Unveiling the Landscape of Brazilian Clinical Oncologists: Challenges, Diversity, and Quality Care

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Abstract

Cancer remains a significant public health challenge in Brazil, with an estimated 704 thousand new cases annually. Clinical oncology, a pivotal specialty in cancer diagnosis and treatment, has evolved since its formal establishment in 1946. Recent recognition by the Brazilian Federal Board of Medicine solidified its status, culminating in normative resolution nr. 2,162/2017. The present study aims to characterize Brazilian clinical oncologists and analyze their epidemiological and structural contexts using data from the Brazilian Society of Clinical Oncology's 2023 census and secondary sources, including the National Cancer Institute (Instituto Nacional de Câncer [INCA], in Portuguese) and Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatistica [IBGE], in Portuguese). A cross-sectional design employing qualitative-quantitative methods surveyed 761 clinical oncologists, revealing insights into demographics, workload, stress levels, and challenges. The results highlight regional disparities in cancer mortality rates despite the concentration of oncology services in the South and Southeast. Challenges include access to new treatments, late diagnoses, and systemic underfunding. Moreover, this study underscores gender and racial disparities within the specialty, indicating a predominantly white and heterosexual profile among practitioners. Addressing these issues is crucial for enhancing healthcare equity and improving patients' outcomes in oncology practice.

Keywords
- censuses
- workforce
- medical oncology

Introduction

Cancer has an increasing incidence, with estimates pointing to 704 thousand new cases in Brazil every year in the period from 2023 to 2025.[1] Clinical oncology, a medical specialty that plays a crucial role in the diagnosis and treatment of cancer, has recent roots in the history of medicine.

Before the specialty in clinical oncology was officially established, the field of cancerology, formally offered since 1946, was overseen by the National Cancer Service (Serviço Nacional de Câncer, in Portuguese), the first agency created to formulate cancer policies and educational campaigns in Brazil.[2] Forty years later, clinical oncology was officially recognized as a medical specialty by the Federal Board of Medicine[3] through normative resolution Nr. 2,162/2017.[4] The competency matrix, developed by the Brazilian Society of Clinical Oncology (Sociedade Brasileira de Oncologia Clínica [SBOC], in Portuguese) and approved in September 2018, outlines the training required for residency in clinical oncology. This residency aims to equip doctors

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with the skills to handle diagnostic and therapeutic procedures, as well as knowledge in prevention, cancer screening, and palliative care.[5]

Given its recent establishment, there is limited research on clinical oncology specialists. The first comprehensive study, Medical Demography[6], provided initial data on these professionals. The present study aims to describe the profile of clinical oncologists in Brazil and the epidemiological and structural context in which they work. It utilizes data primarily from the SBOC's census of clinical oncology 2023 and from secondary sources, such as the Brazilian National Cancer Institute (Instituto Nacional de Câncer [INCA], in Portuguese), the National Registry of Health Establishments (Cadastro Nacional de Estabelecimentos de Saúde [CNES], in Portuguese), the Mortality Information System (Sistema de Informações sobre Mortalidade/Departamento de Informática do Sistema Único de Saúde [SIM/DATASUS], in Portuguese), and the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatistica [IBGE], in Portuguese).

The relevance of the current study lies in providing a detailed understanding of the profile and working conditions of clinical oncologists, which is crucial for shaping public policies, improving medical training, and optimizing cancer care services in Brazil.

Materials and Methods

This is a cross-sectional study with a qualitative-quantitative approach and convenience sampling. The study instrument was the clinical oncology census conducted by SBOC in partnership with Datafolha.

The census was a survey conducted via an online form with 41 questions, with an average response time of 20 minutes. It was sent by email to SBOC members and was available from May 26, 2023, to July 31st, 2023. The inclusion criterion for the census was to work as a clinical oncologist.

Out of a total of 3,038 SBOC members, 2,086 are clinical oncologists, while the rest are non-oncologist collaborators and residents who were not included in the research. Among the 2,086 clinical oncologists, the census obtained 761 responses, resulting in a 95% confidence interval, with a margin of error of ± 4 percentage points.

The SBOC members were considered to represent the target population of clinical oncologists in Brazil. This consideration was based on an analysis comparing the number of associates to the number of specialists and their geographic distribution according to medical demographics and the Expert Qualification Registry (RQE).

