

Geographic Distribution of Cancer Care Providers in the Philippines

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PURPOSE In the Philippines, a lower middle-income country in Southeast Asia, 6 of 10 Filipinos die without seeing a doctor. To ensure universal access to cancer care, providers must be equitably distributed. Therefore, we evaluated the distribution of oncologists across all 17 regions in the Philippines.

METHODS We gathered data from the official websites of national medical societies on their members' regional area of practice: Philippine Society of Medical Oncology, Philippine Radiation Oncology Society, Surgical Oncology Society of the Philippines, Society of Gynecologic Oncologists of the Philippines, and Philippine Society of Hospice and Palliative Medicine. We compared this with the regional census to determine the number of board-certified oncologists per 100,000 Filipinos.

RESULTS For a population of almost 110 million, the Philippines has a total of 348 medical oncologists, 164 surgical oncologists, 99 radiation oncologists, 142 gynecologic oncologists, and 35 hospice and palliative medicine (HPM) specialists. This translates to 0.32 medical oncologists, 0.15 surgical oncologists, 0.09 radiation oncologists, 0.13 gynecologic oncologists, and 0.03 HPM specialists for every 100,000 Filipinos. The number of oncologists is highest in the National Capital Region in Luzon and lowest in the Bangsamoro Autonomous Region in Muslim Mindanao. All regions have at least one medical and gynecologic oncologist. Two regions (12%) have no surgical oncologists, five regions (29%) have no radiation oncologists, and eight regions (47%) have no HPM specialists.

CONCLUSION Efforts are needed to increase the number of oncologists and improve equity in their distribution to ensure universal access to cancer care in the Philippines.

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INTRODUCTION

The Philippines is a large (300,000 sq km.; 110M population) lower middle-income country (LMIC) in Southeast Asia. Cancer ranks fourth in leading causes of death,¹ with almost 49,000 deaths due to cancer in 2021 alone. Geographic disparities in health resources, particularly the health workforce, are evident across the archipelago of more than 7,600 islands: 6 of 10 Filipinos die without ever seeing a doctor.²

The WHO cites health workforce as one of six building blocks of a health system.³ To provide universal access to cancer care, cancer care providers must be well-performing, sufficient, and, more importantly, equitably distributed.⁴ Therefore, there is a critical need to evaluate the geographic distribution of cancer care providers to determine existing capacity and guide future policy.

A 2018 review of the Philippine health system⁵ showed a centralization of physicians and nurses in the National Capital Region (NCR). However, a more specific evaluation of cancer care providers is lacking. In this study, we

evaluated the geographic distribution of board-certified cancer care providers across all 17 regions in the Philippines. Cancer care providers included in this study were medical oncologists, surgical oncologists, radiation oncologists, gynecologic oncologists, and hospice and palliative medicine (HPM) specialists. We compared these data with the regional population census to determine the number of cancer care providers per 100,000 Filipinos.

METHODS

The practice of oncologists in the Philippines is governed by national medical societies. Oncologists cannot practice without passing the board certification examinations administered by these societies, and upon passing, they automatically become members of these societies. We, therefore, gathered publicly available data from the official websites of these medical societies on their members' regional area of practice.

Medical societies included in this study were the Philippine Society of Medical Oncology,⁶ the Philippine Radiation Oncology Society,⁷ the Surgical Oncology

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CONTEXT

Key Objective

What is the geographic distribution of cancer care providers in the Philippines, a large archipelago in Southeast Asia of 110 million people, where cancer is a leading cause of death?

Knowledge Generated

Medical oncologists, surgical oncologists, radiation oncologists, gynecologic oncologists, and hospice and palliative medicine specialists are centralized in the National Capital Region while some regions have no cancer care providers.

There is a severe lack of cancer care providers in the Philippines: For every 100,000 Filipinos, there are 0.32 medical oncologists, 0.15 surgical oncologists, 0.09 radiation oncologists, 0.13 gynecologic oncologists, and 0.03 hospice and palliative medicine specialists.

Relevance

The lack and unequal geographic distribution of cancer care providers in the Philippines causes delays in cancer care given the burden of travel from patient residence to provider and results in poorer patient outcomes; national policies and research endeavors must be geared toward addressing this.

Society of the Philippines,⁸ the Society of Gynecologic Oncologists of the Philippines,⁹ and the Philippine Society of Hospice and Palliative Medicine.¹⁰ We obtained a list of cancer care providers per region and compared this with the official regional population census from the Philippine Statistics Authority¹¹ to determine the number

of board-certified cancer care providers per 100,000 Filipinos.

