information and knowledge**: 10.04%
- **Others**: 0.00%
Taking into account the inequality axes analysed (structural determinants) (Graphic 33), more than half of the studies (64.29%) analysed ethnic-cultural groups, followed by territory (17.86%) and socioeconomic status axis (17.14%).

**Graphic 33. Classification of the studies by inequality axes (breast cancer).**

Significant differences between North America and Europe can be observed (Graphic 34) with regard to the ethnic-cultural group (p<0.00), socioeconomic status and territory axes (p<0.05). In Europe, more studies focused on socioeconomic status and territory (28.57% and 40.48% respectively) than in North America (15.04% and 13.72% respectively). On the other hand, in North America (72.57%), more studies focused on ethnic-cultural group than in Europe (16.67%).
Graphic 34. Classification of the studies by inequality axes, in Europe and North America (breast cancer).

EUROPE

- Sex-Gender: 4.76%
- Ethnic-Cultural Groups: 16.67%
- Socioeconomic Status: 28.57%
- Territory: 40.48%
- Disability: 2.38%

NORTH AMERICA

- Sex-Gender: 5.75%
- Ethnic-Cultural Groups: 72.57%
- Socioeconomic Status: 15.04%
- Territory: 13.72%
- Disability: 2.21%
This study shows that research on social inequalities in cancer screening participation is scarce in Europe in comparison with the quantity of research carried out in North America (USA, Canada). In Europe, the majority of these studies have been carried out from a quantitative perspective, on breast cancer screening programmes, with the general population as the scope of study. The studies principally analyse, as an intermediate determinant, the barriers relating to the organisational aspects, and focus on the socioeconomic status inequality axis as a structural determinant of social inequalities in cancer screening participation. On the other hand, the North American studies differ from the European ones, in that they mostly analyse the vulnerable population as the scope of study, perceptions, beliefs and attitudes as an intermediate determinants, and focus on the ethnic-cultural groups inequality axis as a structural determinant.

The lack of published research about social inequalities in participation in screening programmes in Europe observed in this study may be due to the presumption that European welfare states, with their redistributive principles, generate equity for themselves. This redistribution and presumed equality of access to basic services (health, education, etc) does not always guarantee equity, and inequalities can be observed [38]. In North America inequalities in participation in cancer screening have been identified focusing on financial barriers related with health insurance [39]. However, in Europe, this kind of barrier should have a less significant influence due to the existence of National Health Services, and cancer screening programmes which are free of charge. However, inequalities are also identified where groups with lower socioeconomic status participate less in cancer screening programmes [6] [7]. This issue is likely to be relevant for the rising number of homeless people, asylum seekers and refugees in Europe. A report on the issue with 2010 data published in Eurostat [40] showed that there were over 115 million people (23.4% of the EU-27) at risk of poverty or social exclusion. However, when these data were stratified by country, the differences were stark, as it affected 47% of people in Bulgaria, 25.5% in Spain, 23.1% in the UK, almost 15% in Sweden and the Netherlands,
and 14% in the Czech Republic. This situation is not new. When comparing data from 2009-2010, little change was found. In Spain, the figures were even worse, increasing its share by 2.1% and the United Kingdom increasing its share by 1.1%. Moreover, in light of the current financial crisis and the budget cuts experienced by social services, and specifically by healthcare services, it is expected that social inequalities will increase even more, expanding the gap in inequalities in cancer. Therefore the monitoring of equity, and more specifically, participation in screening, should be prioritised.

With regard to screening programmes for the cancers which feature in our study, the European Guidelines for Quality Assurance in Cancer Screening recommend the establishment of organised and population-based programmes that define a target population group and invite individuals to participate by personal invitation, with the view to facilitate equal access [4]. This type of programme is based on a horizontal approach as it is directed at the entire target population, thus facilitating equal access. However, in spite of the fact that some studies show that organised/population-based programmes demonstrate greater equity than non-organised programmes [32], studies carried out on organised programmes in the Netherlands, England, France, Spain and Italy have identified inequalities in access [33] [34] [35] [36]. These inequalities, that remain despite the existence of population based programmes, can be explained by some structural determinants (as socioeconomic status, gender, ethnicity, etc,) which influence the beliefs, the attitudes and the health-behaviours and lead to inequalities in access to screening [41].