The research team worked on the database produced from the interviewees' responses to create the tables and maps presented in this article. The software used to generate these materials were Microsoft Excel (Microsoft Corp., Redmond, WA, USA), RStudio (Posit PBC, Boston, MA, USA), and QGIS (open source).

Among the census questions used in this article were: units of the federation where they work, age, gender, color/race according to IBGE categories, sector where they work (public or private), average number of first appointments per month, average number of patients seen per month, level of stress with their work in oncology, and the most significant challenges when working as a clinical oncologist in Brazil today.

To determine the sector where the respondent works, four options were provided: only public, mostly public, mostly private, and only private. Stress level was measured using a Likert scale from 1 to 5, in which 1 means not at all stressed and 5 means very stressed. For the question about the biggest challenges of working as a clinical oncologist in Brazil today, a response box with 20 possible answers was provided, including *others* and *don't know*. From these 20 options, the 8 most frequently chosen were selected, and the corresponding percentages for public (only public and mostly public) and private (only private and mostly private) sectors were presented.

It is important to acknowledge several limitations in the study. The convenience sampling method may not fully reflect the diversity of the clinical oncology population in Brazil, as participation was voluntary and limited to SBOC members. Additionally, the use of an online survey may have introduced biases related to access to technology and the availability of time among participants. The methodology also did not capture information about non-respondents, which limits the generalizability of the results. Furthermore, the analysis of challenges faced by clinical oncologists was based on responses to open-ended questions and preestablished categories, which might not have fully captured the complexity of the issues encountered in clinical practice.

Other sources mentioned were used to better understand the context in which these professionals operate, including INCA for the number of new cancer cases, CNES for identifying high complexity oncology care units (unidades de assistência de alta complexidade em oncologia [UNACONs], in Portuguese) and high complexity oncology care centers (centros de assistência de alta complexidade em oncologia CACONs [, in Portuguese), and SIM/DATASUS and IBGE for calculating age-standardized mortality. However, these sources also have their own limitations, such as the possibility of data being outdated and incomplete coverage in certain regions.

Results

In this study, we evaluated all 761 census respondents and found that they are distributed across the 26 Brazilian states and the Federal District and occupy 140 (2.51%) of the country's 5,570 municipalities.

►**Table 1** shows the total number of the sample according to gender and age in each Brazilian state, showing that the southern region has the highest average age among those studied. In contrast, the Northeast region has the lowest average. Additionally, in ►**Figure 1**, we observe the distribution of SBOC's members.

Looking at gender issues, the proportion between men and women is balanced. However, this scenario changes

Table 1 Brazil: distribution and profile of medical oncologists, according to the Brazilian Society of Clinical Oncology's 2023 census

FU's by region (n)*	Respondents	Age**	Female***
Midwest (40)			
DF	43	40 (29–759)	24 (55.8)
GO	19	40 (29–75)	13 (68.4)
MS	12	40 (32–55)	4 (33.3)
MT	14	40 (31–60)	6 (42.8)
North (40)			
AC	1	43	0 (0)
AM	5	44 (38–64)	3 (60)
AP	1	41	1 (100)
PA	14	38 (31–47)	7 (50)
RO	1	34	0 (0)
RR	1	36	1 (100)
TO	1	41	1 (100)
Northeast (36.5)			
AL	8	39 (32–48)	7 (87.5)
BA	36	41 (30–72)	22 (61.1)
CE	21	42 (32–70)	11 (52.3)
MA	5	36 (29–46)	5 (100)
PB	6	37 (30–59)	4 (66.6)
PE	32	41 (30–68)	20 (62.5)
PIU	6	40 (31–50)	4 (66.6)
RN	8	39 (32–46)	3 (37.5)
SE	12	41 (30–49)	6 (50)
Southeast (42)			
ES	11	39 (31–51)	7 (63.6)
MG	79	42 (29–74)	38 (48.1)
RJ	72	47 (29–84)	36 (50)
SP	237	41 (29–75)	109 (45.9)
South (44)			
PR	34	44 (30–75)	18 (52.9)
RS	63	46 (30–78)	20 (31.7)
SC	19	43 (29–65)	6 (31.5)

Notes: *Average age of the region; ** average age of the UF; *** n (%).

when we look at their salary relationship. While most men (40.5%) earn more than 50 thousand reais per month, most women occupy the salary range of 20 to 30 thousand reais per month.

