TREATMENT ABANDONMENT IN CHILDREN AND ADOLESCENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA IN COLOMBIA: TEN YEAR TREND

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BACKGROUND

- Treatment abandonment is a leading cause of treatment failure in low-and middle-income countries.

AIM

- To estimate the 24-month cumulative incidence temporal trend of treatment abandonment among patients with acute lymphoblastic leukemia (ALL) in Colombia.

METHODS

- Data source: VIGICANCER (Childhood Cancer Clinical Outcomes Surveillance System).
- Cohort: 2012-2021.
- We included children and adolescents (<19 years) with ALL.
- We compared treatment abandonment across three periods:
  1) 2012-2016
  2) 2017-2018
  3) 2020-2021
- We stratified by age, race/ethnicity, residence, insurance, and NCI risk.
- We estimated the trend *P*-value of survivor functions by strata.

CONCLUSIONS

- We found a decreasing trend of the 24-month cumulative incidence of treatment abandonment in children and adolescents with ALL from 2012-2021 in Colombia.
- This trend was significant in patients from cities without pediatric oncology units, which, in Colombia, are usually small towns and rural areas, and those with public insurance.
- Increased awareness, access to subsidized lodging at treatment centers, and psychosocial interventions, including treatment abandonment risk identification and prevention, likely contributed to our findings.
- In sum, evidence-based interventions to prevent treatment abandonment are urgently needed in low- and middle-income countries.

RESULTS

Table 1. Patient Registration

VIGICANCER (2012 to 2021)[a]	n	(%)
Acute lymphoblastic leukemia[b]	2,469	(100)
Included in follow-up/analysis[c]	2450	(100)
Children (<15 years)	2,158	(88)
Adolescents (15-18 years)	292	(12)

[a] All tumors 2012-2021 = 7,229; [b] Acute lymphoblastic leukemia = 34% of entire cohort; [c] Treatment abandonment n=190 (8%).

Table 2. Distribution of Age, Sex, and Ethnicity by Treatment Abandonment

Variables	Treatment abandonment: Yes n	(%)	No n	(%)	Total n	(%)	*P*-value
Age (years)							
<1	2	(1)	29	(1)	31	(1)	
1-4	61	(32)	772	(34)	833	(34)	
5-9	51	(27)	613	(27)	664	(27)	.93
10-14	54	(28)	576	(25)	630	(26)	
15-18.9	22	(12)	270	(12)	292	(12)	
Total	190	(100)	2,260	(100)	2,450	(100)	
Sex							
Male	95	(50)	1,261	(56)	1,356	(55)	
Female	95	(50)	999	(44)	1,094	(45)	.12
Total	190	(100)	2,260	(100)	2,450	(100)	
Afrodecendent							
Yes	13	(7)	154	(7)	167	(7)	
No	176	(93)	2,081	(92)	2,257	(92)	.65
Missing	1	(1)	25	(1)	26	(1)	
Total	190	100)	2,260	(100)	2,450	(100)	
Indigenous (N=1260; 2019-2023)							
Yes	10	(13)	46	(4)	56	(4)	
No	66	(86)	1,117	(95)	1,183	(95)	.001
Missing	1	(1)	9	(1)	10	(1)	
Total	77	(100)	1,172	(100)	1,249	(100)	

Table 3. Distribution of Residence and Health Insurance by Treatment Abandonment

Variables	Treatment abandonment: Yes n	(%)	No n	(%)	Total n	(%)	*P*-value
Place of residence							
Province capital city with POU	48	(25)	873	(39)	921	(38)	
Province towns without POU	67	(35)	783	(35)	850	(35)	
Other provinces	73	(38)	568	(25)	641	(26)	<.001
Other country	1	(1)	25	(1)	26	(1)	
Missing	1	(1)	11	(0)	12	(0)	
Total	190	(100)	2,260	(100)	2,450	(100)	
Health insurance type							
Public	144	(76)	1,139	(50)	1,283	(52)	
Semi-private	36	(19)	895	(40)	931	(38)	
Private	2	(1)	46	(2)	48	(2)	
Other	4	(2)	64	(3)	68	(3)	<.001
Uninsured	4	(2)	103	(5)	107	(4)	
Missing	0	(0)	13	(1)	13	(1)	
Total	190	(100)	2,260	(100)	2,450	(100)	

Abbreviation: POU, Pediatric Oncology Unit

Table 4. Distribution of ALL Lineage and Risk Classification by Treatment Abandonment

Variables	Treatment abandonment: Yes n	(%)	No n	(%)	Total n	(%)	*P*-value
Lineage							
B	163	(86)	1,949	(86)	2,112	(86)	
T	21	(11)	228	(10)	249	(10)	
Mixed	4	(2)	75	(3)	79	(3)	.46
Missing	2	(1)	8	(0)	10	(0)	
Total	190	(100)	2,260	(100)	2,450	(100)	
NCI/Rome risk classfication							
High	96	(51)	1,111	(49)	1,207	(49)	
Standard	94	(49)	1,149	(51)	1,243	(51)	.72
Total	190	(100)	2,260	(100)	2,450	(100)	

Abbreviation: NCI, National Cancer Institute

Table 5. Cumulative Incidence (%) of Treatment Abandonment at 24 Months

Variables	%	(95% CI)	*P*-value
Global	7.8	(6.7-9.1)	
Age			
Children (<15 years)	8.2	(7.0-9.5)	.44
Adolescentes (15-18 years)	9.2	(6.0-14.1)	
Sex			
Male	7.7	(6.3-9.5)	.13
Female	9.0	(7.3-11.0)	
Afrodescendent			
Yes	8.1	(4.6-14.2)	.84
No	8.3	(7.1-9.6)	
Indigenous (2019-2023)			
Yes	23.8	(13.8-39.14)	<.001
No	6.2	(5.0-7.7)	
Place of residence			
Province capital city with POU	5.3	(6.2-9.1)	<.001
Province towns without POU	9.4	(4.3-7.6)	
Health insurance type			
Semi-private	3.6	(2.7-5.4)	<.001
Public	11.6	(10.2-14.2)	
Year of diagnosis			
2012-2016	11.7	(9.3-14.7)	
2017-2019	7.9	(6.2-9.9)	<.001
2020-2021	5.7	(4.2-7.0)	

