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Research Paper

Mapping the capacity for geriatric blood Cancer Care in Latin America: A cross- sectional survey of current status and future priorities

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ABSTRACT

Introduction: Older adults with cancer face unique challenges in disease management. Limited awareness among health professionals of their specific needs, combined with variable resources across institutions, can negatively impact outcomes and quality of life. This study aimed to assess the human, infrastructural, and educational resources for managing hematological malignancies in older adults in Latin America, to inform future efforts tailored to the region's specific needs.

Materials and Methods: A cross-sectional survey-based study was conducted among hematologists practicing in Latin America. Participants responded on behalf of their institution, with one response included per center. The survey was distributed through the official networks of the *Grupo de Estudio Latinoamericano de Linfoproliferativos* (GELL). The questionnaire assessed center-level data covering workforce and infrastructure, clinical practices,

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1879-4068/© 2026 Elsevier Ltd. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

research activity, supportive care, and future priorities in the management of patients aged ≥65 years with hematological malignancies. Data were analyzed descriptively.
Results: A total of 73 centers from 16 countries completed the survey. Only 27% ($n = 20$) had dedicated clinics for older adults. While 59% ($n = 43$) had access to geriatricians, only 8% had geriatric hematology/oncology specialists available. Formal training programs were available in only 9.6% ($n = 7$) of centers. Of the centers with geriatricians available, 58% ($n = 25$) referred patients based on age, while only 2.3% used geriatric assessment results. The Clinical Frailty Scale was the most common geriatric assessment tool among non-transplant patients (53%, $n = 39$) and transplant candidates (73%, $n = 24$). Among transplant centers, 48% ($n = 16$) maintained strict age limits for eligibility. Adapted treatment protocols were implemented in 53% (n = 39) of centers overall but were significantly less common in public institutions (38% vs. 70–71% in private/academic, $p = 0.025$). Among research-active centers, 36% (n = 16) never enrolled older adults in clinical trials. Early palliative care was available in only 23% ($n = 17$) of centers. Establishing dedicated clinics or multidisciplinary teams was identified as the highest priority for improving care (47%, $n = 34$).
Discussion: Critical gaps in geriatric hematologic oncology capacity were evident across the trained workforce, infrastructure, and tailored care models. These findings suggest that resource-adapted strategies are needed to build local expertise and improve the integration of geriatric principles into the management of older adults with hematological malignancies.

1. Introduction

Population aging represents one of the most pressing issues for global cancer care, particularly in low-and middle-income countries. Latin America (LATAM) is at the forefront of this transition, with the proportion of adults aged ≥65 years projected to nearly double by 2050, contributing to the increasing burden of hematological malignancies [1,2]. Older adults with these diseases face unique challenges, including the physiological decline in organ function, a higher prevalence of comorbidities, and a close relationship between frailty and poor outcomes. Taken together, these elements increase the risk of adverse events and negatively impact quality of life. Additionally, the historically low recruitment of older adults in clinical trials persists, limiting physicians' ability to deliver evidence-based care for this patient population [3,4]. Recognizing this global challenge, the International Society of Geriatric Oncology (SIOG) has issued recommendations and strategic initiatives aimed at improving outcomes for older patients [5].However, the readiness of each region to implement these recommendations varies widely.

Previous reports have highlighted the systemic barriers in providing hematologic care for older adults in LATAM, including resource constraints, high cancer burden, limited specialized workforce, and lack of advanced training in geriatrics [6–8]. These barriers are expected to impact vulnerable sectors of the population, as reflected by the marked disparities in mortality-to-incidence ratios among people ≥65 years with hematological malignancies between low- and middle-income countries (96%) and high-income countries (61%) [9].

