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National cancer plans and primary care a systematic analysis comparing Latin American and non-Latin American countries

Andrea Rioseco [a,b], Klaus Puschel [a,b,*], Gabriela Soto [a,b], Zdenka Vescovi [a,b], Isabella Fuentes [a,b], Felipe Dibiase [a,c], Gonzalo Ulloa [b], Carolina Goic [b], Jon Emery [b,d], Beti Thompson [b,e], Javiera Martinez-Gutierrez [b,f]

[a] Department of Family and Community Medicine, School of Medicine, Universidad Católica de Chile, Chile
[b] Centro de Prevención y Control de Cáncer (CECAN), FONDAP, Chile
[c] School of Medicine Universidad de Los Andes, Chile
[d] Centre for Cancer Prevention and Early Detection. Nanyang Technological University, Singapore
[e] Public Health Division, Fred Hutchinson Cancer Research Center, Seattle, WA, United States
[f] Centre for Cancer Research, Victoria Comprehensive Cancer Centre, Melbourne, Australia

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ABSTRACT

Background: Cancer is a growing global health issue, particularly in middle- and high-income countries. National Cancer Control Plans (NCCPs) have emerged as a strategic response to reduce this burden. Primary care plays a crucial role across the cancer care continuum, yet its systematic inclusion in NCCPs remains unclear—especially in countries facing significant epidemiological challenges.

Methods: This study employed a systematic qualitative design based on document analysis. Using the READ (Ready material, Extract data, Analyze, Distil) model, we examined the integration of primary care policies and practices in eight NCCPs: four from non-Latin American high-income countries (NLAHIc—Australia, Canada, the United States, and the United Kingdom) and four from Latin American middle-income countries (LATAMc—Argentina, Colombia, Chile, and Mexico). Covidence software facilitated the systematic text review, and a set of evidence-based key performance indicators (KPIs) was developed to guide the analysis.

Results: Primary care integration varied across countries. LATAMc NCCPs showed greater inclusion of primary care than NLAHIc. Health promotion strategies were more consistently present in NLAHIc, while LATAMc better integrated primary prevention into primary care. However, only 50 % of KPIs for secondary prevention and 15 % for survivorship care were included in LATAMc. Palliative care was more consistently integrated in LATAMc (75 %) than in NLAHIc (33 %).

Policy Summary

This is the first study to benchmark NCCPs from Latin American and high-income countries using evidence-based KPIs to assess primary care involvement in cancer control. Findings highlight an urgent need to strengthen primary care integration. LATAMc should improve secondary prevention and survivorship care, while NLAHIc need to better incorporate primary prevention and palliative care into their NCCPs.

1. Introduction

Cancer burden is growing rapidly globally [1]. A 77 % increase in the number of new cancer cases worldwide is predicted by 2050, compared to 2022 [2]. The projected increase in cancer incidence and mortality rates is inversely correlated with a country's Human Development Index (HDI), with lower-HDI nations facing a disproportionately higher burden—exemplified by moderately elevated HDI countries like Argentina and Chile expecting a 64 % rise in new cases and an 18 % greater increase in fatality rates compared to very high HDI countries such as Australia and the United Kingdom, which anticipate a 42 % increase in cases—thereby exacerbating global health inequities [3].

In 2005, the World Health Organization's 58th Assembly (WHA 58.22) adopted a resolution urging its Member States to develop

* Corresponding author at: Department of Family and Community Medicine, School of Medicine, Universidad Católica de Chile, Chile.
E-mail address: kpuschel@uc.cl (K. Puschel).

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national programs for cancer prevention and control to reduce the cancer burden globally. Following this recommendation, many countries developed National Cancer Control Plans (NCCPs) as a framework for cancer control policies and practices. The International Cancer Control Partnership (ICCP) was launched in 2012 and included organizations that were working to support cancer control planning initiatives. The ICCP (www.ICCP-portal.org) is an initiative that gathers all published NCCP and non-communicable disease (NCD) plans. This portal is maintained by the Union for International Cancer Control (UICC), and it is the most up-to-date repository of national cancer plans worldwide [4]. Currently, in 2025, the ICCP comprises 156 countries that have developed either NCCPs or Non-communicable Disease Plans (NCDPs) for cancer prevention and control globally [5].

Primary care is a key player in the cancer care continuum given its presence in the clinical-community interface and its crucial role in prevention, early diagnosis, survivorship, and palliative care [6]. In most countries, primary care is the first-contact and continuing care health care agent provided in community settings by multidisciplinary teams [7]. Stronger primary care systems are associated with increased care access, better health outcomes, less expensive services, and better patient experience [8–10]. In cancer control specifically, systematic evidence confirms the effectiveness of primary care interventions. Comprehensive strategies at the primary care level have proven effective in preventing, detecting, and managing cancer. These include tobacco cessation programs [11,12]; HPV vaccination, which has greatly reduced cervical cancer and other HPV-related diseases [13]; and screening methods like mammography, colonoscopy, and Pap/HPV tests, which help detect cancer early and lower death rates [14–16]. Primary care can play also a crucial role in coordinating care across the cancer continuum [17].