Abbreviation: POU, Pediatric Oncology Unit

Table 6. Cumulative Incidence (%) of Treatment Abandonment at 24 months by Period

Variable	Cumulative incidence, % 2012-16	2017-19	2020-21	*P-value (trend)*
Health insurance type				
Semi-private	4.8	4.6	2.5	.14
Public	14.5	11.5	9.1	.04
Place of residence				
Province capital city with POU	7.4	6.6	3.6	.05
Province towns without POU	13.3	8.5	7.4	.01
Health insurance group and residence				
Semi-private & capital with POU	3.4	5.5	2.0	.30
Semi-private & town without POU	6.1	3.7	3.2	.31
Public & capital with POU	11.1	9.9	6.6	.25
Public & town without POU	16.7	12.0	10.3	.04

Abbreviation: POU, Pediatric Oncology Unit

FINANCIAL SUPPORT

Fundación POHEMA (2010-2024); Cali's Cancer Registry (2009-2024); Sanofi-Espoir-Foundation-"My Child Matters"-Program (2009-2018); Colombian Oncology and Hematology Association-ACHOP- (2018-2024); and Keira Grace Foundation (2022-2024).

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APPLICATION OF ROUTINE STANDARD-OF-CARE NEUROBLASTOMA PATHOLOGY-BASED RISK CLASSIFICATION AND ASSOCIATED OUTCOMES: A PROXY OF QUALITY OF CARE IN LOW- AND MIDDLE-INCOME COUNTRIES?

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BACKGROUND

- Neuroblastoma treatment is complex and requires multidisciplinary and sophisticated management.
- Standard-of-care diagnosis and risk-stratification involves the application of Shimada pathology classification and N-myc molecular analysis.

AIM

- To assess the association of applying routine risk-stratification (Shimada classification and N-myc analysis) and survival in children with neuroblastoma in a prospective multi-center cohort in Colombia.

METHODS

- Data source: VIGICANCER (Childhood Cancer Clinical Outcomes Surveillance System).
- Cohort: Children (<15 years) with neuroblastoma registered from 2019-2023.
- We used Kaplan-Meier to estimate overall survival.
- We estimated Hazard Ratios (HR).

CONCLUSIONS

- We observed that routine pathology-based risk-classification not applied in children with neuroblastoma was associated with lower survival, suggesting receipt of care in an institution with limited pathology resources.
- Application of rigorous risk-classification could be a proxy of diagnostic and treatment capacity and, consequently, access and quality of care.
- Centralized management of children with neuroblastoma in state-of-the-art referral treatment centers can lead to better clinical outcomes.

RESULTS

Table 1. Patient Registration

VIGICANCER (2019 to 2023)	n	(%)
All tumors in children (<15 years)	4,669	(100)
Neuroblastomas	126	(2.7)
Included in follow-up/analysis	124	

Table 2. Social and Demographic Characteristics

Characteristics (N=126)	n (%)
Age (years)	
<1	42 **(33)**
1-4	70 **(56)**
5-9	11 **(9)**
10-14	3 **(2)**
Sex	
Male	70 **(56)**
Female	56 **(44)**
Ethnicity	
Indigenous	4 **(3)**
Afrodescendent	7 **(6)**
Others (mainly mestizos)	112 **(89)**
Unknown	3 **(2)**
Place of residence	
Province capital city with POU	52 **(41)**
Province towns without POU	48 **(38)**
Other provinces	21 **(17)**
Other countries	2 **(2)**
Unknown	3 **(2)**
Health insurance type	
Semi-private	62 **(49)**
Public	54 **(43)**
Private	2 **(2)**
Other	5 **(4)**
Uninsured	2 **(2)**
Missing	1 **(1)**

Abbreviation: POU, Pediatric Oncology Unit

Table 3. Distribution by Histology, Stage, Risk Classification, and Interim Treatment Response

Characteristics (N=126)	n	(%)
Histology		
Neuroblastoma	113	**(90)**
Ganglioneuroblastoma	13	**(10)**
Stage		
I	11	**(9)**
II	15	**(12)**
III	22	**(17)**
IV	50	**(40)**
IV-S	9	**(7)**
Missing	19	**(15)**
Risk		
High	69	**(55)**
Medium	27	**(21)**
Low	16	**(13)**
Missing	14	**(11)**
Interim treatment response (4th or 5th chemotherapy cycle; (n=93, 100%)		
Complete response	14	**(15)**
Partial response	42	**(45)**
Stable disease	7	**(8)**
Progressive disease	14	**(15)**
Not applicable	16	**(17)**

Table 3. Receipt of Transplant

Hematopoietic stem cell transplant (High-risk neuroblastoma, n=69, 100%)	n	(%)
Yes	17	**(25)**
No	52	**(75)**

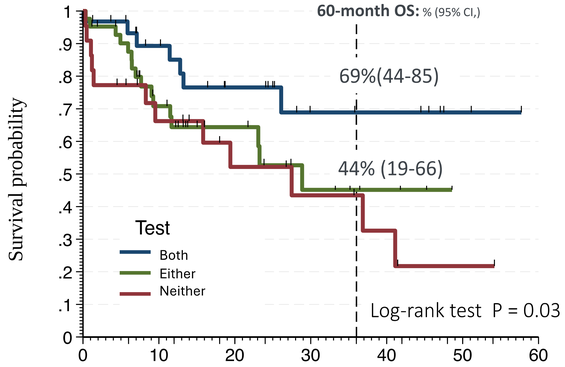
Table 4. Frequency of Tests Performed

Test performed (N=126)	n (%)
Shimada	
Yes	46 **(37)**
No	55 **(44)**
Missing	25 **(20)**
N-myc	
Yes	68 **(54)**
No	36 **(29)**
Missing	22 **(17)**
Shimada and/or N-myc	
Both	31 **(25)**
Either	42 **(33)**
Neither	23 **(18)**
Missing	30 **(24)**