Despite these challenges, comprehensive regional data on the institutional capacity to provide geriatric hematology care in LATAM remain scarce, and recent international reports have identified the lack of regional implementation data as a critical evidence gap. To address this, the Latin American Group for the Study of Lymphoproliferative Disorders (*Grupo de Estudio Latinoamericano de Linfoproliferativos*, [GELL, by its acronym in Spanish]) conducted a regional assessment across hematology centers in the region. GELL is a collaborative research network composed of hematologists and investigators with expertise in lymphoproliferative disorders and hematological malignancies. The network includes members from 16 LATAM countries, as well as collaborators from the United States (US) and Spain, and supports multicenter research and educational initiatives throughout the region.

This study aimed to assess the human, infrastructural, and educational resources available in LATAM for the care of older patients with hematological malignancies and to establish a precedent to guide future actions tailored to the region's needs.

2. Methods

2.1. Survey design

A cross-sectional survey-based study was conducted during July 2025. The survey was developed by the research team based on internationally recognized geriatric oncology frameworks and expert consensus recommendations, including global priorities for the care of older adults with cancer [5,10]. The questionnaire consisted of 28 questions covering three domains: [1] workforce and infrastructure, including institutional characteristics, availability of specialists, dedicated clinics, and educational programs; [2] clinical care and management of older adults with hematologic malignancies, including geriatric assessment tools, referral pathways, and treatment approaches; and [3] research, supportive care, and future priorities, including clinical trial participation, palliative care availability, and perceived needs for advancing geriatric hematology care (Supplementary Material 1).

Content validity was established through iterative review by a panel of GELL experts, who assessed clarity, relevance, and regional applicability of each item, ensuring the survey applied to clinicians working in public, academic, and private settings. Revisions were made until consensus was reached on the final version. Before dissemination, the questionnaire underwent pilot testing in a small sample of hematologists to ensure comprehensibility and face validity; no substantive changes were required.

2.2. Survey population and distribution

The survey targeted clinical hematologists practicing in LATAM who cared for older adults (defined as individuals aged ≥65 years) with hematological malignancies. Participants were asked to respond on behalf of the institution where they provided care. The survey was initially distributed through personal e-mail invitations sent to institutional leaders from 25 centers across 17 countries. Thereafter, the survey was opened to broader participation among eligible hematologists through the official GELL networks.

The study was approved by the Institutional Review Board and Ethics in Research Committee of the *Facultad de Medicina y Hospital Universitario "Dr. José Eleuterio González"* UANL. Participation was voluntary and anonymous. Informed consent was obtained at the beginning of the survey, and participants proceeded only after agreeing to participate.

2.3. Data collection and analysis

Data were collected anonymously using the REDCap electronic data capture platform. To avoid duplication, only one response per center

was included in the final analysis. When multiple responses were received from the same institution, the first response was selected and retained for analysis. A total of 10 duplicate answers were excluded.

Categorical variables were summarized using frequencies and percentages, whereas continuous variables were described using medians and interquartile ranges (IQR). A subgroup analysis was performed to evaluate the differences between institution type using Fisher's exact tests for categorical variables and Kruskal–Wallis's test for continuous variables. All statistical analyses and data visualizations were performed using RStudio (version 4.3.2). Statistical significance was defined as a two-sided p-value <0.05.

3. Results

Responses from 73 centers across 16 countries were retrieved (Fig. 1). Most centers were public institutions (53%, $n = 39$) and had a median of four hematologists (IQR 2–10) and a median of 20 nursing personnel (IQR 6–50).

Only 27% ($n = 20$) of respondent centers had a dedicated clinic for older adults with hematological malignancies. Although 59% ($n = 43$) had geriatricians available, only one center (2.3%) had them working within their department, and just six centers (8.2%) had a specialist in geriatric hematology or oncology. Among centers with geriatricians, 58% ($n = 25$) referred patients based on age; other referral criteria included physician judgment (21%, $n = 9$), comorbidities (12%, $n = 5$), patient or caregiver request (4.8%, n = 2), and results from geriatric assessment (2.3%, $n = 1$). Regarding specialized training availability, only seven (9.6%) centers reported having a training program available, with only four of those being clinical fellowships (Table 1).

