Received: 20 February 2024 | Revised: 27 February 2024 | Accepted: 8 March 2024

DOI: 10.1002/pbc.30973

Pediatric Blood & Cancer

aspho
The American Society of Pediatric Hematology/Oncology

WILEY

SPECIAL REPORT

International Society of Paediatric Oncology (SIOP) Global Mapping Programme: Latin American Society of Pediatric Oncology (SLAOP) country-level report

Andrea Cappellano[1] | **Maite Gorostegui**[2] | **Oscar Gonzalez-Ramella**[3] | **Nevicolino Pereira Carvalho Filho**[4] | **Diana Valencia**[5] | **Luisa Chantada**[6] | **Claudia Sampor**[7] | **María J. Serrano**[8] | **Carla Macedo**[1] | **Oscar Ramirez**[9] | **Susan Sardinas**[10] | **Eva Lezcano**[11] | **Patricia Calderón**[12] | **Yessika Gamboa**[13] | **Ligia Fu**[14] | **Wendy Gómez**[15] | **Magdalena Schelotto**[16] | **Cecilia Ugaz**[17] | **Pablo Lobos**[6] | **Simone Dos Santos Aguiar**[1] | **Katiuska Moreno**[18] | **Julia Palma**[19] | **Gissela Sánchez**[20] | **Filomena Moschella**[21] | **Pascale Yola Heurtelou Gassant**[22] | **Thelma Velasquez**[23] | **Karina Quintero**[24] | **Florencia Moreno**[25] | **Milena Villarroel**[19] | **Soad Fuentes Alabi**[26] | **Liliana Vasquez**[27] | **Julia Challinor**[28] | **Guillermo L. Chantada**[2,16]

Correspondence
Guillermo Chantada, Hospital Pereira Rossel-Fundación Pérez Scremini, Bulevar Artigas 1556, Montevideo 11600, Uruguay.
Email: guillermoluis.chantada@sjd.es

Funding information
Fondation Sanofi Espoir; Foundation S

Abstract

Background: Latin American countries are improving childhood cancer care, showing strong commitment to implement the Global Initiative for Childhood Cancer, but there are scant publications of the situation at a continental level.

Methods: As part of the International Society of Paediatric Oncology Global Mapping project, delegates of each country participating in the Latin American Society of Pediatric Oncology (SLAOP) and chairs of national pediatric oncology societies and cooperative groups were invited to provide information regarding availability of national pediatric cancer control programs (NPCCP), pediatric oncology laws, pediatric oncology tumor registries, and training programs and support to diagnosis and treatment.

Results: Nineteen of the 20 countries participating in SLAOP responded. National delegates reported nine countries with NPCCP and four of them were launched in the past 5 years. National pediatric tumor registries are available in eight countries, and three provided published survival results. Fellowship programs for training pediatric oncologists are available in 12 countries. National delegates reported that eight countries provide support to most essential diagnosis and treatments and 11 provide partial or minimal support that is supplemented by civil society organizations. Seven countries

---

Abbreviations: ACHOP, Asociación Colombiana de Hematología/Oncología Pediátrica [Colombian Association of Pediatric Hematology/Oncology]; AHOPCA, Asociacion de Hemato-Oncologos Pediatras de Centro America. (Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Dominican Republic, Haiti); GICC, Global Initiative for Childhood Cancer; NPCCP, national pediatric cancer control program; PAHO, Pan American Health Organization; PINDA, Programa de Drogas Antineoplásicas para Niños [Children's Antineoplastic Drug Program]; SIOP, International Society of Paediatric Oncology; SLAOP, Sociedad Latino Americana de Oncología Pediátrica [Latin American Society of Pediatric Oncology]; SOBOPE, Sociedade Brasileira de Oncologia Pediátrica [Brazilian Society of Pediatric Oncology]; WHO, World Health Organization.

https://doi.org/10.1002/pbc.30973

have a pediatric oncology law. There are three international cooperative groups and four national societies for pediatric oncology.

Conclusion: Despite many challenges, there were dramatic advances in survivorship, access to treatment, and availability of NPCCP in Latin America. Countries with highest social development scores in general provide more complete support and are more likely to have NPCCP, training programs, and reported survival results.

KEYWORDS
health services, International Society of Pediatric Oncology (SIOP), Latin America, mapping

1 | INTRODUCTION

After the World Health Organization (WHO) launched the Global Initiative for Childhood Cancer (GICC) in 2018, the International Society of Paediatric Oncology (SIOP) embarked on a project to map all the facilities treating children with cancer worldwide. Basic questions were selected to describe the main characteristics and resources for childhood cancer care. The first continent mapped was Africa, showing for first time the pediatric oncology capacity from this continent.[1]

The Latin American Society of Pediatric Oncology (SLAOP), is SIOP's continental branch for the region, includes Spanish- and Portuguese-speaking countries and recently Haiti. SLAOP embraced the challenge to map in Latin America. SLAOP was created in 1979, when pediatric oncology services in the region were emerging mostly in countries with higher socioeconomical indicators in well-established pediatric hospitals, for example, Argentina, Brazil, Chile, Uruguay, and México.[2] Members from other countries gradually joined SLAOP as pediatric oncology services became available in their setting.