Statistics were calculated using Microsoft Excel, and figures were generated using Quantum Geographic Information System. This study was deemed exempt from institutional board review as data used were publicly available on the

TABLE 1. Number of Cancer Care Providers in the Philippines (total and by region)

Region	Population per Region (2020)	Medical Oncologists	% of Total	Surgical Oncologists	% of Total	Radiation Oncologists	% of Total	Gynecologic Oncologists	% of Total	Hospice and Palliative Medicine Specialists	% of Total
Total	109,033,245	348		164		99		142		35	
NCR	13,484,462	165	0.47	83	0.51	62	0.63	63	0.44	19	0.54
CAR	1,797,660	7	0.02	2	0.01	1	0.01	3	0.02	0	0.00
Region I (Ilocos region)	5,301,139	14	0.04	4	0.02	3	0.03	7	0.05	0	0.00
Region II (Cagayan valley)	3,685,744	3	0.01	2	0.01	0	0.00	2	0.01	1	0.03
Region III (Central Luzon)	12,422,172	35	0.10	7	0.04	7	0.07	16	0.11	1	0.03
Region IV-A (Calabarzon)	16,195,042	37	0.11	5	0.03	5	0.05	20	0.14	1	0.03
Mimaropa region	3,228,558	4	0.01	1	0.01	0	0.00	1	0.01	0	0.00
Region V (Bicol region)	6,082,165	6	0.02	3	0.02	1	0.01	3	0.02	0	0.00
Region VI (Western Visayas)	7,954,723	20	0.06	6	0.04	6	0.06	4	0.03	1	0.03
Region VII (Central Visayas)	8,081,988	20	0.06	16	0.10	4	0.04	6	0.04	3	0.09
Region VIII (Eastern Visayas)	4,547,150	5	0.01	0	0.00	0	0.00	1	0.01	2	0.06
Region IX (Zamboanga Peninsula)	3,875,576	6	0.02	3	0.02	2	0.02	2	0.01	0	0.00
Region X (Northern Mindanao)	5,022,768	7	0.02	9	0.05	2	0.02	5	0.04	1	0.03
Region XI (Davao region)	5,243,536	10	0.03	16	0.10	4	0.04	5	0.04	6	0.17
Region XII (Soccsksargen)	4,901,486	7	0.02	6	0.04	2	0.02	2	0.01	0	0.00
REGION XIII (Caraga)	2,804,788	1	0.00	1	0.01	0	0.00	1	0.01	0	0.00
BARMM	4,404,288	1	0.00	0	0.00	0	0.00	1	0.01	0	0.00

Abbreviations: BARMM, Bangsamoro Autonomous Region of Muslim Mindanao; CAR, Cordillera Administrative Region; NCR, National Capital Region.

mentioned official websites of the medical societies, and no patient data were used.

RESULTS

The Philippines has 17 defined geographic regions. Across the five cancer specialties included in this study, we observed that there are oncologists practicing in more than one region. To more accurately estimate the total number of cancer care providers, we counted those practicing in more than one region toward the region they serve the most institutions.

For a population of almost 110 million, the Philippines has a total of 348 medical oncologists, 164 surgical oncologists, 99 radiation oncologists, 142 gynecologic oncologists, and 35 HPM specialists (Table 1). For every 100,000 Filipinos, there are 0.32 medical oncologists, 0.15 surgical oncologists, 0.09 radiation oncologists, 0.13 gynecologic oncologists, and 0.03 HPM specialists (Table 2).

The NCR has the greatest number of cancer care providers while the Bangsamoro Autonomous Region of Muslim Mindanao (BARMM) has the least (Table 1). All 17 regions in the Philippines have at least one medical oncologist and one gynecologic oncologist. Two regions (12%) do not have a surgical oncologist. Five regions (29%) do not have radiation facilities and, therefore, do not have radiation

oncologists. Eight regions (47%) do not have an HPM specialist.

DISCUSSION

For a population of almost 110 million, the Philippines has a total of 348 medical oncologists, 164 surgical oncologists, 99 radiation oncologists, 142 gynecologic oncologists, and 35 HPM specialists. This translates to 0.32 medical oncologists, 0.15 surgical oncologists, 0.09 radiation oncologists, 0.13 gynecologic oncologists, and 0.03 HPM specialists for every 100,000 Filipinos. NCR has the greatest number of cancer care providers while BARMM has the least (Fig 1). With so few providers serving the entire country, many shuttle to multiple hospitals, crossing regional borders in their practice. A greater number of cancer care providers is necessary, given the increasing number of patients with cancer in the Philippines and other LMICs.^{12,13}

Studies have attempted to determine benchmarks for the ideal density of cancer care providers. The absence of a national cancer registry precluded transmutations in data, but we attempt to make the available values comparable for context.