Although primary care offers significant advantages, its importance is inconsistently recognized across different countries. This inconsistency is evident in national health policies, allocation of resources, and healthcare decision-making processes, resulting in varied levels of support and implementation for primary care services [8]. Many countries continue to operate under a hospital-centric model, where healthcare systems prioritize tertiary and specialist care provided in hospital settings. This approach overshadows and undermines primary care services; consequently, depriving citizens of the numerous benefits associated with a robust primary care system [18]. In such countries, cancer specialists have traditionally led cancer control guidelines and practices [19]. The integration of primary care experts in the development of NCCPs and the inclusion of evidence-based practices in national guidelines are a very important step to achieve the benefits attributed to primary care. Despite the recognized importance of primary care in cancer control, there is a lack of detailed information regarding its representation and integration within NCCPs. Further, it is not clear to what extent primary care evidence-based practices are included in NCCPs and if there are differences between countries with different HDIs where cancer represents a substantial health burden for their populations. In this study, we assess the identification of key primary health practices in the cancer care continuum, and the inclusion of primary care experts' input in the NCCPS of eight countries with different HDIs.

2. Methods

Design: A qualitative design based on a document analysis model was applied in this study. Document analysis is a commonly used method in health policy research [20]. It is a systematic procedure for assessing documents and providing verifiable information on the significance and relevance of new or existing policies or practices [21]. In this study, we applied the READ (Ready material, Extract data, Analysis, Distil) approach of document analysis developed by Dalglish et al. [20] to collect and analyze the information of eight NCCPs. Specific criteria that included social, epidemiological, and health care system factors were used to select the NCCPs (Table 1). The Covidence software [22] was used to select, extract, and conduct a full-text review of the data (Extract data). Key performance indicators (KPIs) based on the Lancet Oncology Commission for primary care [23] and a systematic review of best primary care cancer control practices [24] were integrated in a template and used to identify and analyze the data (Analysis Data). An interdisciplinary team of researchers explored the significance and value of the data (Distill) using as a reference the dimensions for cancer control continuum provided by The Lancet Commission and the evidence-based cancer control practices for primary care identified by Martinez-Gutirrez J et al. in a systematic review [24]. We followed the Lancet Commission recommendation to develop KPIs that represent processes of care that can be clearly amenable to improvement.

2.1. Scope, definitions and selection criteria

NCCPs are defined as public health programs designed to reduce cancer incidence and mortality and improve the quality of life of cancer patients through the systematic and equitable implementation of evidence-based strategies for the cancer care continuum, making the best use of available resources [25]. The NCCPs portal is the most up-to-date repository of national cancer plans worldwide. As of August 2024, the ICCP contained 386 NCCP from 139 countries [4].

Table 1
Social and epidemiologic profile of selected Latin American and non-Latin American countries included in the study.

	HDI (2024) (Human Development Index)	**UHC Index** (%) (2022) (Universal Health Coverage Index)	**Cancer Mortality Rates** (2022) (ASR -World/ 100.000)	**Change in Mortality Rates** (2000–2020) (△ %)	**MIR**** (2022) (Mortality to Incidence ratio)	**National Cancer Plan Reviewed** (**n** Ref")
Argentina	**0.849**	79	102.7	**−23.8**	**0.477**	Plan Nacional de Control de Cáncer 2018–2022 [30]
Colombia	**0.758**	80	81.4	**−24.1**	**0.459**	Plan Decenal para el Control del Cáncer en Colombia 2012–2021 [31]
Chile	**0.860**	82	90.1	**−27.9**	**0.479**	Plan Nacional de Cáncer 2022–2027 [32]
Mexico	**0.781**	75	63.5	**−15.5**	**0.451**	Programa Específico de Prevención y Control del Cáncer 2021–2024 [33]
Australia	**0.946**	87	84.6	**−27.1**	**0.183**	Australian Cancer Plan 2023 [34]
Canada	**0.935**	91	96.4	**−29.2**	**0.279**	Canadian Strategy for Cancer Control 2019−2029 [35]
United Kingdom	**0.940**	88	98.3	**−24.3**	**0.320**	Achieving world-class Cancer outcomes: A strategy for England 2015−2020 [36]
United States of America	**0.927**	86	82.3	**−30.3**	**0.224**	National Cancer Plan 2023 [37]