In the past 5 years, many countries included action for childhood cancer as part of their national pediatric cancer control programs (NPCCP). The WHO GICC carried out regionally by the Pan American Health Organization (PAHO) was instrumental in accelerating this process, and now encourages member states to provide universal access for diagnosis and treatment in countries where this is not yet available or where there are significant gaps.[3,4] Although all countries in Latin America now provide care to children with cancer, inequities persist in supply of diagnosis and treatment, survival rates, and overall quality of care. The situation of pediatric oncology in Latin America has been described mostly at national levels or in position papers.[5–7] There are no publications systematically mapping national situations in terms of support to treatment, national programs, pediatric oncologist workforce training, or national registries for childhood cancer.[5,6] Therefore, on behalf of SIOP and SLAOP, we report on the current landscape of pediatric oncology in Latin America by country after having conducted the mapping of the region.

2 | METHODS

In July 2023, SLAOP national delegates were invited to provide data about the availability and characteristics of programs for pediatric oncology in their countries. When available, the national group or national cancer institute were contacted to obtain the necessary information. Therefore, the chairs of Programa Infantil para Drogas Antineoplásicas (PINDA; Children's Program for Antineoplastic Drugs) (Chile), Asociación Colombiana de Hematología y Oncología Pediátrica (ACHOP; Colombian Association of Pediatric Hematology and Oncology) (Colombia), Sociedade Brasileira de Oncologia Pediátrica (SOBOPE; Brazilian Society of Pediatric Oncology) (Brazil), Agrupación Mexicana de Onco Hematología Pediátrica (AMOHP) (Mexico), and the Instituto Nacional de Cáncer, Argentina (Argentinian National Cancer Institute) also provided additional information for these countries.

A 10-item questionnaire was sent to the participants via a Google Form document. All SLAOP national delegates were interviewed to confirm their national data for discrepancies and omissions and provide additional feedback for description of sources of support in their countries. Socioeconomic indicators were obtained from the World Bank Data website and estimates of cases were taken from PAHO childhood cancer country profiles.[8,9] The statistics for total population come from the World Bank's open access development data. Poverty figures describe the percentage of households living in poverty by the Economic Commission for Latin America and the Caribbean (ECLAC) that measures poverty using the basic food basket.[10] This is a selection of food products that cover basic nutrition needs, the availability of the food products, and their price.[2] The population count and percentage of children under 18 were retrieved from the UNICEF Data Warehouse, sourced from the United Nations World Population Prospects.

3 | RESULTS

All invited participants completed the questionnaire. Results are summarized in Table 1 and illustrated in Figure 1, and described below by country.

3.1 | Argentina

Argentina has been providing public support to care for children and adolescents with cancer regardless the insurance status since

TABLE 1 Description of socioeconomical and demographic indicators by country and responses from national delegates.

Country/income level	Population (millions)	Population under 18 years (millions)	Percentage households living in poverty	Estimated pediatric cancer cases	NPCCP	Pediatric cancer law	Public supply of diagnosis and treatment	National registry for pediatric cancers	Training program for pediatric oncologists
Argentina/UMIC	46.234	12.5	22.6	1919	Yes +5 years	Yes	Includes most of the essential drugs and CSO do not routinely provide chemotherapy	Yes	Yes
Bolivia/LMIC	12.224	4.505	23.1	467	No	No	Only at restricted ages and CSOs routinely provide some essential drugs	No	Yes
Brazil/UMIC	215.313	53	15	8908	Yes +5 years	Yes	Includes most of the essential drugs and CSO do not routinely provide chemotherapy	No[a]	Yes
Chile/HIC	19.603	4.2	6.9	681	Yes+5 years	Yes	Includes most of the essential drugs and CSO do not routinely provide chemotherapy	Yes	Yes
Colombia/UMIC	51.874	13.307	29	2211	No	Yes	Includes most of the essential drugs and CSO do not routinely provide chemotherapy	No[a]	Yes
Costa Rica/UMIC	5.18	1.253	13	237	Yes <5 years	No	Includes most of the essential drugs and CSO do not routinely provide chemotherapy	Yes	Yes
Dominican Republic/UMIC	11.228	3.620	15	392	Yes <5 years	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	No	Yes
Ecuador/UMIC	18	5.543	20.3	1027	No	No	Only at restricted ages and CSOs routinely provide some essential drugs	No	No
El Salvador/UMIC	6.336	1.928	26.5	258	Yes +5 years	Yes	Includes some essential drugs and CSOs routinely provide additional chemotherapy	Yes	No
Guatemala/UMIC	17.357	6.894	43.1	628	No	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	No	Yes

(Continues)

TABLE 1 (Continued)