In patients not undergoing hematopoietic cell transplantation (HCT), the Clinical Frailty Scale [11] was reported as the most frequently employed screening tool for comprehensive geriatric assessment (CGA) (53%, $n = 39$), followed by Geriatric 8 (G8) and Cumulative Illness Rating Scale-Geriatric (CIRS-G) (both 22%, $n = 16$). Notably, 25% of centers ($n = 18$) reported no routine geriatric assessment in this population (Fig. 2A). CGA use was more frequent among patients planned to undergo HCT, with the Clinical Frailty Scale remaining as the most common tool (73%, $n = 24$), followed by G8 (30%, $n = 10$) and CIRS-G

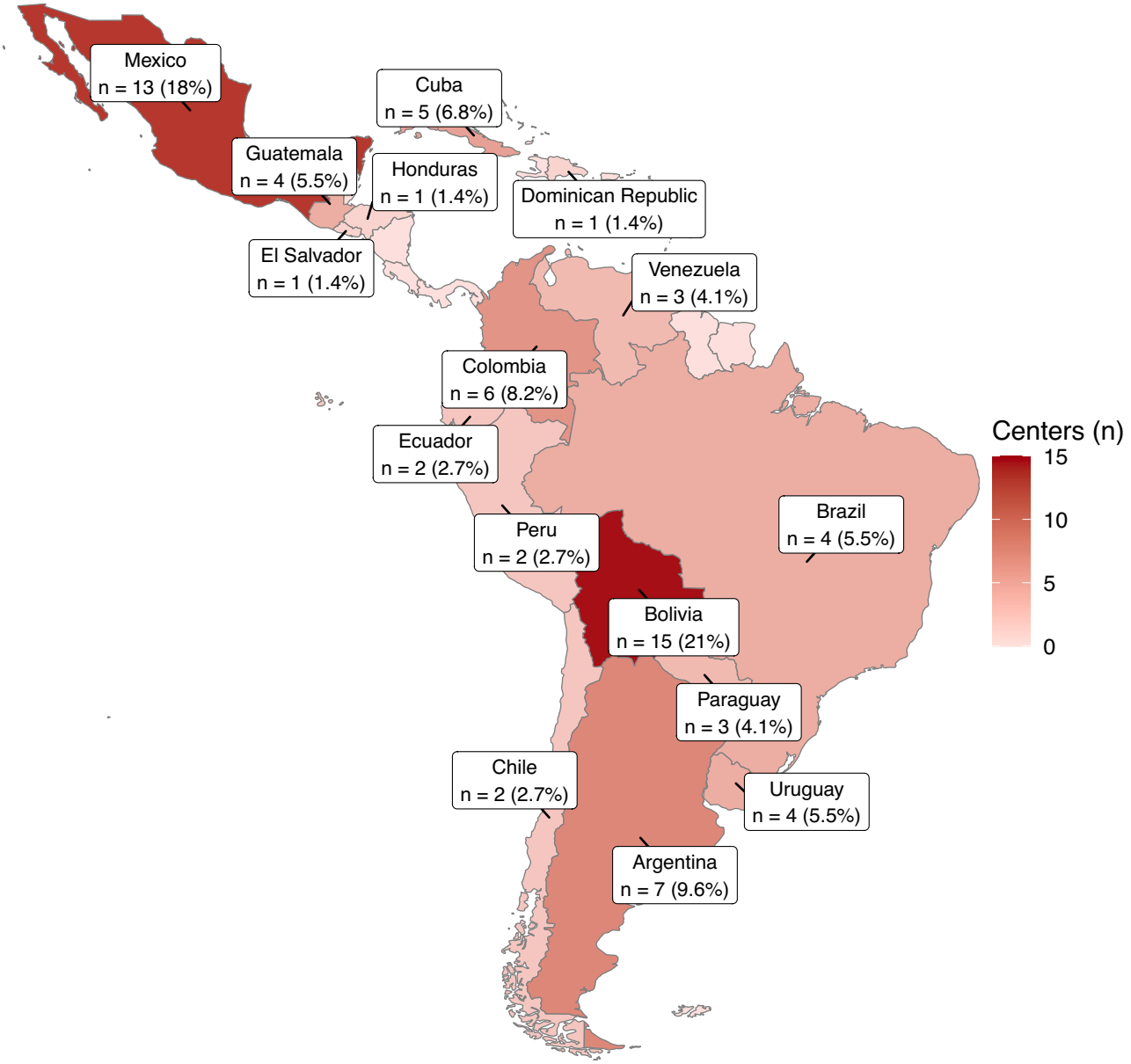


Fig. 1. Participating hematology centers. Number of respondent centers per country.

Table 1
Institutional characteristics, workforce, and geriatric care resources of participating centers.

Characteristic	Overall ($N = 73$)
Institution type	
Public	39 (53.4%)
Private	27 (37.0%)
Academic	7 (9.6%)
Workforce per center	
Hematologists, median (IQR)	4 (2–10)
Hematology residents, median (IQR)	6 (4–9)
Nursing personnel, median (IQR)	20 (6–50)
Geriatric resources	
Dedicated clinic for older adults	20 (27.4%)
Geriatricians	43 (58.9%)
Specialist in geriatric hematology/oncology	6 (8.2%)
Specialized training programs	7 (9.6%)
Referral pathways *	
Based on age	25 (58.1%)
Physician judgment	9 (20.9%)
Comorbidities	5 (11.6%)
Patient/caregiver request	2 (4.8%)
Results from geriatric assessment	1 (2.3%)
HCT capacity	
HCT without strict age restriction †	17 (51.5%)
HCT with age restriction †	16 (48.4%)
HCT not available	40 (54.8%)
Treatment adaptation	
Adapted treatment protocols	39 (53.4%)
Research inclusion of older adults	
Always ‡	12 (27.2%)
Only in older adult-focused studies ‡	16 (36.3%)
Never included ‡	16 (36.3%)
No research conducted	29 (39.7%)
Palliative care services	
For everyone, since the early stages	17 (23.3%)
Only in the terminal stages	34 (46.6%)
Not offered routinely	8 (11.0%)
Not available	14 (19.2%)

Abbreviations: IQR: Interquartile range; HCT: hematopoietic cell transplantation