** Estimated from Incidence and Mortality ratios reported by IARC/WHO in 2022 [28]

A visual representation of the selection process can be seen in Fig. 1. We performed a convenience sample of eight NCCPs. We selected four Non-Latin American high-income countries (NLAHIc) and four Latin American countries (LATAMc) based on four main criteria. First, we selected countries with a formal NCCP published on the ICCP platform. We excluded countries that reported plans only at a regional level. Second, we included a group of LATAMc and NLAHIc with similar HDIs within each group according to the United Nations Human Development Index [26]. Selected LATAMc had a high HDI that ranged between 0.75 and 0.86. High NLAHIc had a very high HDI that ranged from 0.92 to 0.95. Third, we selected LATAMc and NLAHIc with high health care access and coverage systems scores (> 75 %) as estimated by the Universal Health Coverage (UHC) Index developed by the World Health Organization [27]. The UHC Index is reported on a 0-to-100-unit scale and is computed as the means of 14 tracer indicators of health service coverage. Finally, we selected a group of countries with a similar epidemiological profile within each group. We used Age Standardized Mortality Rate adjusted for the world population (ASR) as the most robust indicator of cancer burden across countries [28]. We listed LATAMc according to the ASR and selected one country from each quartile. Then, we listed NLAHIc from North America, Europe, and Oceania according to their ASR, and selected one country from each quartile. This sampling method allowed us to attain a wide epidemiologic representation of the countries and regions included in the study. We selected NCCPs that were written in either English or Spanish due to the language proficiency of the research team. The countries selected were Argentina, Colombia, Chile and Mexico (LATAMc), Australia, Canada, United Kingdom (UK), and United States of America (USA) (NLAHIc)).

Table 1 summarizes social and epidemiological profiles of the selected countries and provides references to the NCCCPs reviewed. The table presents changes in cancer mortality rates over time and Mortality to Incidence Ratios (MIR). This ratio is a crude indicator of cancer burden that estimates the cases of disease lethality. The MIR index can be used for international benchmarking because incidence and mortality data of adequate quality are available from most countries. Higher MIR values generally indicate poorer survival [29].

2.2. Data collection and analysis

The Covidence software [22] was used to select, extract, and analyze the NCCPs of the countries included in this study. Covidence is an online platform created and recommended by the Cochrane Community for systematic reviews [22]. The selection and extraction of the data were guided by our set of evidence-based KPIs [24] integrated in a template within the Covidence software. The key dimensions included in Table 2 for cancer control in primary care were based on the dimensions identified by The Lancet Oncology Commission that went from primary prevention to palliative care [6]. Following these recommendations, we included a dimension to explore whether primary care collaborators were integrated and participated in the elaboration of the NCCP. We also followed the Lancet Commission recommendation to develop KPIs that represent processes of care that are clearly amenable to improvement. Key performance indicators for each dimension were based on evidence-based practices identified by the Lancet Commission Report (2015)[6], in a systematic review conducted by Oar et al. (2019) [23] and also in an updated review of systematic reviews conducted by [24]. The set of KPIs were grouped in an instrument with 6 dimensions and 32 items that included: relevance of primary care in the NCCP, and evidence-based practices in: health promotion, primary prevention, secondary prevention, survivorship and palliative care. The first section of the instrument "primary care relevance", focused on assessing the recognition and explicit mention of primary care in the NCCPs and the inclusion of primary care collaborators in their authorship. This section contained 3 KPIs. The next sections addressed the cancer care continuum defined for primary care (health promotion, primary prevention, secondary prevention, survivorship and palliative care) [23]. The health promotion and community engagement dimension included 4 KPIs, the primary prevention dimension incorporated 4 KPIs, the secondary prevention Section 6 KPIs, the survivorship care 4 KPIs, and the palliative care dimension 6 KPIs. The extraction template included a verification system consisting in the identification of the page number, paragraph, and wording associated with policies or practices assessed. References to policies and practices not contained in the NCP were reviewed if they were directly mentioned in the NCCP with a verifiable reference.