Regarding color/race data, the research showed that 81% of Brazilian clinical oncologists are white, 16% are brown, 2% are yellow, and 1% are black; and regarding sexual orientation, 94% are heterosexual, 4% are gay, 1% are lesbian, and 1% are bisexual.

The epidemiological scenario in which the studied professional is inserted is observed in ►**Figure 2**, in which we can follow the mortality rates for all neoplasms in 2022 (INCA – Atlas).[7]

The analysis of this scenario shows us that, regionally, the South is the place most affected by cancer mortality in Brazil. This data led us to look for information on how the structure of public services is distributed in our country; we can see the findings of this research in ►**Figure 3**, which shows that the CACONs and the UNACONs are concentrated in the South and Southeast regions of the country.[8]

Regarding training in clinical oncology, there is a 9 to 1 ratio between those who completed residency (90.4%) and those with a specialization (9.3%).

►**Table 2** provides data on the workload of these professionals through the average number of appointments attended monthly. The Northern region leads the number

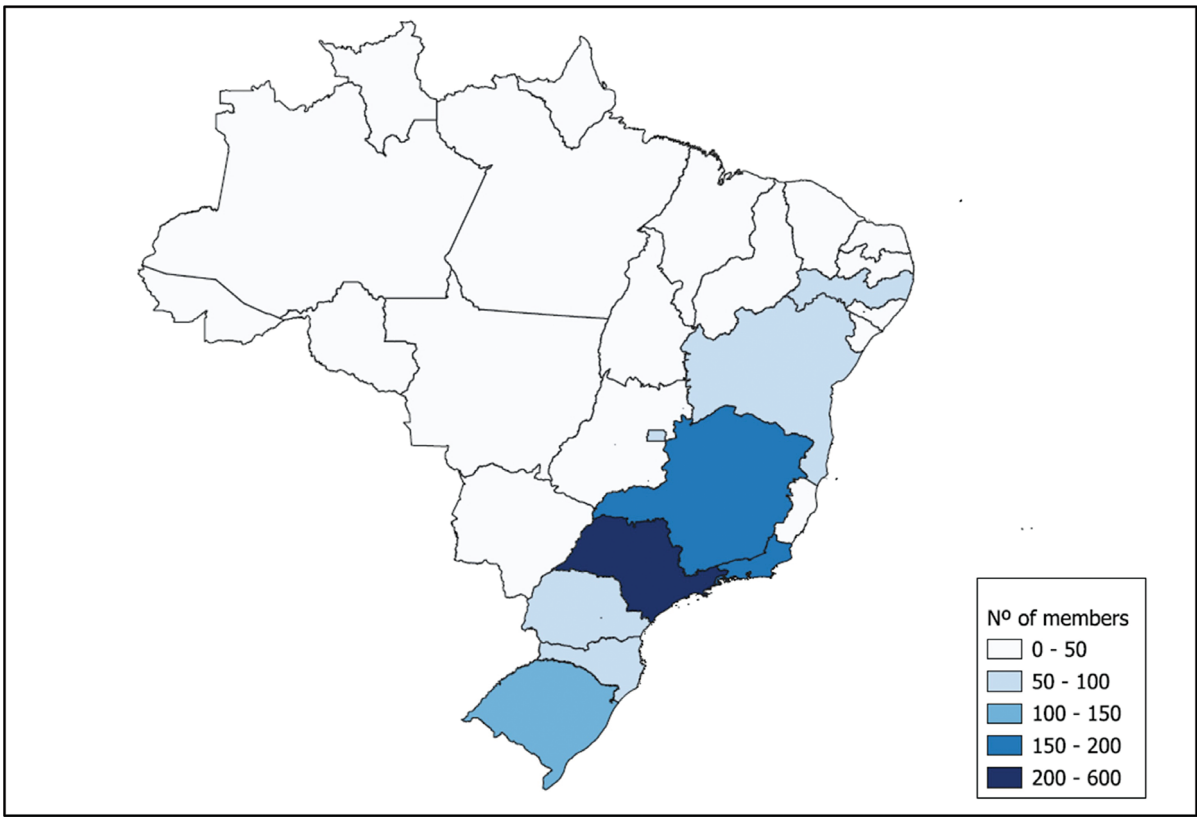

Fig. 1 Distribution of Brazilian Society of Clinical Oncology's members by state, 2023.