Data are presented as median (IQR) or n (%).
* Calculated among centers with geriatricians available (n = 43).
† Calculated among centers with transplant available (n = 33).
‡ Calculated among centers with clinical research available (n = 44).

(21%, $n = 7$). Only 9% (n = 3) of transplant-capable centers reported not using geriatric assessment tools in HCT candidates (Fig. 2B).

The most frequently reported barriers to routine CGA implementation by participating centers were lack of personnel (66%, $n = 48$), followed by lack of time (38%, $n = 28$) and lack of training (30%, $n = 22$) (Fig. 3).

While most centers did not have HCT availability (55%, $n = 40$), among those offering it, 52% ($n = 17$) reported age alone not being an exclusion criterion, while 48% ($n = 16$) had strict age limits. The most common age limit for HCT was 70 years (44%, $n = 7$). Beyond the transplant setting, around half of centers (53%) reported implementing adapted treatment protocols for older adults in routine hematology practice.

Among centers conducting clinical research (60%, $n = 44$), 36% (n = 16) reported never including older adults in clinical studies despite having active research, whereas 36% (n = 16) enrolled them only in older adult-focused studies. Only 27% ($n = 12$) always considered them for accrual.

Palliative care services were most often described as "available only for patients in terminal stages" of their disease (47%, $n = 34$), while only 17 centers (23%) reported availability of early palliative care. Fourteen centers (19%) reported not having palliative care services in their center.

Finally, when asked, "What action or resource from the survey do you think would have the greatest impact for older adults in your center?" the most frequent response was establishing a dedicated clinic or team for older adults with hematological malignancies (47%, n = 34), followed by routine CGA (15%, $n = 11$), and availability of a geriatric hematologist/oncologist (14%, $n = 10$).