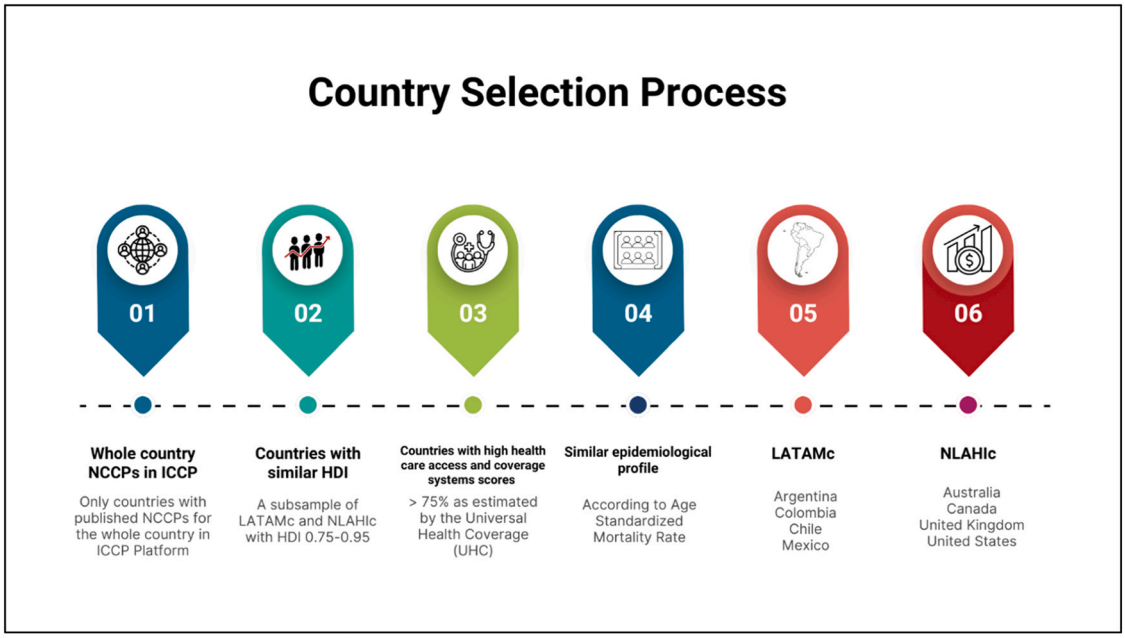

Fig. 1. Country selection process. NCCPs: National Cancer Control Plans; ICCP: International Cancer Control Partnership; LATAMc: Latin American Countries; NLAHIc: Non-Latin American High-Income Countries.

Table 2
Dimensions* and Key Performance Indicators** included in the analysis.

Dimensions	Key Performance Indicators (KPI)
I. Primary Care Relevance	1. Primary care collaborators included in authorship of the Plan. 2. Primary care identified as part of cancer control strategy 3. Clear role and functions of primary care in cancer control strategy
II. Health Promotion and Community Engagement	1. Health Promotion strategies identified at the community level 2. Community organizations or networking identified as a strategy for cancer control 3. Community Advisory Board (CAB) or similar identified as a strategy to work in cancer control 4. Community-based participatory activities identified as part of primary care strategies for cancer control
III. Primary Prevention	1. Primary Prevention included in primary care practices 2. Hepatitis B Virus Immunization 3. HPV Immunization 4. Systematic Brief Advice for smoking cessation, alcohol consumption, diet and regular exercise as part of primary care practices.
IV. Secondary Prevention	1. Secondary prevention included in primary care practices 2. PAP Test Program 3. HPV clinical detection 4. HPV Self detection 5. Mammography Screening Program 6. FOBT Program 7. Colonoscopy Program 8. Low Dose CT Lung Screening Program
V. Survivorship Care (SVc)	1. SVc Plan/Program identified as part of primary care 2. SVc clinical control practices identified 3. SVc included psychological care practices. 4. SVc included social determinants identification and support practices
VI. Palliative Care	1. Palliative Care Program explicitly identified as part of primary care 2. Palliative Care included community care practices (e.g. home visits) 3. Palliative Care included opioids management symptoms strategies 4. Interprofessional teamwork practices included in primary care 5. Psychological care included in primary care 6. Social care included in primary care practices

* Oar A, Moraes FY, Romero Y, Ilbawi A, Yap ML. Core elements of national cancer control plans: a tool to support plan development and review. Vol. 20, The Lancet Oncology. Lancet Publishing Group; 2019. p. e645–52

** J. Martinez-Gutierrez, et al. Are we ready? assessing effectiveness and implementation of cancer control strategies in primary care: a comprehensive review of systematic reviews. Vol. 42, Family Practice. Oxford University Press; 2025

The review of NCCPs started on August 8th, 2024, and was finalized on November 15th, 2024. We included the most recent version of each plan available at the commencement of our review process. NCCP documents were imported into the Covidence systematic review platform, and a full-text review was performed by two independent reviewers. A total of 8 reviewers, paired in dyads, participated in the process. Each pair of reviewers independently extracted the key information, using the data extraction template containing the semi-structured instrument (Table 2). Discrepancies in the extracted data were reviewed jointly by both reviewers to reach consensus. Disagreements in the extraction or analysis were resolved by a third reviewer.

Covidence software provided a structured synthesis of the data, ready for analysis. In the analysis, we used a highly sensitive approach, i.e., we included primary care policies or practices mentioned explicitly in the NCCPs and those that were not mentioned but referenced in a verifiable document. A dichotomous approach (1 = present; 0 = absent) was used to assess each KPI. We did not grade the density or relative importance of KPIs in the document and did not set a threshold (e.g., based on the number of citations of the KPI) to include it in the analysis. For each dimension, we conducted a quantitative group analysis of LATAMc and NLAHIc, adding the KPIs of each dimension and obtaining a percentage of KPIs achieved for each group of countries.