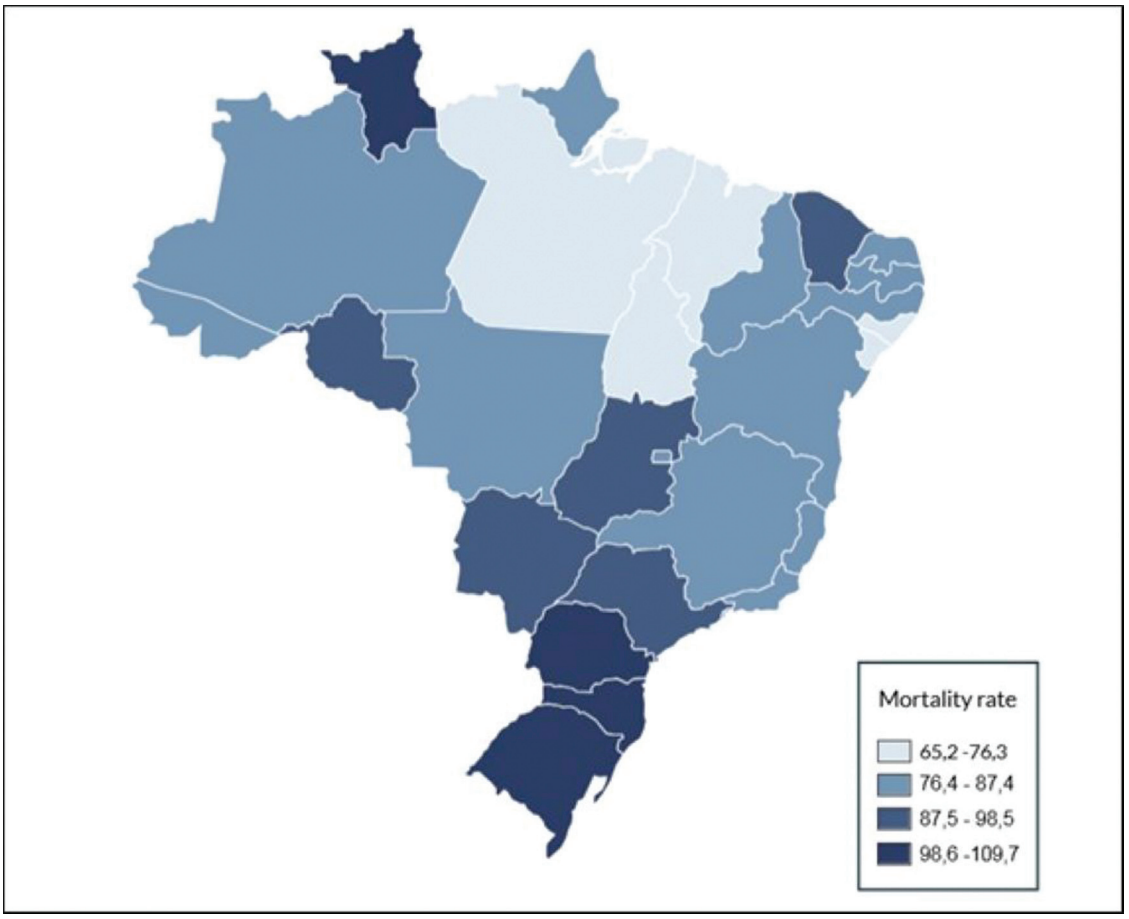

Fig. 2 Mortality rates for all neoplasms, gross and age-adjusted, for the Brazilian population of 2010, per 100,000 men and women (Brazil, 2022).