Furthermore, not all European countries have carried out organised programmes, with opportunistic programmes established in some countries, and programmes still in the development phase in others. This type of programme only extends to approximately 50% of the target population [3], thus the programmes do not cover the entire target population. Therefore, inequalities are linked not only to socioeconomic barriers, but also to structural health-system barriers, such as the type of screening programme or programme coverage.
The results of this study also show that if we compare the three types of cancer, inequalities in participation have been studied to the greatest extent in breast cancer screening programmes, followed by cervical cancer screening programmes, and then to a lesser extent in CRC screening programmes. This may be due to the fact that breast cancer screening programmes are established in more European countries (26 out of the 27 European Union member states) compared to cervical cancer screening programmes (25 out of 27) and CRC (19 out of 27)[3]. Moreover, 22 of the breast cancer screening programmes are population-based in contrast to 17 population-based cervical cancer screening programmes and 12 CRC programmes.

Different equity policy approaches have been defined: vertical and/or horizontal; horizontal policies are aimed at the entire population and aim to ensure equality in access, whilst vertical policies are targeted at specific population groups with particular vulnerability characteristics [42]. Both approaches aim to reduce inequalities. Horizontal policies obtain better results with regard to equity, but they are not sufficient in avoiding inequalities that can be reduced with specific policies for vulnerable population groups, such as vertical or “Robin Hood” policies [38]. It is therefore important that equity policies take both approaches into account.

Taking into account the different equity approaches defined above, it can be concluded from our results, that the European articles identified in this study primarily analyse inequality in participation in cancer screening programmes from an horizontal equity point of view. This statement is based on the fact that the majority of the European studies analyse barriers to participation with the scope of study being the general population. However, in North America, in comparison to Europe, there are a greater number of studies analysing inequalities from a vertical equity point of view, that is to say, analysing inequalities amongst particular groups of the vulnerable population, with ethnic group being the most studied inequality axis. As previously mentioned, the differences observed from the perspective of the analysis of inequalities between Europe and North America may be due to the presumed existence of horizontal equity in Europe, due to the development of welfare states.
However, as we noted earlier, horizontal inequalities can still be observed. These inequalities may become more significant with the current financial crisis, bringing about a welfare state crisis.

The barriers to participation analysed in the selected studies, that we labelled intermediary determinants, based on the Social Determinants of Health’s Model, [17] include those related to information, beliefs and attitudes towards the disease and the programme, previous health experiences, organisational aspects, social support and reasons for participation. As we highlighted, the barriers that are analysed to the greatest extent in all contexts, are those related to the organisational aspects, including the health insurance system, the invitation system, the type of test, the general practitioner’s referral etc. Some studies have observed that this type of organisational barrier affect the population to the greatest extent [43]. However, there are few studies analysing the extent to which these barriers affect the population when socioeconomic status is taken into account [44].

With regard to the methodology used for the articles reviewed, the majority of the studies have been carried out from a quantitative perspective, with few examples of a qualitative methodology. A qualitative methodology enables us to understand social representations, including social perceptions, everyday knowledge established socially and shared with the group, and with practical training [45]. This type of methodology allows us to understand the complexity of social reality, and as inequalities result from this complex interaction between sociocultural factors, this methodology can help us to better understand why they occur.
6. CONCLUSION AND RECOMMENDATIONS

The study offers a general overview of the situation with regard to research on social inequalities in participation in cancer screening programmes. Despite having carried out an exhaustive search of the most comprehensive databases of medical literature (Pubmed and Embase), some studies related to social inequalities in cancer screening participation may have been missed due to the MeSH and Emtree terms selected. Even so, this study offers a broad outline of the determinants related to social inequalities that are being researched, from which perspective, in which countries, and using which methodology. This is very useful for identifying the strengths and weaknesses in research on social inequalities in cancer.

Taking the results of this study into account, and following the recommendations of the European Guidelines for Quality Assurance in Cancer Screening [4] for assuring equal access to this type of programme, further studies are necessary to develop an understanding of how social inequalities exert their effect on participation in cancer screening and how we can address those issues, especially in the European context. This can be useful for obtaining knowledge about how to design, implement, and evaluate this type of programme with a view to reducing inequalities.

Moreover, a multidisciplinary approach is necessary in order to mitigate socioeconomic inequalities in cancer [46]. New integrative frameworks that link how socioeconomic status and inequality axes link with attitudes and perceptions could help to understand better the inequalities and target points for interventions[44].
7. REFERENCES


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