Country/income level	Population (millions)	Population under 18 years (millions)	Percentage households living in poverty	Estimated pediatric cancer cases	NPCCP	Pediatric cancer law	Public supply of diagnosis and treatment	National registry for pediatric cancers	Training program for pediatric oncologists
Haiti/LMIC	11.58	4.426	59	285	No	No	No or very limited supply and CSOs supply chemotherapy	No	No
Honduras/LMIC	10.4	3.78	63.9	775	Yes <5 years	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	Yes	No
Mexico/UMIC	127.5	37.34	34.4	6984	No	Yes (only some states)	Includes most of the essential drugs and CSOs do not routinely provide chemotherapy	No	Yes
Nicaragua/LMIC	6.948	2.462	17[a]	284	No	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	Yes	No
Panama/HIC	4.408	1.374	9.9	167	Yes <5 years	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	No	Only for pediatric hematology
Paraguay/UMIC	6.78	2.331	18.7	303	No	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	No	Yes
Peru/UMIC	34.049	10.631	14.4	1559	Yes <5 years	Yes	Includes most of the essential drugs and CSOs do not routinely provide chemotherapy	Yes	Yes
Uruguay/HIC	3.422	0.784	2.7	150	No	No	Includes most of the essential drugs and CSOs do not routinely provide chemotherapy	Yes	Yes
Venezuela/LMIC	28.301	9.402	24[a]	1250	No	No	Includes some essential drugs and CSOs routinely provide additional chemotherapy	No	Yes

Abbreviations: CSO, Civil Society Organizations; HIC, high-income country; LMIC, low middle-income country; NPCCP, National Pediatric Cancer Control Program; UMIC, upper middle-income country.

[a] Regional registries available.

treatment for childhood cancer became available in the 1970s.[11] There is a National Cancer Institute (NCI) that sets policy, but is not involved in direct patient care. The NCI launched an NPCCP and a National Cancer Registry and is leading an effort to stratify treatment units across the country.[12] There is a long tradition of training the pediatric oncologists in Argentina, and there are many training programs, usually receiving trainees from other Latin American countries.[13]

3.2 | Bolivia

Bolivia only grants support to free diagnosis and treatment for children in specific age groups, and uninsured older children and adolescents are partially covered. There is a recently launched pediatric oncologist training program in the capital city La Paz. There are no national data for childhood survival or incidence. Civil society organizations (CSOs) cover some cancer medications, family housing, and other support, and some children with cancer seek treatment in neighboring countries.[14]

3.3 | Brazil

Brazil has an NPCCP; however, it is a federation of 26 states and thus, data at a national level are scarce. High-quality pediatric oncology services and physician training programs have been available in large Brazilian cities for decades, Brazil offers public support for diagnosis and treatment to all children and adolescents with cancer. The national society SOBOPE, created in 1981, is the largest in the region.[15] There are at least 20 cancer registries in Brazil, and combined reports on incidence and survival of some tumors have been reported at a national level, but to date, there is no national cancer registry capable of reporting a national estimate of survival for children with cancer.[16,17]

3.4 | Chile

Chile, a pioneer in the region, was the first Latin American country to have NPCCP, PINDA. There is public support to pediatric cancer treatment to all children, and training programs for pediatric oncologists and subspecialties, especially in nursing, have been available for decades.[18] Public institutions associated to PINDA have been stratified according to the resources and care they can provide across all the regions. There is a national registry whose results were reported.[19]

3.5 | Colombia

Colombia offers public support to diagnosis and treatment for children with cancer with a fragmented healthcare system allocating treatment centers according to health insurance status and place of residency. Colombia does not have an NPCCP, although there is a National Cancer Institute that treats patients and acts as a referral center for complex treatments and offers limited positions in existing training programs, so most of the pediatric oncologists were trained abroad. Colombia has a pediatric cancer registry, which expanded from a successful experience in a provincial registry (Vigicancer) to other provinces, but is not reaching the whole nation yet.[20] There is a professional society for pediatric oncology, ACHOP (Colombian Association of Pediatric Hematology and Oncology), founded in 1996.

3.6 | Costa Rica

Costa Rica provides public support for diagnosis and treatment for children and adolescents with cancer, and there is an NPCCP launched in the past 5 years. The country has a pediatric cancer registry, and offers training opportunities for pediatric oncologists and pediatric hematologists.[21]

3.7 | Cuba

No data from Cuba were made available for this report.

3.8 | Dominican Republic

The country offers public support for cancer treatment and supportive care medications to children and adolescents with cancer and an NPCCP was released in 2023. A CSO provides additional support for drug procurement, patient and family psychosocial support, blood donation, and diagnostic testing. There is no dedicated professional society for pediatric oncology, but there is a chapter for pediatric oncology at the national pediatric society. There is a fellowship program for pediatric oncologists that began in 2016.

3.9 | Ecuador

The country grants public support to diagnosis and treatment of children with cancer only to certain age groups. There is no NCCP and there are no pediatric cancer registries or specific training programs for pediatric oncologists.

3.10 | El Salvador

There is public support to diagnosis and treatment for children and adolescents with cancer 13 years and under, there is an NPCCP and a national law that includes action to prevent treatment abandonment. There are no training opportunities for pediatric oncology. A CSO supports some non-government treatment costs, and psychosocial professionals as well as other family and patient needs. There is a national population-based registry operating over the past 10 years.