4. Comparative analysis by institution type

A comparative analysis between public, private, and academic institutions showed no statistically significant differences across most indicators of geriatric hematology care. The number of hematologists, trainees, and nursing staff was comparable between groups ($p > 0.05$) (Table 2).

While geriatricians were available in most centers, specialists in geriatric hematology/oncology remained limited across all settings (3% in public vs 15% in private vs 14% in academic institutions, $p = 0.13$). Similarly, the availability of dedicated geriatric clinics was comparable between groups, ranging from 23% to 33% ($p = 0.68$). Academic centers had numerically higher availability of formal training programs compared to other institution types; however, these differences did not reach statistical significance ($p = 0.11$).

In contrast, adapted treatment protocols for older adults were significantly more common in private and academic centers than in public institutions (70–71% vs. 38%, $p = 0.03$). No statistically significant differences were observed in early palliative care availability or inclusion of older adults in clinical research ($p > 0.05$), with low implementation of both practices regardless of center type (Table 3).

5. Discussion

In this cross-sectional survey of 73 centers across 16 Latin American countries, we identified substantial limitations in the resources and care models available for older adults with hematological malignancies. Our results highlight critical gaps in essential geriatric-oriented services, including designated age-adapted units, integrated geriatric roles in core clinical teams, specialized training programs, standardized adapted-treatment protocols, and availability of early palliative care.

Most centers were public institutions, yet the relatively limited number of health professionals reflects the systemic-level inequities common in LATAM health systems, where public services typically serve most of the population and operate under high patient volumes and insufficient resources [7]. The participating countries are part of a highly heterogeneous socioeconomic landscape, even within the same income classification, differing markedly in gross national income (GNI), population size, health expenditure, and workforce density (Supplementary Table 1). Despite these differences, these indicators highlight structural vulnerabilities across the region, such as workforce shortages and health investment that remains insufficient to the aging population's needs, even in countries with higher GNI.

Consequently, the similar shortcomings across the region should be interpreted not only as resource constraints but also as evidence of structural challenges, such as suboptimal development of specialists and inadequate resource allocation [12,13]. The impact of these disparities can also be seen at the institutional level. Across public, academic, and private centers, workforce composition followed a similar pattern, in which the unequal distribution found between hematologists and nursing personnel per center may represent a fragile foundation for implementing optimal and individualized care models for older adults with hematological malignancies.

The lack of dedicated clinics for older adults and the poor integration of geriatric expertise within the hematology departments were notable, as only one center reported having geriatricians as part of their team and just six centers had access to a specialist in geriatric hematology or oncology. This disparity between available geriatric services and their integration into hematology may perpetuate fragmented health care models instead of effective clinical networks for treating older patients.