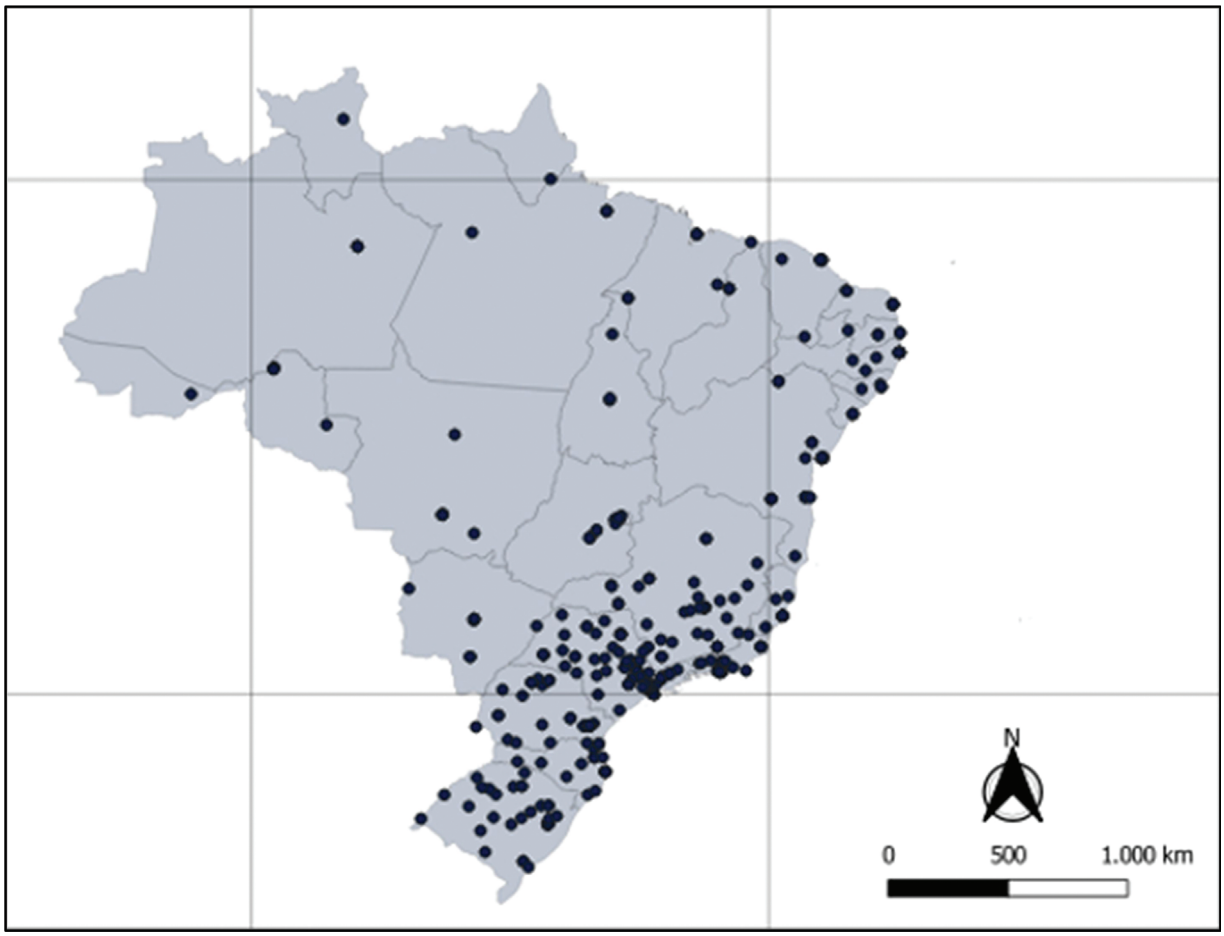

Fig. 3 Geographic distribution of high complexity oncology care centers (CACONS, in Portuguese) and high complexity oncology care units (UNACONS, in Portuguese) (Brazil, 2023).

of first appointments and total appointments. The Northeast occupies the second place in the total number of first appointments, and the Southeast occupies the second place in total number of appointments.

The stress level, also studied in this research, shows a predominance of *stressed*, according to the Likert scale, with only three states in the *neither too much nor too little stressed* range, as stratified in ►**Figure 4**.

Regarding the biggest challenges in working as a clinical oncologist, there was a significant similarity in the results analyzed between professionals from the public and private sectors. The main factors for both are the difficulty in accessing new medicines, late diagnoses, and underfunding and/or inefficient management of health systems. The excess of Whatsapp (Meta, Menlo Park, CA, USA) demands resulted from the most significant disparity in responses between sectors, predominating in the private sector (►**Figure 5**).

Discussion

The results obtained in this study provided a comprehensive view of the profile, workload, stress level, challenges, and the universe in which the Brazilian clinical oncologist is inserted.