3. Results

3.1. Primary care relevance

The overall relevance of primary care in the development of NCCPs was 58 % (14/24 KPI recorded). LATAMc scored higher (67 % - 8/12 KPIs recorded) compared to NLAHIc (50 % - 6/12 KPIs recorded) when considering the three key items assessed in this dimension (Fig. 2). Most plans (6/8) had primary care members among their authors or collaborators. Exceptions were the Mexican and USA plans (Table 3). Half of the plans reported the number of participating primary care members. Number of participants varied from one in Colombia and the UK to 9 in Chile. The two NCCPs that did not include primary care collaborators, did not identify primary health care as part of the national cancer strategy with explicit functions and responsibilities. Only the Chilean and Argentine NCCPs included the three items of this dimension. They both integrated primary care collaborators in the development of the plan, recognized primary care as part of the cancer control strategy, and defined its roles and responsibilities in the cancer continuum. Table 3 presents “Primary Care relevance” by country.

3.2. Health promotion, community engagement, and primary prevention in primary care

The inclusion of health promotion and primary cancer prevention strategies in primary care within the NCCPs was dissimilar in LATAMc and NLAHIc. NLAHIc had a higher score (81 %; 13/16 items recorded) and included more systematic health promotion and community-based strategies in primary care compared to LATAMc (56 %; 9/16 items recorded) (Fig. 2). In contrast, LATAMc scored higher (81 %; 13/16) in primary prevention strategies such as immunization and brief advice for risk behaviors compared to NLAHIc (56 %; 9/16) (Fig. 2). Argentina, Australia and Canada NCCPs identified all four key items for health promotion and cancer control. They included health promotion and community engagement as an essential component of cancer control in primary care, identified networking and Community Advisory Boards as part of the plan, and proposed community based participatory interventions for cancer control in primary care.

In the primary prevention dimension, Argentina, Chile and Colombia included all essential items in their NCCPs (HPV, HBV, smoking cessation advice, decrease alcohol consumption, healthy eating and exercise) All plans integrated HPV immunization as part of their strategy. Most of them (75 %) made explicit that systematic brief advice for smoking cessation, alcohol consumption, healthy diet and regular exercise were part of primary care functions to improve cancer control. Table 3 presents the specific items of health promotion and primary cancer prevention identified in each NCCP by country.

3.3. Secondary prevention

Secondary prevention strategies (cervical, breast, colorectal and/or lung cancer screening practices) were more frequently mentioned in NLAHIc (72 % - 23/32 items registered) compared to LATAMc (50 % - 16/32 items registered) (Fig. 2). NLAHIc targeted a wider spectrum of cancer conditions and integrated a greater number of screening interventions. All plans considered cervical cancer screening, HPV detection and mammogram screening as a secondary cancer prevention strategy. The Australian NCCP was the only plan that incorporated self

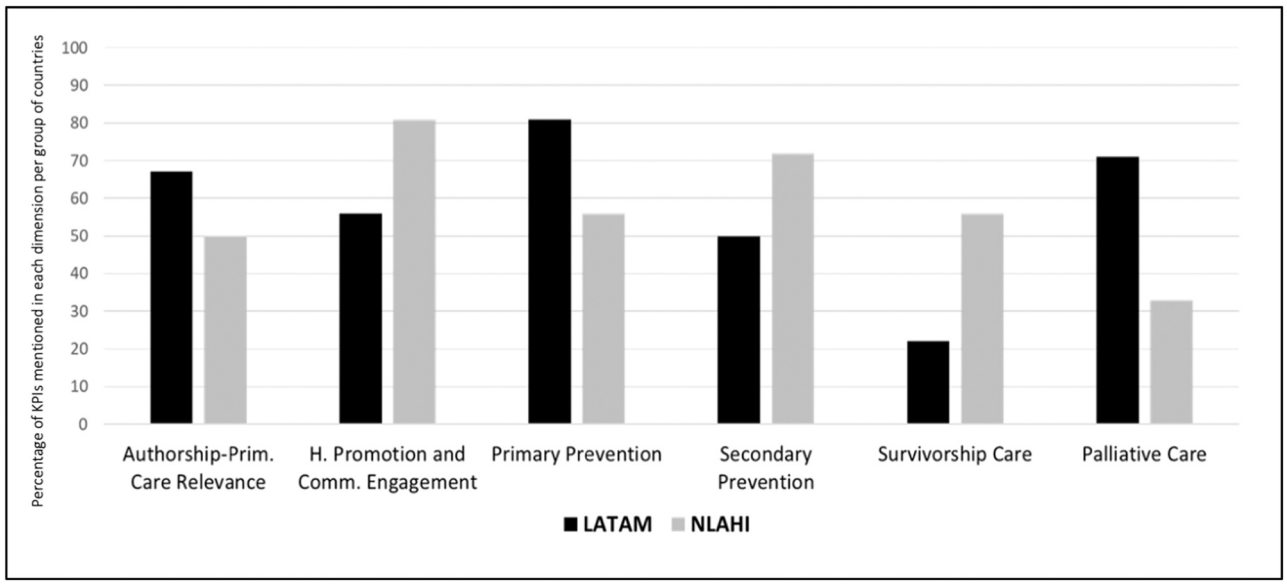

Fig. 2. Primary care cancer control dimensions included in National Cancer Plans in selected LATAM and NLAHI countries.