Table 5. Shimada and N-myc Results

Test results	n	%
Shimada		
Unfavorable	20	**43**
Favorable	26	**57**
	Total 46	**100**
N-myc		
Amplified	25	**37**
Not amplified	38	**56**
Unknown	5	**7**
	Total 68	**100**

Figure 2. Overall Survival of Children with Neuroblastoma According to One, Two, or None of the Tests Performed



No. at risk											
Both	31	26	20	17	15	7	6	6	2	1	0
Either	42	34	20	12	8	6	4	2	1	0	0
Neither	22	15	12	8	7	5	4	1	1	1	0

All neuroblastoma patients (N=126):

	Hazard ratio (95% CI)
Both tests were performed:	reference
Either one was performed:	2.2 (0.9-5.3)
Neither test performed	2.9 (1.1-7.3)

Hazard ratios excluding stage IV tumors (n=67):

Either one was performed:	2.2 (0.9-5.3)
Neither test performed	2.9 (1.1-7.3)

FINANCIAL SUPPORT

Fundación POHEMA (2010-2024); Cali's Cancer Registry (2009-2024); Sanofi-Espoir-Foundation-"My Child Matters"-Program (2009-2018); Colombian Oncology and Hematology Association-ACHOP- (2018-2024); Keira Grace Foundation (2022-2024).

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DISENTANGLING THE ROLE OF RURALITY IN INDIGENOUS CHILDREN WITH RETINOBLASTOMA: FINDINGS FROM A PROSPECTIVE MULTICENTRIC COHORT STUDY IN COLOMBIA

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BACKGROUND

- Epidemiology data on retinoblastoma (RB) is scarce in low- and middle-income countries.
- A higher incidence has been reported in Indigenous populations in Central America.
- In Colombia, Indigenous population usually resides in rural areas.
- Therefore, increased incidence of RB in Indigenous populations could be confounded by rurality.

AIM

- To assess the association of RB occurrence with rurality and Indigenous populations in a prospective cohort of children in Colombia.

METHODS

- Data source: VIGICANCER (Childhood Cancer Clinical Outcomes Surveillance System).
- Cohort: Children with retinoblastoma registered in VIGICANCER from 2019-2023.
- Kaplan-Meier was used for survival analyses.
- We estimated the odds ratio (crude OR) for the association between RB, ethnicity, and place of residence.
- Adjusted OR's using the following covariates: age, sex, and insurance type were calculated by multivariable logistic regression.

CONCLUSIONS

- We found higher odds of RB in Indigenous populations; however, when adjusted by place of residence, the association became not significant. This suggests that the association of Indigenous ethnicity with RB is confounded with rurality.
- Moreover, the association between RB and place of residence was strong and persisted after adjustment.
- Although Indigenous children with RB had lower survival, bilateral tumors were not more frequent in the Indigenous population.
- Our findings are relevant to disentangling drivers of RB and suggest non-genetic risk factors playing a role in the Indigenous population.
- Future studies are warranted to better understand better the role of rurality and other socio-demographic factors in low- and middle-income countries.

RESULTS

Figure 1. Patient flowchart

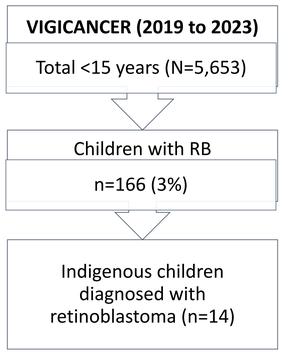


Table 1. Socio-Demographic Characteristics in Retinoblastoma vs Other Tumors

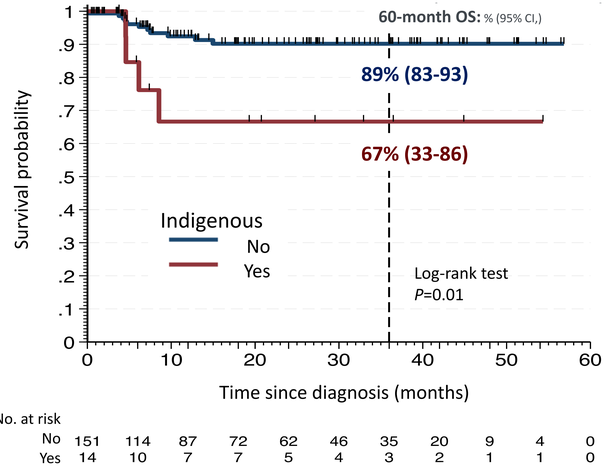
Characteristics	RB (n=166)		Other (n=5,487)		Total (n=5,653)		*P-value*
	n	(%)	n	(%)	n	(%)	
Indigenous							
Yes	14	(8)	177	(3)	191	(3)	*.001*
No	152	(92)	5,310	(97)	5,462	(97)	
Place of residence							
Province capital city with POU	29	(17)	2,257	(41)	2,286	(40)	
Province towns without POU	48	(29)	1,830	(33)	1,878	(33)	
Other provinces	83	(50)	1,273	(23)	1,356	(24)	*<.001*
Other countries	3	(2)	63	(1)	66	(1)	
Missing	3	(2)	64	(1)	67	(1)	
Health insurance type							
Semi-private	68	(41)	2,374	(43)	2,442	(43)	
Public	91	(55)	2,710	(49)	2,801	(50)	
Private	3	(2)	92	(2)	95	(2)	*.47*
Other	3	(2)	221	(3)	224	(3)	
Uninsured	1	(1)	77	(1)	78	(1)	
Missing	0	(0)	13	(0)	13	(0)	