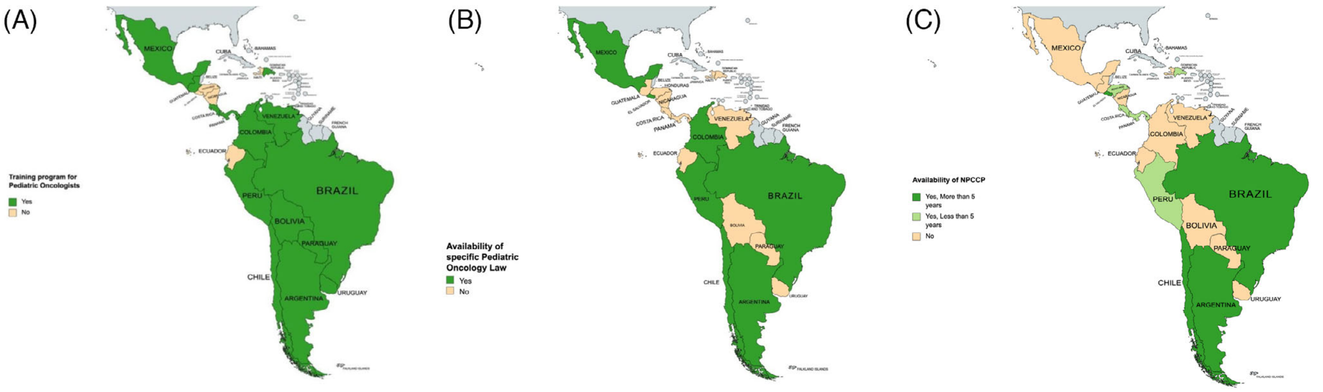

FIGURE 1 Graphic representation: (A) reported training problem for pediatric oncologist; (B) specific pediatric oncology law; (C) availability of national pediatric cancer control program.

3.11 | Guatemala

There is no NPCCP in Guatemala, and there is public support for diagnosis and treatment for children and adolescents with cancer limited to some chemotherapy medications, but not for radiotherapy. In addition, a CSO provides support to most children and adolescents by covering personnel expenses and additional chemotherapy. Guatemala has a locally university-accredited pediatric oncologist fellowship training program.

3.12 | Haiti

Haiti offers minimal public support to diagnosis and treatment of children or adolescents with cancer, and patients are treated mostly through the support of CSOs. There is no NPCCP and there are no pediatric cancer registries or specific pediatric oncologist training program.

3.13 | Honduras

Honduras has an NPCCP, and there is public support for diagnosis and the supply of a list of chemotherapeutic drugs for children and adolescents with cancer. However, CSOs provide additional support for chemotherapy procurement. There is no training program for pediatric oncologists in Honduras, and current physicians were all trained abroad. There is a national registry operating at the major pediatric hospital, but no national survival results have been reported to date.

3.14 | Mexico

Mexico has a long tradition of high-quality pediatric care and availability of training programs for pediatric oncology, providing training to many specialists working in the continent.[22] Public support for diagnosis and treatment was granted by the "Seguro Popular," which has been recently reformatted, so the health system is currently fragmented with at least seven sources of financing supplying diagnosis and treatment from different sources with some gaps. There are regional pediatric cancer registries.

3.15 | Nicaragua

Nicaragua has no NPCCP; however, it does provide public support for diagnosis and some chemotherapy for children and adolescents with cancer, with CSO support for chemotherapy procurement. There is no training program for pediatric oncologists in Nicaragua, all the workforce was trained abroad. There is a national registry operating at the major pediatric hospital, but no results have been reported to date at a national level.

3.16 | Panama

Panama has an NPCCP, and since 2019 has included a chapter for children and adolescents.[23] There is support for the supply of a list of chemotherapeutic drugs and supportive care medications, but CSOs provide additional support for chemotherapy procurement. There is a fellowship program for pediatric hematologists only.

3.17 | Paraguay

Paraguay has no NPCCP and limited public support for diagnosis and treatment of children and adolescents with cancer. Uninsured patients may access support from CSOs that also provide housing and there is a large number of patients seeking treatment in neighboring countries.[24]

3.18 | Peru

Peru was selected as the first focus country for the WHO GICC in 2019, and has led a series of transformations of the care children with cancer receive.[25] Hence, currently, Peru has a pediatric cancer-specific law and children are mentioned in the NPCCP. There is public support for diagnosis and treatment for patients up to 18 years of age. Multiple

CSOs provide additional support for children and adolescents with cancer. There is a national pediatric cancer registry, and fellowships for pediatric oncologists are available.

3.19 | Uruguay

Uruguay does not have an NPCCP. Children and adolescents have full public support for cancer diagnosis and treatment. A CSO supports the national referral center, and the national pediatric cancer registry is located within the same organization, which is also the official address of the international cooperative group Grupo América Latina de Oncología Pediátrica (GALOP) (Latin America Pediatric Oncology Group). Recently, a fellowship program for pediatric oncologists became available.

3.20 | Venezuela

The Venezuelan government provides public support for diagnosis and chemotherapy and supportive care medications; however, there are frequent shortages and stockouts, which are partially covered by CSOs. There is no current NPCCP, and there is a national association for pediatric hematology-oncology as a well-established training program for pediatric oncologists.