Additionally, the near absence of educational opportunities emerged

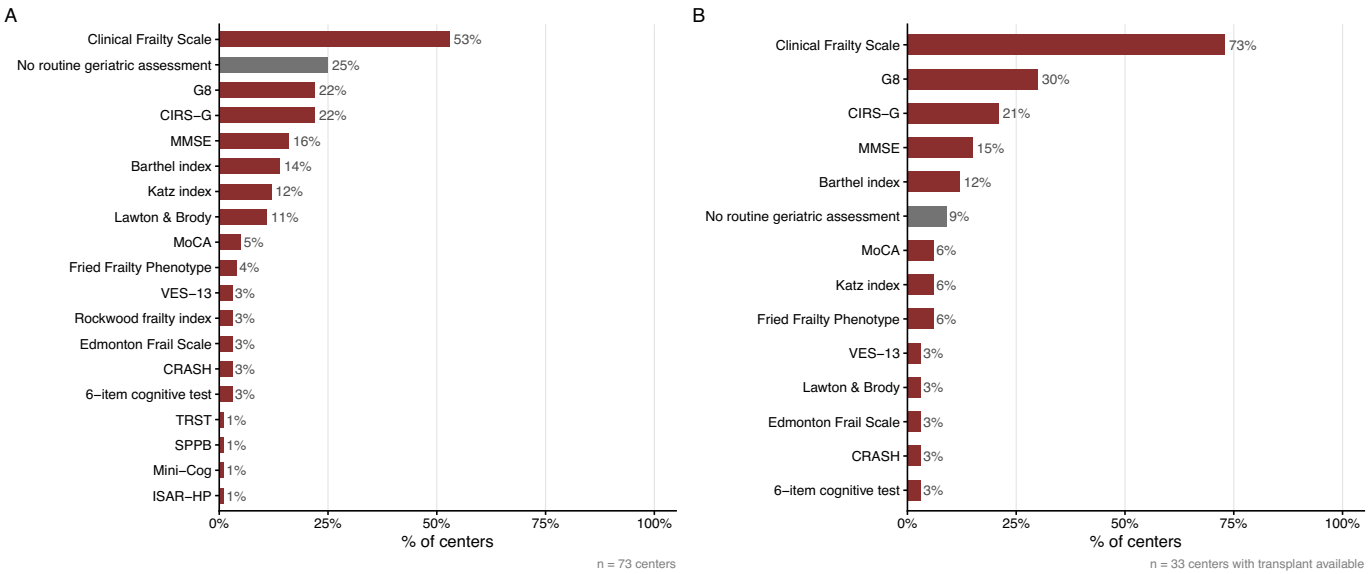


Fig. 2. Geriatric assessment tools used across participating centers. (A) Tools used for patients not undergoing hematopoietic cell transplantation (all centers, n = 73). (B) Tools used for transplant candidates (centers with transplant available, n = 33). Multiple responses were allowed. Abbreviations: G8, Geriatric 8; CIRS-G, Cumulative Illness Rating Scale–Geriatrics; MMSE, Mini-Mental State Examination; MoCA, Montreal Cognitive Assessment; VES-13, Vulnerable Elders Survey-13; CRASH, Chemotherapy Risk Assessment Scale for High-Age Patients; TRST, Triage Risk Screening Tool; SPPB, Short Physical Performance Battery; Mini-Cog, Mini-Cognitive Assessment Instrument; ISAR-HP, Identification of Seniors at Risk–Hospitalized Patients.