Abbreviations: POU, Pediatric Oncology Unit

Table 2. Disease Characteristics Stratified by Ethnicity

Characteristics	Indigenous Yes (n=14)		Indigenous No (n=152)		Total (n=166)		*P-value*
	n	(%)	n	(%)	n	(%)	
Laterality							
Bilateral	3	(21)	45	(30)	48	(29)	
Unilateral	10	(71)	104	(68)	114	(69)	*.36*
Missing	1	(7)	3	(2)	4	(2)	
Metastatic disease							
Yes	4	(29)	10	(7)	14	(8)	*.03*
No	9	(64)	131	(86)	140	(84)	
Missing	1	(7)	11	(7)	12	(7)	
CNS disease							
Yes	3	(21)	2	(1)	5	(3)	*.01*
No	11	(79)	150	(99)	161	(97)	

Figure 2. Overall Survival For Children with Retinoblastoma Stratified by Ethnicity



Crude and Adjusted OR* for the Association between Retinoblastoma, Indigenous Ethnicity, and Place of Residence

Association between Indigenous ethnicity and RB
(Including place of residence as a confounding variable)
Crude OR 2.6 (95% CI, 1.5-4.6)
Adjusted OR 1.4 (95% CI, 0.7-2.8)

Association between place of residence and RB
(Including Indigenous ethnicity as a confounding variable)
Crude OR 2.8 (95%CI, 2.1-3.7)
Adjusted OR 3.4 (95%CI, 2.2-5.1)

FINANCIAL SUPPORT

Fundación POHEMA (2010-2024); Cali's Cancer Registry (2009-2024); Sanofi-Espoir-Foundation-"My Child Matters"-Program (2009-2018); Colombian Oncology and Hematology Association-ACHOP- (2018-2024); Keira Grace Foundation (2022-2024).

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MULTISYSTEMIC HISTIOCYTOSIS WITH RISK ORGAN INVOLVEMENT IN CHILDREN: CLINICAL CHARACTERISTICS AND SURVIVAL OUTCOMES IN A MIDDLE-INCOME COUNTRY

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Background / Aim

- Langerhans Cell Histiocytosis (LCH) is a rare, heterogenous hematological neoplastic disease, characterized by expansion of myeloid precursors.
- Although highly curable overall, survival is lower in children with multisystem (MS) and risk organ (RO+) involvement (liver, spleen, lung, and hematopoietic).
- Outcomes data for LCH in low- and middle-income countries (LMIC) are scarce.

Aim:

- To describe clinical characteristics and survival in a multi-center prospective cohort of children with MS LCH RO+ in Colombia.

Methods

- Data source: VIGICANCER (Childhood Cancer Clinical Outcomes Surveillance System).
- Cohort: Children (<15 years) with LCH registered in VIGICANCER from 2019-2023.
- Kaplan-Meier was used for survival analyses.

Conclusions

- Survival outcomes in our cohort mirrored those reported in high-income countries, adding valuable data to the limited literature in LMIC.
- Intracranial involvement was observed in 50% of children.
- Most relapses occurred within two years of diagnosis, with no treatment-related deaths.
- The low incidence of LCH has limited reports on robust outcomes data, even in a national multi-center cohort where less than 1% of cases were MS LCH RO+.

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Survival outcomes were **similar** to **high-income countries, contributing** to the **limited literature** in LMIC

Multinational **collaboration** is **essential** to improve **understanding** of this rare disease in LMIC

Results

Figure 1. Patient Registry Flowchart

VIGICANCER 2019-2023
5,625
I
Total <15 years
4,675
I
Multisystem LCH
53
I
Multisystem LCH Risk Organ+
23

Table 1. Socio-Demographic Characteristics

Characteristics (N=25)	n	%
Age (years)		
<1	7	**28**
1-4	14	**56**
5-9	1	**4**
10-14	3	**12**
Sex		
Male	14	**56**
Female	11	**44**
Ethnicity		
Indigenous	2	**8**
Afrodescendent	0	**0**
Others (mainly mestizos)	23	**92**
Place of residence		
Province capital city with POU	10	**40**
Province town without POU	10	**40**
Other provinces	5	**20**
Other countries	0	**0**
Health insurance type		
Semi-private	11	**44**
Public	13	**52**
Private	1	**4**
Other	0	**0**
Uninsured	0	**0**

Abbreviation: POU, Pediatric Oncology Unit

Figure 2. Overall Survival

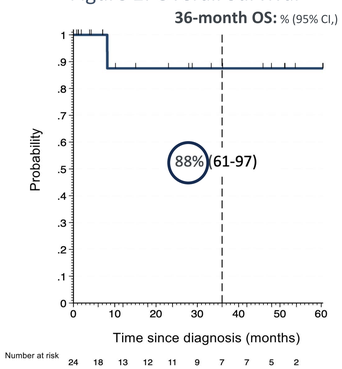
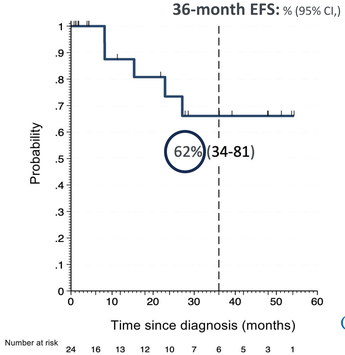


Figure 2. Event-Free Survival



Financial Support

Fundación Hospital Pediátrico la Misericordia-HOMI; Fundación POHEMA (2010-2024); Cali's Cancer Registry (2009-2024); Sanofi-Espoir-Foundation-"My Child Matters"-Program (2009-2018); Colombian Oncology and Hematology Association-ACHOP- (2018-2024); Keira Grace Foundation (2022-2024).

THYROID CANCER IN CHILDREN: CLINICAL CHARACTERISTICS AND SURVIVAL IN A MULTI-CENTER PROSPECTIVE COHORT IN COLOMBIA

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BACKGROUND

- Thyroid cancer is rare in children (<15 years).
- The incidence of this cancer is increasing globally.
- In Colombian children, the reported annual incidence is 4.4 per million.