Table 2 Number of consultations per month by medical oncologists, according to the Brazilian Society of Clinical Oncology's 2023 census

Region	First consultations*	Total consutations*
Midwest	18.63	140.9
North	20.75	181.1
Northeast	19	160.5
Southeast	17.9	163.9
South	17.8	156.5

Note: *Weighted average.

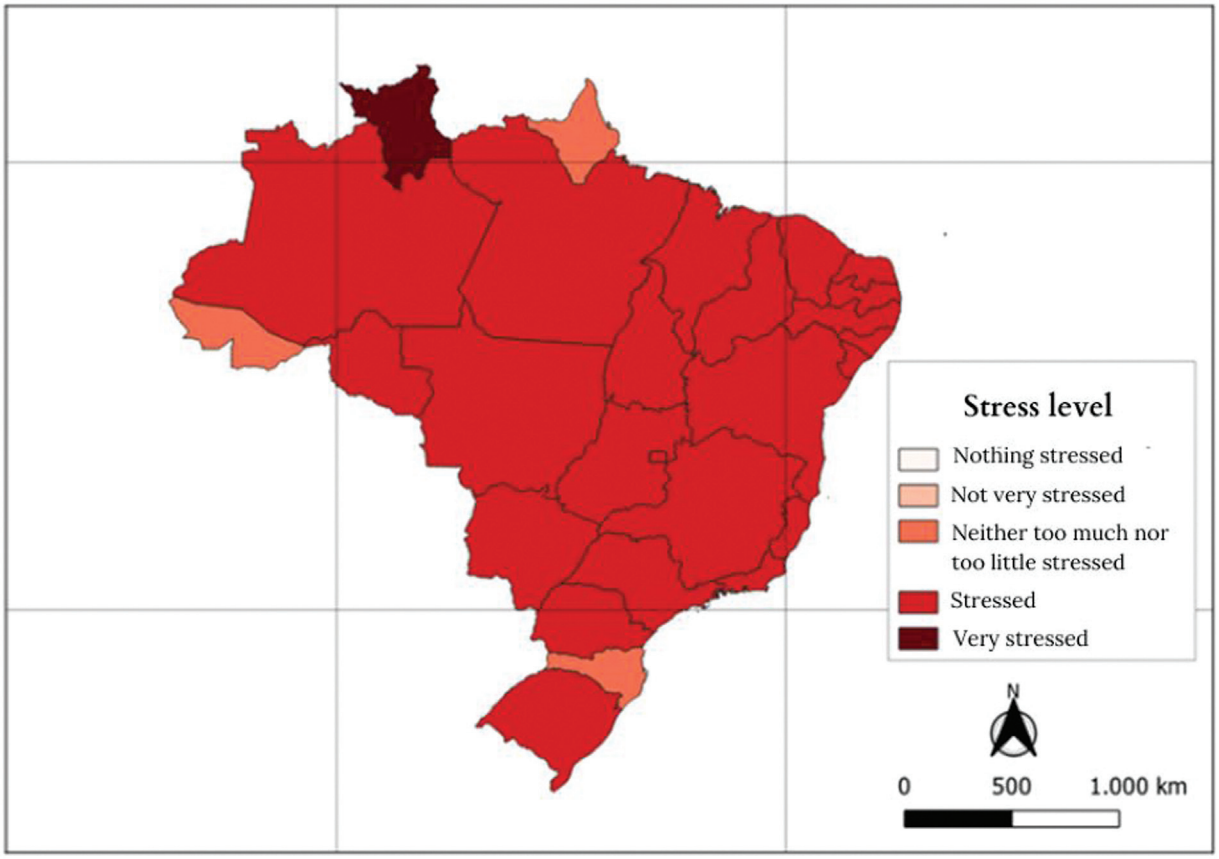

Fig. 4 Average stress level of oncologists, according to the Brazilian Society of Clinical Oncology's 2023 census, distributed by state, Brazil.