Table 3
Primary care relevance, health promotion, primary and secondary prevention practices identified in NCCPs.

	Latin American countries				Non-Latin American countries			
Dimensions/Key Performance Indicators	**Argentina**	**Colombia**	**Chile**	**Mexico**	**Australia**	**Canada**	**USA**	**UK**
Primary care relevance								
Primary care collaborators included in authorship of the Plan.	1	1	1	0	1	1	0	1
Primary care identified as part of cancer control strategy	1	1	1	0	1	1	0	1
Clear role and functions of primary care in cancer control strategy	1	0	1	0	0	0	0	0
Health Promotion and Community Engagement								
Health Promotion strategies identified at the community level	1	1	1	0	1	1	1	1
Community organizations or networking identified as a strategy for cancer control	1	0	0	1	1	1	1	1
Community Advisory Board (CAB) or similar identified as a strategy to work in cancer control	1	0	0	0	1	1	0	0
Community-based participatory activities identified as part of primary care strategies for cancer control	1	1	1	0	1	1	0	1
Primary Prevention								
Primary Prevention included in primary care practices	1	1	1	0	0	0	0	0
VHB Immunization	1	1	1	0	0	1	1	0
VPH Immunization	1	1	1	1	1	1	1	1
Systematic Brief Advice for smoking cessation, alcohol consumption, diet and regular exercise as part of primary care practices.	1	1	1	0	1	1	0	1
Secondary Prevention								
Secondary Prevention included in primary care practices	1	1	1	0	0	0	0	0
PAP Test Program	1	1	1	1	0	1	1	1
HPV clinical detection	1	1	1	1	1	1	1	1
HPV Self detection	0	0	0	0	1	1	0	0
Mammography Screening Program	1	1	1	1	1	1	1	1
FOBT Program	1	1	0	0	1	1	1	1
Colonoscopy Program	1	1	0	0	0	1	1	0
Low Dose CT Lung Screening Program	0	0	0	0	1	1	1	1

1 =Presence of the KPI; 0 =absence of the KPI

HPV testing as a cervical cancer screening strategy in primary care. Colorectal cancer screening strategies were mentioned in most plans (6/8) except in the Chilean and in the Mexican ones which did not identify any secondary prevention strategy for this condition. Table 3 shows the key items associated with secondary prevention in each NCCP.

3.4. Survivorship and palliative care

Survivorship care was the lowest dimension integrated in LATAMc NCCPs. The overall score for survivorship care in primary care in LATAMc was 13 % (2/16 items recorded) compared to 56 % (9/16 items recorded) in NLAHIc (Fig. 2). The Canadian NCCP was the only plan that included all four dimensions in their plan. The Canadian NCCP recognized survivorship care as part of the primary care roles and identified clinical, psychological and social strategies in primary care to address the cancer survivor population. The Chilean and the Australian plans recognized survivorship care as part of the primary care roles but did not address specific clinical (e.g. pain, fatigue), psychological (depressive disorder screening) or social (e.g. support groups) strategies for improving the care of this population. Table 3 shows the specific items included in this dimension and the report on the different plans by country.

Palliative care was considered part of the primary care role in most LATAMc, and they described specific functions associated with it. LATAMc demonstrated a stronger commitment to integrating palliative care into primary care services within their NCCPs. This was evidenced

by higher scores in assessments measuring the extent of this integration compared to other regions (75 % - 18/24 items reported) compared to NLAHIc (33 % - 8/24 items reported) (Fig. 2). Argentina and Chile were the only countries that included all six items integrated in this dimension. These items considered clinical support (e.g. pain management), psychological care, social support, and community-based strategies. Table 4 presents the items identified in each NCCP by country for palliative care.

4. Discussion

In this study, we saw considerable variation in the six dimensions of the National Cancer Plans (NCCPs). Primary care relevance, primary prevention, and palliative care were most prevalent in LATAM countries compared to NLAHl countries. The latter were stronger in health promotion, secondary prevention, and survivorship care. Overall, however, all NCCPs had elements of all six dimensions, with varying degrees of inclusion.