AIM

- To describe socio-demographics, clinical characteristics, and survival in children with thyroid cancer in a multi-center prospective cohort in Colombia.

METHODS

- Data source: VIGICANCER (Childhood Cancer Clinical Outcomes Surveillance System).
- Cohort: Children (<15 years) with thyroid carcinomas registered from 2014-2023.
- For survival analyses, an event was defined as relapse or death.
- Treatment abandonment was considered an event if the vital status was not verified after the date of abandonment.
- We used Kaplan-Meier for survival analyses.
- Overall survival (OS) and event-free survival (EFS) are presented.

RESULTS

Table 1. Patient Registration

VIGICANCER (2014 to 2023)	n	(%)
All tumors in children (<15 years)	7,183	(100)
Thyroid cancer	73	(1.0)

Table 2. Socio-Demographic Characteristics

Characteristics (n=73)	n	(%)	*P-value*
Age (years)			
≤9	10	(14)	<.001
10-15	63	(86)	
Sex			
Male	25	(34)	.01
Female	48	(66)	
Ethnicity			
Afrodescendent	6	(8)	
Mixed race / others	64	(88)	<.001
Missing	3	(4)	
Health insurance group			
Private/semi-private	44	(60)	.10
Public/others	29	(40)	
Rurality			
Rural	40	(55)	.40
Urban	33	(45)	
Year of diagnosis			
2014-2017	20	(28)	
2018-2020	25	(34)	.67
2021-2023	28	(38)	

Table 3. Clinical Characteristics

Characteristics (n=73)	n	(%)
Histologic classification		
Papillary	60	(82)
Follicular	6	(8)
Medullary	6	(8)
Undiferentiated	1	(2)
Staging		
I	10	(14)
II	16	(22)
III	13	(18)
IV	30	(41)
Missing	4	(5)
Metastatic disease		
Yes	30	(41)
No	39	(53)
Missing	4	(6)

Figure 1. Overall Survival

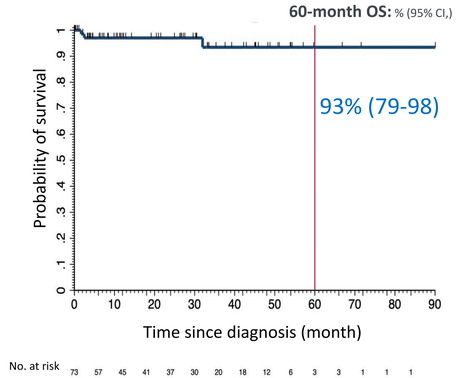
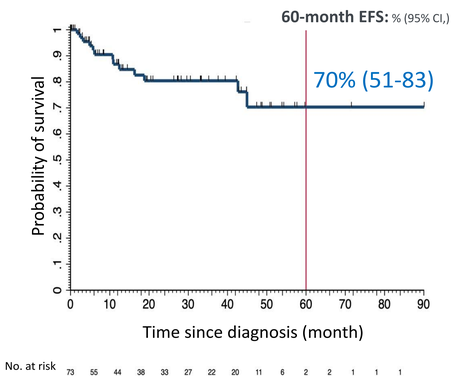


Figure 2. Event-Free Survival (EFS)



CONCLUSIONS

- OS for thyroid cancer in this cohort was similar to published reports in high-income countries; however, EFS was inferior.
- We found a 30% difference in EFS between stages I-II vs. stages III-IV, and although not statistically significant, the impact of advanced disease on survival is known.
- Over half of patients presented with stages III-IV, which could explain this finding.
- Thyroid cancer can be easily suspected by physical examination and is highly curable; therefore, thyroid cancer should be included as a target diagnosis in early-detection initiatives in low- and middle-income countries.

Figure 3. EFS for Papillary Carcinoma

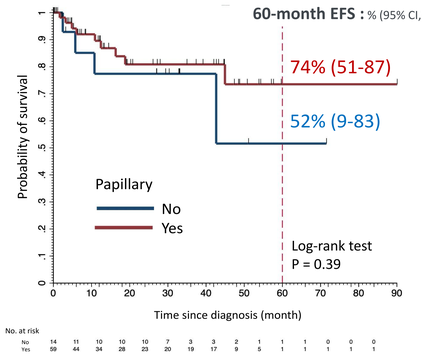
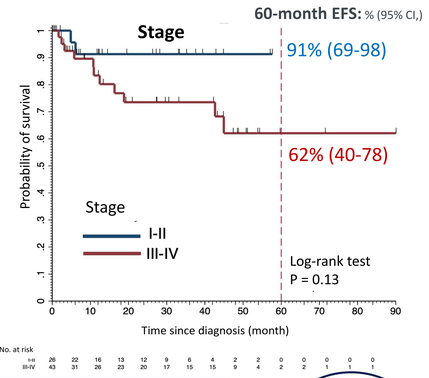


Figure 4. EFS by Stage



FINANCIAL SUPPORT

Fundación POHEMA (2010-2023); Cali's Cancer Registry (2009-2023); Sanofi-Espoir-Foundation-"My Child Matters"-Program (2009-2018); Colombian Oncology and Hematology Association-ACHOP- (2018-2023). Keira Grace Foundation (2022-2024).

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LAYING THE GROUNDWORK: UNDERSTANDING HEALTHCARE SYSTEM PATHWAYS IN CHILDHOOD CANCER CARE IN PREPARATION TO IMPLEMENT A PATIENT NAVIGATION PROGRAM IN WESTERNCOLOMBIA

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BACKGROUND

- Patient navigation facilitates access to high-quality cancer care.
- Implementation of patient navigation requires a deep understanding of the healthcare system where it will be implemented.
- We developed NAVIGUIA, a patient navigation program to improve access to and continuity of care in children with cancer in Cali, Colombia.

AIM

- To conduct a situational diagnosis at prospective candidate institutions for NAVIGUIA implementation in Western Colombia.