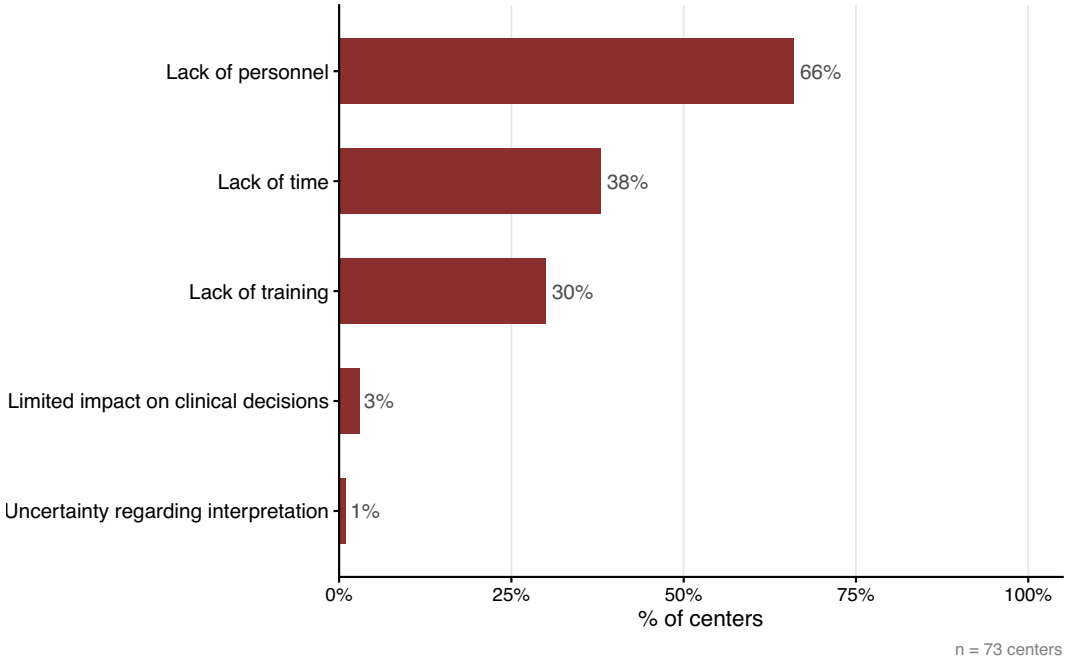


Fig. 3. Barriers to routine geriatric assessment implementation. Multiple responses were allowed; therefore, percentages are not mutually exclusive and may exceed 100%.

Table 2
Hematology workforce composition by institution type.

Characteristic	Public N = 39[1]	Private N = 27[1]	Academic N = 7[1]	p-value[2]
Hematologists	4 (2–10)	4 (2–8)	10 (5–13)	0.28
Hematology residents	6 (4–8)	6 (4–8)	13 (4–15)	0.36
Nursing personnel	20 (6–55)	15 (8–30)	30 (15–56)	0.59

[1] Data are presented as median (IQR) number of personnel per center. [2]*P*-values were calculated using Kruskal-Wallis test. Abbreviations: IQR: interquartile range.

as another challenge, limiting access to advanced competencies in the field, a common concern reported across other studies [14,15].

Limited experience may explain why, even in centers with access to geriatricians, chronological age alone remained the primary referral criterion in over half of institutions, while only 2.3% used geriatric assessment results. This reliance on age reflects a persistent misconception in the care of older adults, despite robust evidence showing that frailty, functional status, and comorbidity burden are superior predictors of biological fitness and clinical vulnerability [4,16].

While the increased use of CGA in the HCT setting is encouraging, its routine implementation across non-transplant settings remains

Table 3
Availability of key resources for the care of older patients with hematological malignancies by institution type.

Characteristic	Public N = 39[1]	Private N = 27[1]	Academic N = 7[1]	p-value[2]
Geriatricians	26 (67%)	13 (48%)	4 (57%)	0.36
Specialist in geriatric hematology/oncology	1 (3%)	4 (15%)	1 (14%)	0.13
Dedicated clinic for older adults	9 (23%)	9 (33%)	2 (29%)	0.68
Specialized training programs	2 (5%)	3 (11%)	2 (29%)	0.11
Adapted treatment approaches	15 (38%)	19 (70%)	5 (71%)	0.03
Transplant offered without strict age restriction*	5 (45%)	8 (50%)	4 (67%)	0.81
Early palliative care availability	7 (18%)	9 (33%)	1 (14%)	0.37
Inclusion of older adults in clinical research †	5 (23%)	6 (38%)	1 (17%)	0.57

[1] Data are presented as n (%) of centers reporting availability of each resource.
[2] P-values were calculated using Fisher's exact test.
* Calculated among the total of centers with transplant available ($n = 33$).
† Calculated among centers with clinical research available ($n = 44$).

inconsistent. This was mainly driven by capacity-related barriers, particularly insufficient personnel and limited time, rather than a lack of perceived clinical value, as most respondents recognized the relevance and usefulness of CGA. This limited approach represents a missed opportunity to tailor treatment plans, anticipate toxicities, and guide supportive care as recommended per guidelines [17,18]. Importantly, CGA is a clinically actionable intervention that requires relatively fewer resources while still providing substantial benefits to older patients [19]. Therefore, prioritizing CGA-guided interventions may represent a cost-effective strategy for resource-constrained settings such as LATAM.

Our results mirror patterns observed in previous studies. In a Mexican national survey, less than 20% of oncologists reported routinely performing CGA [20]. Similarly, an international survey conducted predominantly in academic and private settings in the US found that most hematologists and oncologists rarely or never performed CGA [21]. In community-based US practices, routine use of geriatric assessment was even lower, with only 13% of oncologists implementing validated tools to evaluate older patients [22].These parallel findings suggest that such barriers are not isolated to individual countries but represent a shared regional and global challenge, even in settings with greater geriatric oncology resources.