Stronger primary care systems are associated with higher access to care, better health outcomes, less expensive services, and better patient experience [8] [9] [10]. Despite the robust evidence on the key roles of primary care in cancer control [6], even countries that mentioned primary care in their NCCPs did not always define clear functions and responsibilities for primary health care teams. The consequences of this lack of clarity might be related to the slow implementation of evidence-based cancer control interventions in primary care globally [24]. A comprehensive evaluation of five evidence-based cancer control programs (clinicians' advice to quit smoking, mammography, colorectal cancer screening, human papillomavirus co-testing and vaccination) found that the adoption by 50 % of the target population took an average of 15 years from the landmark publication [38]. Similar results were observed in a primary care cohort study that included 60,000 people in Santiago, Chile [39]. The authors demonstrated that implementation of evidence-based cancer prevention strategies ranged from 10 % for brief advice counseling for tobacco or alcohol consumption to 50 % for cervical or breast cancer screening in 2018–2022. In contrast, immunization rates for HBV and HPV were over 90 % in the same period. In Puschel et al.'s cohort study, opportunistic practices were associated with low implementation rates, while organized-systematic practices contained in national guidelines were associated with higher implementation rates [39]. In a similar fashion, the National Cancer Institute in the United States launched the Implementation Science Centers Network to enable the effective and equitable translation of evidence-based strategies to reduce cancer risk and improve outcomes [40].

It should be noted that the inclusion of primary care experts in the NCCPs and the identification of specific functions and responsibilities of primary care teams in the NCCPs do not ensure the implementation of key cancer control practices [41]. Nevertheless, this approach is crucial for several reasons: it empowers local healthcare teams, facilitates a more equitable distribution of resources, and enables the reorganization of medical practices to better address communities with high healthcare needs. To leverage the benefits of primary care in the cancer control continuum, a stronger and more systematic inclusion in the NCCPs is required [42].

LATAMc integrated fewer screening prevention practices in the NCCPs compared to the NLAHI selected non-Latin American countries. The limited integration of screening practices related to cervical, breast, colorectal, and lung cancers is of particular concern given the increasing burden of these cancers in Latin America. There is robust evidence that supports earlier diagnosis, and the lower mortality rates associated with these practices [43]. Self-testing for HPV has proven to be effective for increasing cancer screening rates both in high- and low-income countries [44,45]. LATAMc did not include self-HPV testing as a prevention strategy in their NCCPs to reduce the cervical cancer burden, although mortality rates are 2–3 times higher in Chile or Colombia compared to Canada or Australia, where HPV self-testing is included [46]. Furthermore, there is concern about the increasing mortality trend of cervical cancer for the 2015–2030 period among young women in Argentina and Mexico [47].

Colorectal cancer is increasing rapidly in Latin America, and currently is the second most common related death in the region [48]. There is consistent evidence on the effectiveness of screening to improve early detection and reduce mortality rates [49]. Despite the robust evidence, colorectal cancer screening was not included in the NCCPs of Chile and Mexico. In contrast, they were included in all NLAHIc countries selected in this study.

Mammogram screening was included in all NCCPs analyzed in our study. The introduction of mammogram screening in LATAM countries was about 10 years later than in most European and North American countries, but the adherence rates are still below 70 % [50]. The challenge for most LATAMc in secondary breast cancer prevention is to move from opportunistic to a systematic screening model.

Screening programs should not only consider the use of an accurate test with high sensitivity and specificity but also the availability of an effective and timely treatment. As mentioned, there is robust evidence of the effectiveness and cost-effectiveness of breast and colorectal cancer screening compared to non-screening [14,15]. Most LATAMc have implemented breast cancer screening programs that include all the components required, including treatment of detected cases. However, there is variability in the inclusion of colorectal cancer screening programs in LATAMc. The inclusion of colorectal cancer screening programs has been included as a priority in the Latin American and Caribbean Cancer Code launched by the Panamerican Health Organization [51] given the high burden related of this disease. The absence of health policies that include colorectal screening programs in the NCCPs of LATAMc should be a matter of concern given the epidemiologic scenario and the evidence available on its cost-effectiveness.

Table 4
Survivorship care and palliative care practices as part of primary care practices in the NCCPs.

	Latin American countries				Non-Latin American countries			
Dimensions/Key Performance Indicators	Argentina	Colombia	Chile	Mexico	Australia	Canada	USA	UK
Survivorship care (SVc)								
SVc Plan/Program identified as part of primary care	0	0	1	0	1	1	0	0
SVc clinical control practices identified	0	0	0	0	0	1	1	1
SVc included psychological care practices.	0	0	0	0	0	1	0	1
SVc included social determinants identification and support practices	0	1	0	0	0	1	0	1
Palliative Care								
Palliative Care Program explicitly identified as part of primary care	1	0	1	1	0	1	0	1
Palliative Care included community care practices (e.g. home visits)	1	0	1	0	0	1	0	1
Palliative Care included opioids management symptoms strategies	1	1	1	0	0	0	0	0
Interprofessional teamwork practices included in primary care	1	1	1	0	0	1	0	1
Psychological care included in primary care	1	1	1	0	0	1	0	0
Social care included in primary care practices	1	1	1	0	0	1	0	0

1 =Presence of the KPI; 0 = absence of the KPI

A different strategy might be considered for lung cancer control. NLAHI countries included in our study considered lung cancer screening detection through the low-dose scanner in their NCCPs. The evidence shows that this screening could reduce mortality rates in heavy smokers [52]. However, the high cost of this strategy is a strong limitation for LATAMc. There is some evidence that primary preventive smoking cessation interventions could reduce the incidence of lung cancer by 8 %-46 % while screening reduces lung cancer mortality by 1 %-24 % and is generally less effective and more costly than smoking cessation interventions [53]. Therefore, NCCPs should focus on assuring training and resources to improve smoking cessation interventions in primary care as a primary measure, especially in LATAMc with fewer resources than NLAHI countries. This strategy is consistent with the Latin American and Caribbean Code against cancer recommendation [51].