METHODS

- Six institutions that provide pediatric cancer services were identified as prospective candidates for NAVIGUIA implementation.
- Two navigation leaders from the implementation team assessed pediatric cancer care at the prospective candidate institutions.
- Assessment (surveys, interviews, observations) was based on four pillars:
  1) Characterization of the population served by the institution.
  2) Description of pediatric oncology services and quality of care (diagnostic capacity, availability of treatment modalities, supportive care, psychosocial support).
  3) Cancer care workflow characterization through the patient tracer method (30 patients, 6 per institution).
  4) Evaluation of institutional compliance with the Colombian cancer control standards (63 items) used to certify pediatric oncology units.

RESULTS

Patient tracer results characterizing workflows

- Psychology, social work, and palliative care were available in 53% (n=16), 7%(n=2) and 10% (n=3) of patients, respectively.
- Time since admission to evaluation by pediatric oncologist ranges from 0 to 11.3 (Median=1 day).

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- Our assessment revealed limited resources in most institutions, leading to fragmentation of childhood cancer care.
- Only one had all essential services.
- In 50%, essential services were only available through a third-party provider.
- Compliance with cancer certification standards was low (36%).
- Situational diagnosis provided key information essential to successful implementation of NAVIGUIA.
- Our approach can be reproducible in other LMIC.

RESULTS

Table 2. Description of Human Resources and Specialties

Specialty	Institution				
	1	2	3	4	5
Pediatric Oncologist	✓	✓	✓	✓	✓
Oncolgy Nurse	✓	✓	✓	✓	✓
Pediatric Oncology surgeon	✓	✗	✓	✓	✓
Psychologist	✓	✓	✓	✓	✓
Social Worker	✓	✓	✓	✓	✓
Pediatric Cardiologist	✓	✗	✗	✗	✓
Pediatric Infectologist	✓	✗	✗	✗	✓
Pediatric Pulmonologist	✓	✗	✗	✗	✗
Pediatric Endocrinologist	✓	✗	✗	✗	✗
Pediatric Gastroenterologist	✓	✗	✗	✗	✓
Neurosurgeon	✓	✗	✗	✗	✓
Pediatric Orthopedic Surgeon	✓	✗	✗	✗	✓

✓	Available
✗	Unavailable

RESULTS

Table 1. Description of pediatric oncology services and quality of care

Hospital Services	Institution				
	1	2	3	4	5
Pediatric oncology consultation	✓	✓	✓	✓	✓
Emergency Services	✓	✗	✗	✗	✗
In-patient wards	✓	!	!	!	✓
Pediatric surgery	✓	!	!	!	✓
Chemotherapy	✓	✓	✓	✓	✓
Diagnostic imaging	✓	!	!	!	✓
Pediatric Intensive Care	✓	!	!	!	✓
Radiotherapy	✓	!	!	!	✓
Clinical Laboratory	✓	✓	✓	✓	✓
Pathology	✓	!	!	!	✓
Pharmacy	✓	✓	✓	✓	✓
Rehabilitation Service	✓	✗	✗	✗	✓
Home Care	✓	!	!	!	✓
Palliative Care	✓	!	!	!	✓
Nuclear Medicine	!	!	!	!	!
Chemotherapy Preparation Unit	!	!	!	!	✓
Tumor Board	!	✗	✗	✗	✗
Navigation Program	✓	✗	✗	✗	✓

✓	Available
✗	Unavailable
!	Has contracted the service with a third-party provider

Figure 1. NAVIGUIA teams at work

FINANCIAL SUPPORT

Fundación POHEMA - Keira Grace Foundation (2022-2024).

ADDRESSING THE NEED FOR POPULATION-LEVEL DATA IN NORTHWESTERN MEXICO: "SOUTH-SOUTH" COLOMBO-MEXICAN PARTNERSHIP TO ESTABLISH A POPULATION-BASED CANCER REGISTRY AND A PEDIATRIC CANCER SURVEILLANCE SYSTEM

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Background / Aim

- Population-Based Cancer Registries (PBCRs) and surveillance systems are core elements of cancer control
- Implementation in low- and middle-income countries (LMIC), like Mexico, is challenging given complex healthcare systems
- In 2008, we implemented a bi-national collaboration between Rady Children's Hospital-San Diego and Hospital General-Tijuana to improve childhood cancer outcomes in the U.S.-Mexico border

Aim:

- We describe the implementation of the first PBCR in Northwestern Mexico, and an integrated pediatric cancer real-time monitoring, replicated from Colombia's successful model "VIGICANCER", through a "South-South" Colombo-Mexican partnership

Methods

- To launch Tijuana's PBCR, *BajaREG*, we established an interdisciplinary US-Mexican working group that assessed needs, adapted protocols, and conducted training on data collection, coding, and analyses

Results

- In 2018, *BajaREG* was established and joined Mexico's National Cancer Registry Network, with twenty data sources (5 public, 15 private) identified
- In 2020, *PACARSS* (Pediatric and Adolescent Cancer Registry Surveillance System), was integrated into *BajaREG*, to monitor real-time childhood cancer outcomes
- *BajaREG* and *PACARSS* implementation faced many barriers:
  - Limited local infrastructure and funding
  - Misinformation in the medical community
  - Underdeveloped information systems
  - Bureaucratic hurdles at public institutions
  - Challenges, including the COVID-19 pandemic
  - Resistance to sharing information
- Since *BajaREG* inception, accurate data has been collected from 53% target sources and a total of 8231 adults and 268 pediatric new cancer cases were registered from 2018-2023
- *PACARSS* has collected data in 6 participant institutions from 150 pediatric cases and reported to the CONCORD Cancer Survival Group (UK)

- Engaging health authorities involved in cancer control to support comprehensive population-level cancer registration is a priority
- Locally tailored "South-South" partnerships can develop sustainable PBCRs and cancer surveillance systems in LMIC
- Learnings from this "South-South" partnership apply to other LMIC
- Our model sets a precedent in national and international cancer registration and surveillance collaborations