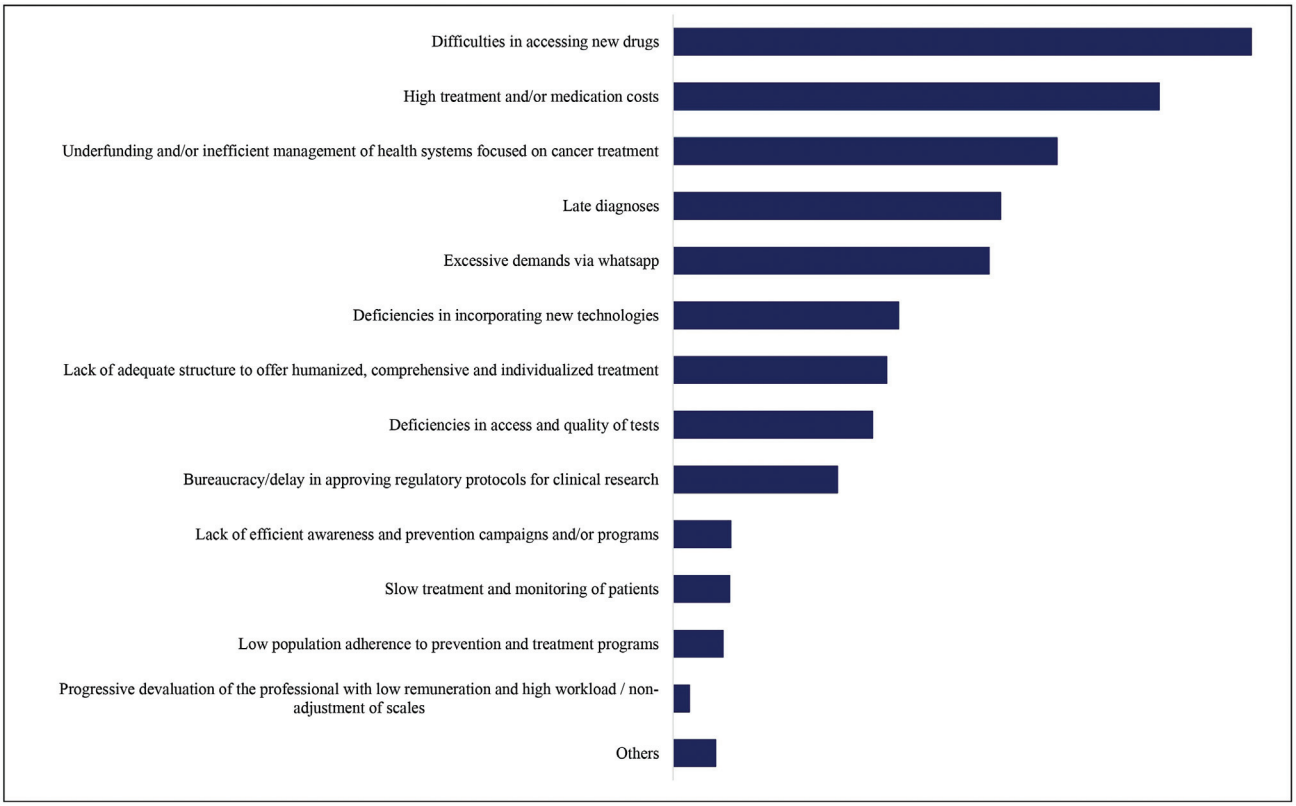

Fig. 5 Main challenges faced by clinical oncologists, according to the Brazilian Society of Clinical Oncology's census (Brazil, 2023).

Clinical Oncologist Profile

The most striking characteristics were presented, revealing that these professionals have a predominantly white and heterosexual profile. This datum demonstrates the lack of representation and diversity within the specialty, becoming even more concerning when compared to the survey by the Federal Council of Medicine in 2020,[9] which showed that 3% of Brazilian doctors are black. In comparison, the clinical oncology census shows just 1%.

A master's thesis published in the magazine "Trabalho, Educação e Saúde" studied the ways in which racism manifests itself in undergraduate medical courses from the students' perspective. They concluded that in addition to racism in its interpersonal and institutional character, it exists in the internalized scope, which "[...] in the classification of Jones (2002), represents the internalization of racist standards by the stigmatized group, incorporating negative aspects and opinions about themselves, even in relation to capacity, skill and value".[10]

According to medical demographics, there has been a more diverse entry into medical programs in recent years. However, the structural racism that unfortunately exists in our country and the internalization of these norms reflect on the graduation experience of these students, who, in turn, may give up or face more challenges in their academic journey. To resolve these issues, it is crucial to intensify inclusion through existing recruitment programs, such as quotas and financial support that aim to foster the retention of underrepresented groups among medical students.