The similar distribution between centers with and without adapted treatment plans underscores the lack of consensus and standardized protocols for managing the care of older patients. This variability became more apparent when stratified by type of institution, with private and academic centers reporting a significantly greater availability of adapted treatment approaches than public institutions, likely reflecting differences in access to supportive care services, innovative therapies, and educational resources that facilitate protocol adaptation [23]. A comparable pattern was observed in transplant practices: while some centers reported that age was not a restriction for HCT, others had strict age limits, most commonly at 70 years, which potentially stemmed in variable access to resources, geriatric assessment, and institutional experience.

Together, these findings suggest that delivering timely and personalized care for older adults requires not only adequate infrastructure and multidisciplinary support, but also specialized geriatric knowledge, elements that remain limited across all types of practice settings in the region (Table 3). Furthermore, many international standards of care are modeled in high-income countries and may be difficult to implement in resource-constrained settings. Therefore, efforts should focus on the development and implementation of locally adapted treatment strategies that account for the realities of healthcare systems in LATAM.

The underrepresentation of older adults in clinical trials further illustrates these challenges. More than half of research-active centers either never enrolled older patients or restricted them to older adult-focused trials, perpetuating therapeutic uncertainty and restricting implementation of advanced therapies in this population. A comparable limitation was observed in palliative care, which was mostly restricted to the terminal stages of the disease. Although palliative care has traditionally been delivered late in the disease course, current evidence supports early palliative care models to reduce symptom burden and improve quality of life [24].

Importantly, despite these gaps, respondents were aware of the value of implementing comprehensive geriatric-oriented structures, with the highest priority given to establishing dedicated clinics or multidisciplinary teams. Such readiness for change provides a strong framework to integrate tailored actions at institutional levels.

Our study has limitations. Its survey-based design may introduce potential response bias toward physicians more invested in research or practicing in better-resourced centers. The heterogeneity of participating centers and modest sample size may have limited statistical power to detect potentially meaningful differences between institution types. Additionally, the open distribution strategy through the GELL network, while allowing broader regional participation, precluded the calculation of a formal response rate, as participation was voluntary and dependent on individual and institutional engagement. Participation varied across countries and may not reflect the overall distribution of hematology centers or population size in the region, limiting country-level representation. Nonetheless, the comprehensive evaluation across multiple domains of geriatric care, the inclusion of diverse health care settings, and the responses across multiple countries provide a valuable real-world regional review.

In summary, this multinational mapping of geriatric hematologic oncology capacity in LATAM identified not only resource constraints but also the absence of structured training and care models tailored to the biological heterogeneity of older adults with hematological malignancies. These findings provide a foundation to develop pragmatic resource-adapted strategies, promote multidisciplinary collaboration, and design educational and clinical programs aimed at improving outcomes and quality of life for older adults with hematological malignancies in low- and middle-income settings.

Ethics approval

The present study was reviewed and approved by the Institutional Review Board and Ethics in Research Committee from Facultad de Medicina y Hospital Universitario “Dr. José Eleuterio González” UANL.

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Author Contributions

Conceptualization: HAVA, PRCP, LCCG, ADLFC, RC, LM, DGA. Methodology: HAVA, PRCP, LCCG, ADLFC, RC, HVA, LM, DGA, GFP, LK, AGOA, CECL, LV, HI. Data curation: HAVA, PRCP, LCCG, ADLFC, GFP, LK, HI, DC, LV, FV, ACO, BB, CP, MATV, AQ, AVG, RRJ, JRP, MC, ADD, DGA. Formal analysis: HAVA, PRCP, LCCG, ADLFC, AGOA, CECL. Visualization: HAVA. Writing of original draft: HAVA, PRCP, LCCG, ADLFC, RC, LM, HVA. All authors reviewed and edited the final draft of the article.

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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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jgo.2026.103069.

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