Table 1: All cases by Anatomical Site (2018 to 2023; BajaREG)

Anatomic Site	n	(%)
Breast	1335	(16.2)
Cervix	565	(6.7)
Colon	561	(6.8)
Prostate	375	(4.6)
Unknown primary site	475	(5.8)
Stomach	403	(4.9)
Lung	377	(4.6)
Thyroid	155	(1.9)
Hematopoietic	498	(6.1)
Others	3487	(42.4)
Total	8231	100

Table 2. Pediatric Cases According to International Childhood Cancer Classification 3erd Version (ICCC-3), (2018 to 2023; BajaREG)

ICCC-3 Classification	n	(%)
I. Leukemias, myeloproliferative and myelodysplastic diseases	109	(40.7)
II. Lymphomas and reticuloendothelial neoplasms	31	(11.6)
III. Intracranial and intraspinal neoplasms of the central nervous system	34	(12.7)
IV. Neuroblastoma and other peripheral nervous system tumors	14	(5.2)
V. Retinoblastoma	3	(1.0)
VI. Renal tumors	5	(1.9)
VII. Hepatic tumors	8	(3.0)
VIII. Malignant bone tumors	16	(6.0)
IX. Soft tissue sarcomas and other extraosseous tumors	9	(3.4)
X. Germ cell tumors, trophoblastic tumors, and gonadal neoplasms	16	(6.0)
XI. Other malignant epithelial neoplasms and malignant melanomas	1	(0.3)
XII. Other malignant neoplasms and unspecified	22	(8.2)
Total	268	(100)

Figure 1: Rady Children's Hospital-San Diego and Hospital General-Tijuana Leadership Team

Figure 2: Map Between San Diego and Tijuana

Figure 3: *BajaREG* and *PACARSS* Leadership Team

Acknowledgments

Rady Children's Hospital-San Diego: Patrick A. Frias, MD; Jill Strickland; and Gail Knight, MD, MMM.

DEVELOPMENT OF A USER-CENTERED MOBILE HEALTH APP TO SUPPORT PRIMARY CARE PROVIDERS DURING EARLY DETECTION OF CHILDHOOD CANCER IN COLOMBIA: ITERATIVE OPTIMIZATION OF *S-IMICICA_V.2*

Elvia Grillo[1,2,3], Jesús Ardila[1,4], Santiago Bolivar[5], Patricia Montenegro[6], Oscar Ramirez[1,2,4], Paula Aristizabal[7,8,9] **On behalf of VIGICANCER working Group**

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BACKGROUND

- Mobile health (mHealth) can improve early detection of childhood cancer and prompt referral for treatment in low- and middle-income countries.
- Effectiveness of mHealth interventions relies on context-specific development, making them acceptable and usable by the target population.

AIM

- To describe the development of a user-centered mHealth app, **S-IMCICA_V.2,** in collaboration with primary care providers (PCPs) in Colombia, to improve early detection of childhood cancer and referral to a pediatric oncology unit (POU).

METHODS

- Identified gaps in early detection of childhood cancer and referrals in Colombia:
  - PCPs education
  - Referral support
  - Data capture
  - Referral tracking
- A team of engineer programmers developed the S-IMCICA prototype to address identified gaps.
- We engaged key stakeholders (PCPs, pediatric oncologists, nurses, allied staff) from urban and rural locations with varying experience levels in delivering childhood cancer services.

We iteratively developed S-IMCICA_V.2:

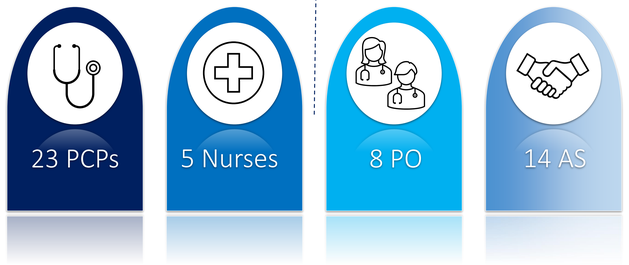
Gathering feedback sessions: In-person (1) and virtual (3)

Quantitative surveys Qualitative interviews

RESULTS

- Participants completed simulation exercises and activities to become familiar with the app.
- Developers implemented changes based on feedback to improve functionality.

50 stakeholders participated in the sessions.

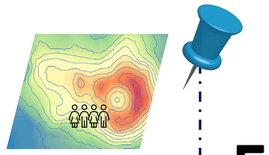


Abbreviations: PCPs, Primary Care Physicians; PO, Pediatric Oncologists; AS, Allied Staff

- Participants found the final prototype, **S-IMCICA_V.2**, **helpful and easy to use, meeting their needs to facilitate identification** of cancer signs and symptoms and differential diagnoses.

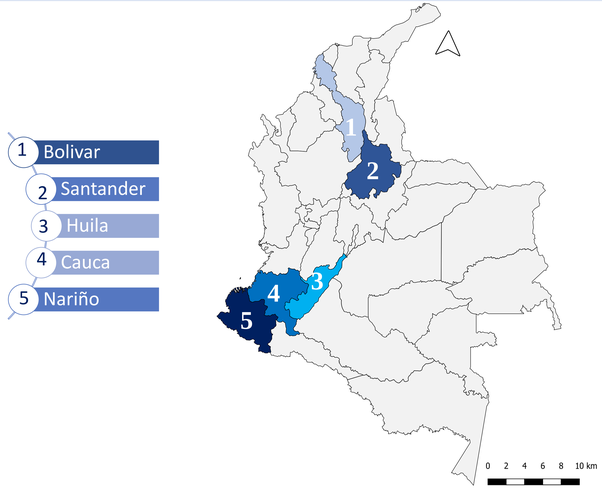
Feedback: On enhancement of user experience, workflow, and adoption.

- Changes requested included personalization, alphabetizing lengthy dropdown menus, adding clinically relevant logic checks when entering data, and incorporating gamification.
- Additional features to enhance **S-IMCICA_V.2's:**
  - Listing the nearest POU that could accept the patient.
  - Tools to track referral outcomes.