3.21 | Cooperative groups

National and international cooperative groups for clinical research in Latin America have been extensively mapped elsewhere.[26] National groups that have performed pragmatic clinical research studies include Grupo Argentino de Tratamiento de Leucemias Agudas (GATLA) (Argentine Acute Leukemia Treatment Group) in Argentina and national societies such as SOBOPE (Brazil) or ACHOP (Colombia). There are regional groups across Latin America such as GALOP, Consorcio Latinoamericano de Enfermedades Hematooncológicas Pediátricas (CLEHOP) (Latin American Hemato Oncologic Pediatric Diseases Consortium), and the Asociación de Hemato-Oncología Pediátrica de Centro América (AHOPCA) (Pediatric Hemato-Oncology Association of Central America) in Central America and the Caribbean. The group MAS (Mexico in Association with St Jude) includes 50 institutions and in collaboration with the Casa de la Amistad para Niños Con Cáncer (Friendship House for Children with Cancer).[26]

4 | DISCUSSION

4.1 | Timeline of pediatric oncology care

Historically, pediatric oncology in Latin America has experienced two major periods. The first period began in the 1970s in the most affluent countries in South America (Argentina, Brazil, Chile, and Uruguay) and later in Mexico, where large, usually public pediatric hospitals took the leadership in creating the first pediatric oncology services. In Brazil, this period also included cancer hospitals. Public support to care was granted from the start in most of these programs (except Mexico), but nevertheless, inequity in the access to care was apparent, especially in larger countries with major distances between cities offering childhood cancer treatment.[2,27,28] In most of these countries, pediatric oncology evolved in parallel with the growth of pediatrics in general and other pediatric specialties. CSOs later provided additional support for advocacy (most common), patient housing, and research. The CSOs have not routinely provided chemotherapy or covered diagnostic studies, as these costs are fully covered by the governments for uninsured patients. This model was later adopted by countries such as Colombia, Perú, Venezuela, and Ecuador, which had increasing governmental support for childhood cancer as their economies developed but CSOs had a stronger role providing additional chemotherapy as needed.

The second period of pediatric oncology development originated in Central America (except Costa Rica), where specialized pediatric oncology was unavailable in public hospitals until international organizations provided support in the 1990s.[29] In this setting, which also includes Bolivia and Paraguay, there was limited initial support from the governments and a greater impact of CSOs that are still essential for program sustainability and chemotherapy procurement, as well as diagnostic studies, housing, survivorship support, and psycho-social support.[30]

4.2 | Pediatric oncologist specialty training

A similar picture of public pediatric hospitals taking the lead was seen for training of pediatric oncologists. In the late 1960s and 1970s, a first generation of pediatric oncologists usually trained in the United States or Europe set up the first units in public pediatric hospitals in Chile, Argentina, Mexico, and Uruguay or in cancer centers in Brazil. Later, most of these hospitals offered fellowship programs that trained the subsequent generations of local specialists and also professionals from countries where there were no or scarce training opportunities like Colombia, Bolivia, and Ecuador. As this was a result of the development of pediatric medicine, subspecialty training like pediatric surgery, neurosurgery, pathology also became available and specialists from these countries were also trained in these programs. More recently, fellowship programs in pediatric oncology became available in other countries like Guatemala, Bolivia, and Uruguay, but no or limited subspecialty training is offered so far.

4.3 | National cancer registries for childhood cancers

Our study shows that eight of 19 countries have a national cancer registry, and only Argentina, Costa Rica, and Uruguay reported their national results in the peer-reviewed literature.[14,31] Other countries like Colombia have reported survival data from a specific region in the past, notably Cali, but the registry now enters patients from 27 pediatric oncology units across the country. Overall, three registries reported national results. Peer-reviewed results reported national 5-year survival ranging from 51.7% for children (<15 years) in a cohort treated from 2009 to 2013 in selected areas in Colombia to a 5-year survival of 70.6% reported in Uruguay in 2012, which improved to a 79.6% for the period 2011–2015.[31–33] Chile reported a 71.4% 5-year survival in the period of 2007–2011 in a non-peer-reviewed official publication of the RENCI registry.[19,20] Peer-reviewed published results from Argentina at a national level showed 61.7% 5-year survival rate from 2000 to 2007, which improved to 72.2% in the period 2010–2014 as reported in a non-peer-reviewed official publication of the ROHA registry.[14] Brazil has no national registry but provincial registries cover large populations, reporting as in other large countries, survival discrepancies according to specific areas.[28,34] It is hoped that national registries now available in more Latin American countries will provide additional information to other countries to guide their national policies.