Our study reveals that there is an urgent need to integrate survivorship care in NCCPs, particularly in LATAMc. Survivorship care is an increasing problem globally [54], and the population of cancer survivors is increasing rapidly in Latin America [55]. However, there is a lack of integrated care in this population [55,56]. Our results are similar to those published by Romero et al. et al. in their global overview of NCCPs that showed that only half of NCCPs included survivorship strategies for cancer care [5]. There is no clear model for survivorship care, however, evidence shows that the integration of primary care with specialty care (shared care) facilitates a comprehensive approach that could respond better to the multiple dimensions or cancer survivors´ health needs [17]. LATAMc did not include primary care as a relevant player in survivorship care in the NCCPs. NLAHIc included some KPIs in clinical (e.g pain management), psychological (depressive detection), and social (group support) dimensions in their plans. Comprehensiveness of the shared-care model can be an effective way to improve the quality of care for the increasing population of cancer survivors and should be strongly included in NCCPs [17].

In contrast, most LATAMc incorporate KPIs of palliative care as part of the primary care responsibilities. This is in line with the recommendation of the World Health Organization “Palliative care for all” [57] that promotes the integration of primary care as a key player in palliative care [58]. Latin America has made significant advances in palliative care. For example, the number of countries with a national palliative care plan increased from 29 % in 2012–59 % in 2020 [59]. A similar scenario could be achieved for the increasing survivorship population through the integration of national policies in the NCCPs.

4.1. Strengths and limitations

Our pioneering study benchmarks NCCPs from Latin American and high-income countries using evidence-based key performance indicators, offering a systematic framework to enhance primary care’s role in cancer control and guide future development and evaluation. We used an evidence-based approach to select the key performance indicators for primary care practices that should be included in the NCCPs. There are, however, some limitations that are important to address. First, our study did not explore the impact of primary care in cancer burden, it rather focuses on whether key primary dimensions and evidence-based practices were included in National Cancer Control Plans (NCCPs). Second, our results may not apply to countries with a different profile from the ones selected in this study. We used a convenience sampling to select a group of LATAMc and NLAHIc and analyzed their NCCPs. We defined clear selection criteria to include middle-high and high-income countries where cancer is a relevant epidemiologic problem and a high public health priority. All selected countries have an NCCP and have a health care system where primary care is identified as an important component. NCCPs had to be written in English or Spanish which excluded countries that do not speak these two languages. Second, the information analyzed was based on a document analysis approach and it does not necessarily reflect implementation practices in real-world settings. Consequently, our findings do not reflect the actual implementation of cancer control practices in either primary care settings or specialized healthcare facilities. Rather, they indicate the presence or absence of these practices within official policy documents. The identification of practices in the NCCPs expresses a political definition that is a necessary first step to allocate resources and effectively implement cancer control guidelines. Finally, it is possible that some evidence-based cancer control practices were not included in the NCCPs but were incorporated in other national guidelines. We searched the references of all practices included in each NCCP for the performance indicators selected. In the case they were mentioned in a referenced document, we included them as part of the analysis.

5. Conclusion

Latin American middle- to high -income and non-Latin American high income National Cancer Control Plans differed in their orientations to the six dimensions of care. From those six dimensions, primary care was identified as one key player in the cancer care continuum. Our study reveals the urgent need to enhance integration of evidence-based primary care practices into the National Cancer Care Control Plans. A more consistent integration of secondary cancer preventive practices in Latin America, and of cancer survivorship care globally also is needed to improve the quality of care in the emerging population of cancer survivors. Palliative care practices have been consistently integrated in primary care in Latin American National Cancer Control Plans.

CRediT authorship contribution statement

Jon Emery: Writing – review & editing. **Carolina Goic:** Writing – review & editing. **Gonzalo Ulloa:** Data curation. **Klaus Puschel:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Andrea Rioseco:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Javiera Martinez-Gutierrez:** Writing – review & editing, Writing – original draft, Data curation. **Beti Thompson:** Writing – review & editing. **Felipe Dibiase:** Writing – review & editing, Data curation. **Isabella Fuentes:** Writing – review & editing, Data curation. **Zdenka Vescovi:** Writing – review & editing, Data curation. **Gabriela Soto:** Writing – review & editing, Methodology, Data curation.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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