Female Rise and Wage Inequality

As for information on gender, when compared to a 2022 study by the American Association of Clinical Oncology (ASCO),[11] which tried to observe the workforce in North America and obtained the result that only 35.8% of clinical oncology professionals are women, while in Brazil this percentage is 51%, according to the SBOC census.

We can, therefore, understand a significant rise in the female presence in the medical field in our country, showing notable progress in breaking down barriers. Despite this noteworthy increase in female representation, it is crucial to address and remedy existing salary gaps, ensuring that women receive fair and equitable pay for their jobs in the medical field. Equal pay is essential to fostering a truly inclusive society and fully recognizing women's valuable contributions to healthcare.

Epidemiological Scenario

The results showed that there is no direct correlation between the number of oncologists, cancer treatment facilities, and the mortality rate in the states, given that even with the concentration of oncology services and professionals in the South and Southeast of the country, these regions are still the most affected by cancer deaths. This indicates that the disparity in cancer mortality rates across different regions may be attributed to a complex combination of factors such as socioeconomic conditions, public education, and health policies.

To address these disparities effectively, it is crucial to implement comprehensive strategies that improve equitable access to healthcare and promote cancer awareness and prevention in all communities. One practical solution is the establishment of regional centers of oncology excellence. These centers would serve as hubs for specialized cancer care, integrating resources and expertise to enhance the quality and accessibility of treatment in underserved areas.

By providing advanced diagnostics, treatment options, and training programs, these centers could help bridge the gap between regions with varying levels of healthcare infrastructure and improve overall cancer outcomes. Additionally, supporting preventive measures and public health campaigns specific to the needs of different regions would further contribute to reducing cancer mortality disparities and improving patient outcomes across the country.

Challenges of Oncology Practice

Analyzing and correlating factors such as stress, performance challenges, and workload is essential for reflecting on the thesis raised at the end of the epidemiological scenario.

According to the geographic distribution in the census and secondary studies, the South and Southeast regions have the most significant number of clinical oncologists and services qualified for oncological care. However, when this datum is placed alongside the workload, it can be seen that they are not directly correlated and that the concentration of resources and professionals in these regions may not correspond to the demand.

More in-depth studies are needed to allow us to measure the parameters of average monthly appointments and average number of patients per enabled service to observe the number of professionals and structures suitable to face this scenario.

In addition to demographic, workload, and epidemiological aspects, challenges were presented that were independent of the direct action of clinical oncologists. According to these professionals, the eight biggest challenges for their practice are related to management and financial structures.

Currently, the existing technology in the field of oncology studies allows new medications and procedures to appear all the time to diagnose and treat patients with cancer. Still, the two biggest challenges mentioned were difficulty accessing new technologies and late diagnoses.

This reflects a process related to the financing and management of the health sectors. The high cost of these technologies and the structural model for their approval in evaluation forums result in a lack of access to several existing treatments that have not yet been included in the list of medicines and procedures in public and private health systems or, in the most extreme cases, are already included and even then can only be offered to patients through judicialization, which is the claim, before the courts, for medicines that are not available in the public network or in supplementary healthcare.

Conclusion

The present study showed that although clinical oncology is still a young specialty, its professionals face structural

challenges, both from health systems and from the lack of diversity found in data on sexual orientation and color/race.

Studies of the profile of clinical oncologists, their challenges, and the epidemiological and structural scenario in which they are inserted play an essential role in expanding the perspective on how these aspects may impact patient care.

Therefore, studies and actions aimed at improving the handling and management of this scenario are imperative so that professionals can offer the quality treatment and monitoring taught during their training.

The SBOC, creator of the census and its analysis, is committed to the advancement of clinical oncology in Brazil together with its committees. We seek to constantly reflect on improving the practice of the specialty to provide what, in short, is the mission of this profession: to promote health and quality of care for patients with cancer.

Authors' Contributions

SMB, MRM, ALFC: Conception and design, data analysis and interpretation, final approval of manuscript, writing of the manuscript, and provision of study materials or patient; MIFMB, PMGH: Conception and design and provision of study materials or patient; CGF: Provision of study materials or patient; LPB: Collection and assembly of data, conception and design, data analysis and interpretation, and final approval of the manuscript; GAPL: Conception and design, data analysis and interpretation, final approval of the manuscript, and writing of the manuscript.

Clinical Trials

None.

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Conflict of Interests

The authors have no conflict of interests to declare.

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