4.4 | National pediatric cancer control programs

National delegates reported that nine of 19 countries have an NPCCP or national strategy mentioning children. In four countries, the program has been available for less than 5 years, so this is likely a consequence of the actions of the WHO GICC initiative. However, there is a wide variation in how children are represented in these programs and in their legal status in each country. Our study collected the information from national delegates, and we have not asked about the legal status of NPCCP in each country. The complexity of these data should be evaluated in greater depth in further studies. Countries with a longer history of public support to childhood cancer treatment, for example, Argentina and Brazil, developed their NPCCP years after universal access was granted and high survival data were obtained. Uruguay, on the contrary, reported the highest survival rates for childhood cancer in the region, but has no NPCCP. In these countries, children with cancer have been included in a bill of public children health rights and then recently included specifically in the NPCCP in Argentina. Countries where public support was implemented later during the GICC times, like Peru, have opted for developing pediatric NPCCP as a driver to accelerate progress. A specific law for pediatric cancer has not been shown to be a pre-requisite for countries to achieve universal access and a high survival rate. However, countries transitioning to wider public support, as with NPCCP, may accelerate progress and guarantee public funding even in situations of political, economic, and government instability. At this moment, seven of 19 countries have a dedicated pediatric oncology law. The launching of the WHO GICC has been instrumental in mobilizing the governmental agencies in Latin American countries that do not offer full public support to diagnosis and treatment to gradually incorporate childhood cancer in their list of supported pediatric diseases.[35] Its impact is also visible in the number of countries with a pediatric oncology law, which was launched in the past 5 years almost with no exemption. This report may not capture the situations in many countries where the public support to treatments is gradually increasing or other educational activities related to GICC are occurring. Latin American countries with lower HDI may then speed up as they follow the long path followed by countries in the region with higher HDIs to improve cure rates over recent decades. Nevertheless, data from this study suggest that Latin American countries with the best resources and survivorship results are those with higher HDI and therefore stronger health systems, highly resourced hospitals with a specialty trained workforce (not only in pediatric oncology but in other pediatric specialties), and socioeconomic support for low-income families in major public pediatric referral centers. It is unknown to what extent survival results may be improved without concomitant improvements in socioeconomical indicators in settings with insufficiently trained pediatric healthcare physicians, resources, lack of other pediatric subspecialists, poor healthcare infrastructure, and greater patient and family poverty.

4.5 | Public and CSO support for treatment

In most but not all cases, countries with a higher HDI offer a more complete public supply menu for diagnosis and treatment, thus, childhood cancer is part of a stronger social right for access to childhood healthcare in general. Although eight of 19 SLAOP delegates reported that governmental agencies cover most or all the essential drugs for treating childhood cancers, 11/19 delegates reported that coverage for uninsured patients is partial. In some settings, some families even emigrate looking for treatment usually in neighboring countries, but mostly, CSOs and international organizations provide support by supplying chemotherapy and diagnostic studies like flow cytometry or immunohistochemistry in private centers. Therefore, when the total number of affected children is considered, an estimate of 79.5% of children with cancer in the SLAOP member countries have public support to most standard diagnosis and treatment. However, this relatively favorable picture should not lead to overoptimistic conclusions, as the percentage of families living in poverty in Latin America is still high, and even when supply of treatment is theoretically possible, there may be inequities limiting the access to the most vulnerable even in the wealthiest countries. In addition, although we did not analyze these data, it has been shown that the lack of or limited public financial support correlates with a high rate of treatment abandonment, which has a major impact on survival.[5] In countries with higher HDIs, emerging challenges include high-cost drugs, genomic testing and cellular therapies not currently covered by public funding.

4.6 | Research in Latin America

There are three international cooperative groups in Latin America (AHOPCA, CLEHOP, and GALOP) dedicated to clinical research, and also national cooperative groups like ACHOP, AMHOP (Agrupación Mexicana de Onco-Hematología Pediátrica [Mexican Group of

Pediatric Onco-Hematology]), GATLA, and SOBOPE carry out clinical research activities.[26] However, dedicated budget and resources are limited, so SIOP has developed the Program for Advancing Research Capacity (PARC) to address this problem.[36]

5 | CONCLUSION

Despite many challenges (e.g., economics, political, professional specialization), there were dramatic advances in survivorship rates, access to treatment, and availability of NPCCPs in Latin American countries participating in SLAOP. Throughout the trajectory of childhood cancer treatment development, public support as well as international partnerships have been instrumental for these achievements.

AFFILIATIONS

[1]Institute of Pediatric Oncology (IOP/GRAACC), São Paulo, Brazil

[2]Hospital Sant Joan de Déu, Pediatric Cancer Center Barcelona (PCCB), Barcelona, Spain

[3]Hospital Civil de Guadalajara Dr Juan I. Menchaca, Guadalajara, Mexico

[4]Hospital Santa Marcelina/TUCAA, SOBOPE (Sociedade Brasileira de Oncologia Pediátrica), São Paulo, Brazil

[5]Department of Pediatric Oncology, IMAT Oncomedica AUNA, Monteria, Hospital Universitario de Santander, Bucaramanga, Colombia

[6]Hospital Italiano, Buenos Aires, Argentina

[7]Hospital JP Garrahan, Buenos Aires, Argentina

[8]Clínica Foscal, Floridablanca, Santander, Colombia

[9]Fundación POHEMA, Cali, Colombia

[10]Hospital del Niño Dr Ovidio Aliaga Uria, La Paz, Bolivia

[11]Hospital Central Del Instituto de Previsión Social (IPS), Asunción, Paraguay

[12]Hospital Infantil Manuel de Jesús Rivera, Managua, Nicaragua

[13]Oncology Unit, National Children's Hospital, San José, Costa Rica

[14]Hospital Escuela, Tegucigalpa, Honduras

[15]National Cancer Institute-INCART, Santo Domingo, Dominican Republic

[16]Hospital Pereira Rosell Fundación Perez-Scremini, Montevideo, Uruguay

[17]Instituto Nacional de Enfermedades Neoplásicas, Lima, Perú

[18]Hospital Verdi Cevallos Balda, Portoviejo, Ecuador

[19]Hospital Dr Luis Calvo Mackenna, Santiago, Chile

[20]Hospital SOLCA and Hospital Metropolitano, Quito, Ecuador

[21]Hospital Universitario Dr Luis Razetti, Barcelona Edo Anzoategui, Barcelona, Venezuela