CONCLUSIONS

- With S-Foundation support, we developed a user-friendly and user-centered m-Health app using iterative feedback from key stakeholders.
- We will integrate **S-IMCICA_V.2** to a newly-developed E-learning curriculum and implement in five Colombian regions.



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CHILDHOOD CANCER CLINICAL OUTCOMES SURVEILLANCE SYSTEM (VIGICANCER): FOURTEEN YEARS OF ACTIVITIES MONITORING "REAL-WORLD" IN A MIDDLE-INCOME COUNTRY

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On behalf of VIGICANCER working Group

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BACKGROUND

- Childhood cancer control requires:
  - Timely and accurate diagnosis.
  - Prompt and effective treatment.
- Monitoring clinical outcomes is essential to evaluate the continuum and effectiveness of cancer care.

AIM

- To describe clinical characteristics, five-year overall survival (OS), and event-free survival (EFS) in a 14-year cohort of children with cancer in Colombia.

METHODS

- VIGICANCER:
  - Established in Cali in 2009.
  - Expanded to 10 Colombian cities in 2019.
  - Operates in 27 pediatric oncology units.
  - Registration of 55% of childhood cancer cases predicted to occur annually.
  - Includes children <19 years with a new cancer diagnosis (International Classification of Diseases for Oncology, 3rd-Edition).
  - Collects information on sociodemographic and clinical characteristics.
  - Registered events are death, relapse, treatment abandonment, and lose of follow-up.
  - Conducts active follow-up every three months.
  - Performs local and centralized compulsory data quality checks.
  - Estimates survival using Kaplan-Meier and Log-Rank tests.

CONCLUSIONS

- Reliable and timely outcomes data are essential to inform policy in childhood cancer control.
- Continuous monitoring of "real-world" clinical outcomes and related determinants provides key information on the local "standard of care" and informs implementation strategies to improve survival.
- Systems like VIGICANCER are urgently needed in low- and middle-income countries.

RESULTS

Figure 1. Patient Registration Flowchart

VIGICANCER 2009-2023
10,008
Excluded: 707
9,838
Included in follow-up/analysis
9,734
Events
3,184
Deaths
2,728

Table 1. Socio-Demographic Characteristics

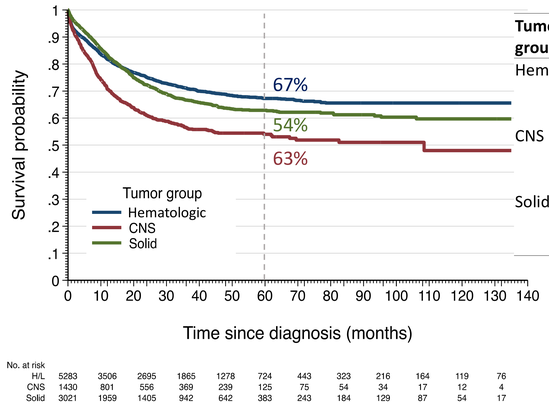
Characteristics (N=9838)	n (%)
Age (years)	
<1	442 (4)
1-4	2664 (27)
5-9	2365 (24)
10-14	2628 (27)
15-18	1734 (18)
Sex	
Male	5409 (55)
Female	4426 (45)
Missing	1 (0)
Ethnicity	
Afrodescendant	267 (4)
Indigenous	153 (3)
Mixed-race/Other	4329 (72)
Missing	1266 (21)
Residence	
Province capital city with POU	3862 (40)
Province town without POU	3343 (34)
Other provinces	2475 (25)
Other countries	89 (1)
Missing	8 (0)
Health insurance type	
Semi-private	4024 (42)
Public	4763 (50)
Private	199 (2)
Other	368 (4)
Uninsured	243 (3)

Abbreviations: POU, Pediatric Oncology Unit

Table 2. Distribution by Tumor Group

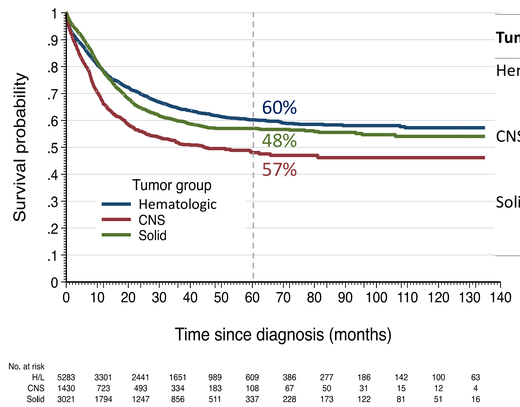
International Classification of Childhood Cancer		n (%)
I.	Leukemias	4064 (41)
II.	Lymphomas	1279 (13)
III.	Intracranial neoplasms of the CNS	1445 (15)
IV.	Neuroblastoma	237 (2)
V.	Retinoblastoma	294 (3)
VI.	Renal tumors	405 (4)
VII.	Hepatic tumors	143 (1)
VIII.	Malignant bone tumors	677 (7)
IX.	Soft tissue sarcomas	468 (5)
X.	Germ cell and gonadal tumors	467 (5)
XI.	Other epithelial and melanomas	316 (3)
XII.	Other neoplasms and unspecified	43 (0)
	Total	**9838 (100)**

Figure 2. Overall Survival by Tumor Group



Tumor group	Time (m)	Overall Survival (%)	(95%CI)
Hematologic			
	60	67	(66-69)
	120	66	(64-67)
CNS			
	60	54	(51-57)
	120	48	(41-55)
Solid			
	60	63	(61-65)
	120	60	(57-63)

Figure 3. Event-Free Survival by Tumor Group



Tumor group	Time (m)	Event-Free Survival (%)	(95%CI)
Hematologic			
	60	60	(59-62)
	120	57	(55-59)
CNS			
	60	48	(45-51)
	120	46	(42-50)
Solid			
	60	57	(55-59)
	120	54	(51-57)

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