[22]Nos Petits Frères et Sœurs/Hôpital Saint-Damien, Port Au Prince, Haiti

[23]Unidad Nacional de Oncologia Pediátrica (UNOP), Guatemala City, Guatemala

[24]Children's Hospital Dr Jose Renan Esquivel, Panama City, Panama

[25]Instituto Nacional del Cancer, Buenos Aires, Argentina

[26]Hospital Nacional de Ninos Benjamin Bloom y Centro Medico Ayudame a Vivir, San Salvador, El Salvador

[27]Department of Noncommunicable Diseases and Mental Health, Unit of Noncommunicable Diseases, Pan American Health Organization/World Health Organization, Washington, District of Columbia, USA

[28]University of California San Francisco, San Francisco, California, USA

ACKNOWLEDGMENTS

This project was supported by the Sanofi Espoir Foundation until 2021, now with continued funding from Sanofi's Foundation S in Paris, France. We would like to acknowledge the work of Dorcas Malahlela for her contributions to this project. We would like to dedicate this paper to Alois Bianchi, Juan Quintana, Federico Sackmann-Muriel, Enrique Schvartzman, and Antonio Wachtel because of their work as pioneers in the specialty at SLAOP.

CONFLICT OF INTEREST STATEMENT

The authors declare they have no conflicts of interest.

ORCID

Maite Gorostegui https://orcid.org/0000-0003-1393-9300
María J. Serrano https://orcid.org/0009-0006-7143-0958
Cecilia Ugaz https://orcid.org/0000-0002-9403-7415
Pascale Yola Heurtelou Gassant https://orcid.org/0000-0002-5705-1242
Liliana Vasquez https://orcid.org/0000-0002-9584-3208
Guillermo L. Chantada https://orcid.org/0000-0002-9375-9336

REFERENCES

1. Geel JA, Challinor J, Ranasinghe N, et al. Pediatric cancer care in Africa: SIOP Global Mapping Program report on economic and population indicators. *Pediatr Blood Cancer*. 2021;68:e29345.
2. Rivera-Luna R, Zapata-Tarres M, Shalkow-Klincovstein J, et al. The burden of childhood cancer in Mexico: implications for low- and middle-income countries. *Pediatr Blood Cancer*. 2017;64:e26366.
3. *CureAll framework: WHO Global Initiative for Childhood Cancer. Increasing Access, Advancing Quality, Saving Lives*. WHO; 2021.
4. Vasquez L, Fuentes-Alabi S, Loggetto P, et al. Advances in the Global Initiative for Childhood Cancer: implementation in Latin America and the Caribbean. *Rev Panam Salud Publica*. 2023;47:e128.
5. Guzman CP, Cordoba MA, Godoy N, et al. Childhood cancer in Latin America: from detection to palliative care and survivorship. *Cancer Epidemiol*. 2021;71:101837.
6. Denburg A, Cuadrado C, Alexis C, et al. Improving childhood cancer care in Latin America and the Caribbean: a PAHO Childhood Cancer Working Group position statement. *Lancet Oncol*. 2017;18:709-711.
7. Marchevsky DS. Margarita Statement, Sociedad Latinoamericana de Oncologia Pediatrica (SLAOP): Latin American Society of Pediatric Oncology. *Med Pediatr Oncol*. 2001;37:405-406.
8. Perfiles de país del cáncer en la niñez 2021 [Childhood Cancer Country Profiles 2021]. PAHO; 2021. Accessed on December 23, 2023. https://www.paho.org/es/perfiles-cancer-infantil-2021?topic=77350&d%5Bmin%5D=&d%5Bmax%5D=&title=&page=1
9. World Bank open data. The World Bank; 2023. Accessed on December 27, 2023. https://data.worldbank.org/
10. Social Panorama of Latin America and the Caribbean. ECLAC; 2023. Accessed on December 23, 2023. https://www.cepal.org/en/publications/type/social-panorama-latin-america-and-caribbean
11. Sackmann Muriel F, Eppinger-Helft M, Braier JL, et al. [Treatment of acute lymphoblastic leukemia. Evaluation of 6-year-cooperative studies in Argentina]. *Sangre (Barc)*. 1974;19:186-199.
12. Fedorovsky JM, Cuervo LG, Luciani S. Pediatric cancer registries in Latin America: the case of Argentina's pediatric cancer registry. *Rev Panam Salud Publica*. 2017;41:e152.

13. Dartiguelongue JB, Guinazu G, Pineiro Tripodi L, Arpi L. [National survey of pediatric residences in Argentina]. *Arch Argent Pediatr*. 2020;118:358-367.
14. Moreno F, Dussel V, Orellana L, network R. Childhood cancer in Argentina: survival 2000–2007. *Cancer Epidemiol*. 2015;39:505-510.
15. de Castro Junior CG, Macedo CR. Brazilian Society of Pediatric Oncology—SOBOPE: 30 years of history, a lot in the present, full of the future. *Rev Bras Hematol Hemoter*. 2011;33:326-327.
16. de Camargo B, de Oliveira Santos M, Rebelo MS, et al. Cancer incidence among children and adolescents in Brazil: first report of 14 population-based cancer registries. *Int J Cancer*. 2010;126:715-720.
17. Ferman S, Santos Mde O, Ferreira JM, et al. Childhood cancer mortality trends in Brazil, 1979–2008. *Clinics (Sao Paulo)*. 2013;68:219-224.
18. Day SW, Segovia L, Viveros P, Alqudimat MR, Rivera GK. The Latin American Center for Pediatric Oncology Nursing Education: development, implementation, and accomplishments. *Cancer Nurs*. 2013;36:340-345.
19. Vallebuona C. Primer informe del registro nacional de cancer infantil de chile (menores de 15 años), renci, quinquenio 2007–2011. Ministerio de Salud, Chile; 2018.
20. Ramirez O, Aristizabal P, Zaidi A, Ribeiro RC, Bravo LE, Group VW. Implementing a childhood cancer outcomes surveillance system within a population-based cancer registry. *J Glob Oncol*. 2018;4:1-11. doi:10.1200/jgo.17.00193
21. Erdmann F, Li T, Luta G, et al. Incidence of childhood cancer in Costa Rica, 2000–2014: an international perspective. *Cancer Epidemiol*. 2018;56:21-30.
22. Baeza-Bacab MA, Sienra-Monge JJL, Reyes-Vazquez HL. The foundation of the Hospital Infantil de Mexico, today Hospital Infantil de Mexico Federico Gomez. *Bol Med Hosp Infant Mex*. 2019;76:146-154.
23. Quintero K, Berrio I, Arenas E, et al. Global Initiative for Childhood Cancer: progress and challenges in Panama. *Rev Panam Salud Publica*. 2023;47:1-4. doi:10.26633/RPSP.2023.154
24. Samudio A, Figueredo D, Lassaletta A, et al. Building a National Pediatric Cancer Center and Network in Paraguay: lessons for addressing challenges in a low-income country. *J Pediatr Hematol Oncol*. 2015;37:383-390.
25. Maradiegue E, Pascual C, Vasquez L, et al. Strengthening public health policies for childhood cancer: peru's achievements through the WHO Global Initiative for Childhood Cancer. *Rev Panam Salud Publica*. 2023;47:132.
26. Major A, Palese M, Ermis E, et al. Mapping pediatric oncology clinical trial collaborative groups on the global stage. *JCO Glob Oncol*. 2022;8:e2100266.
27. Scopinaro MJ, Casak SJ. Paediatric oncology in Argentina: medical and ethical issues. *Lancet Oncol*. 2002;3:111-117.
28. Doubova SV, Knaul FM, Borja-Aburto VH, et al. Access to paediatric cancer care treatment in Mexico: responding to health system challenges and opportunities. *Health Policy Plan*. 2020;35:291-301.
29. Howard SC, Marinoni M, Castillo L, et al. Improving outcomes for children with cancer in low-income countries in Latin America: a report on the recent meetings of the Monza International School of Pediatric Hematology/Oncology (MISPHO)-part I. *Pediatr Blood Cancer*. 2007;48:364-369.
30. Rossell N, Olarte-Sierra MF, Challinor J. Survivors of childhood cancer in Latin America: role of foundations and peer groups in the lack of transition processes to adult long-term follow-up. *Cancer Rep (Hoboken)*. 2022;5:e1474.
31. Castillo L, Fluchel M, Dabezies A, Pieri D, Brockhorst N, Barr R. Childhood cancer in Uruguay: 1992–1994. Incidence and mortality. *Med Pediatr Oncol*. 2001;37:400-404.
32. Bravo LE, Garcia LS, Collazos P, et al. Reliable information for cancer control in Cali, Colombia. *Colomb Med (Cali)*. 2018;49:23-34.
33. Morosini FSA, Arias V, Castillo L. Incidence, mortality and survival of pediatric cancer in Uruguay 2011–2015. *Rev Bras Cancerol*. 2023;69:e-163054.
34. Moreno F, Rose A, Chaplin MA, et al. Childhood liver tumors in Argentina: incidence trend and survival by treatment center. A report from the national pediatric cancer registry, ROHA network 2000–2015. *Pediatr Blood Cancer*. 2020;67:e28583.
35. Loggetto P, Jarquin-Pardo M, Fuentes-Alabi S, et al. Regional collaboration for the development of national childhood cancer plans in Latin America and the Caribbean. *Rev Panam Salud Publica*. 2023;47:125.
36. Pritchard-Jones K, Challinor JM, Hunger SP, et al. SIOP strategy 2021–2025: cure for more, care for all. *Pediatr Blood Cancer*. 2022;69:e29577.

How to cite this article: Cappellano A, Gorostegui M, Gonzalez-Ramella O, et al. International Society of Paediatric Oncology (SIOP) Global Mapping Programme: Latin American Society of Pediatric Oncology (SLAOP) country-level report. *Pediatr Blood Cancer*. 2024;e30973. https://doi.org/10.1002/pbc.30973