A. A study conducted in Japan pegged the benchmark for radiation oncologists at 0.38 per 100 cancer patients¹⁴; in the Philippines, radiation oncologist

TABLE 2. Number of Cancer Care Providers in the Philippines per 100,000 Population (total and by region)

Region	Population per Region (2020)	Medical Oncologists	Surgical Oncologists	Radiation Oncologists	Gynecologic Oncologists	Hospice and Palliative Medicine Specialists
Total	109,033,245	0.32	0.15	0.09	0.13	0.03
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Region V (Bicol region)	6,082,165	0.10	0.05	0.02	0.05	0.00
Region VI (Western Visayas)	7,954,723	0.25	0.08	0.08	0.05	0.01
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BARMM	4,404,288	0.02	0.00	0.00	0.02	0.00

Abbreviations: BARMM, Bangsamoro Autonomous Region of Muslim Mindanao; CAR, Cordillera Administrative Region; NCR, National Capital Region.

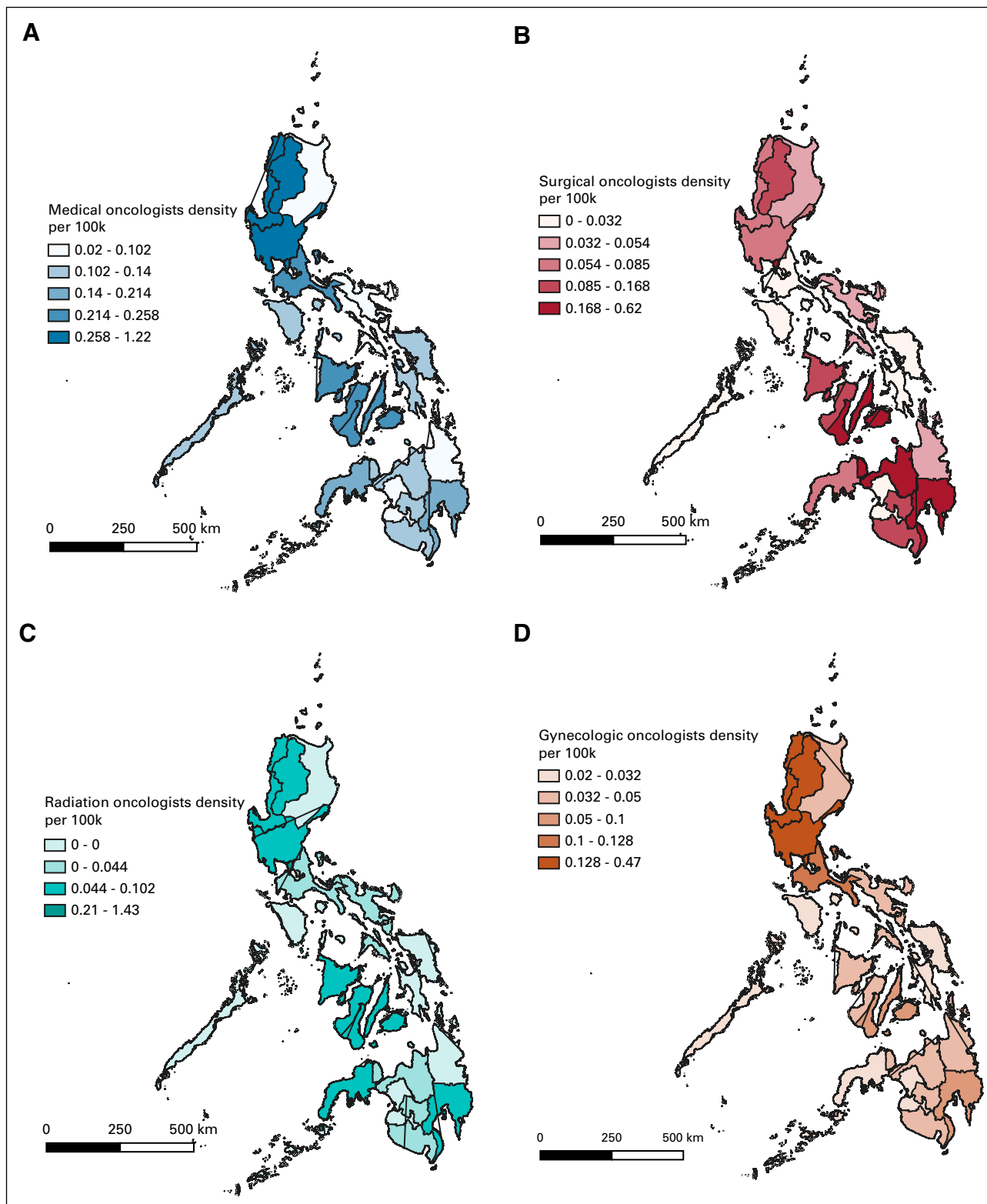


FIG 1. Regional density of cancer care providers in the Philippines per 100,000 population: (A) medical oncologists, (B) surgical oncologists, (C) radiation oncologists, (D) gynecologic oncologists, and (E) hospice and palliative medicine specialists.

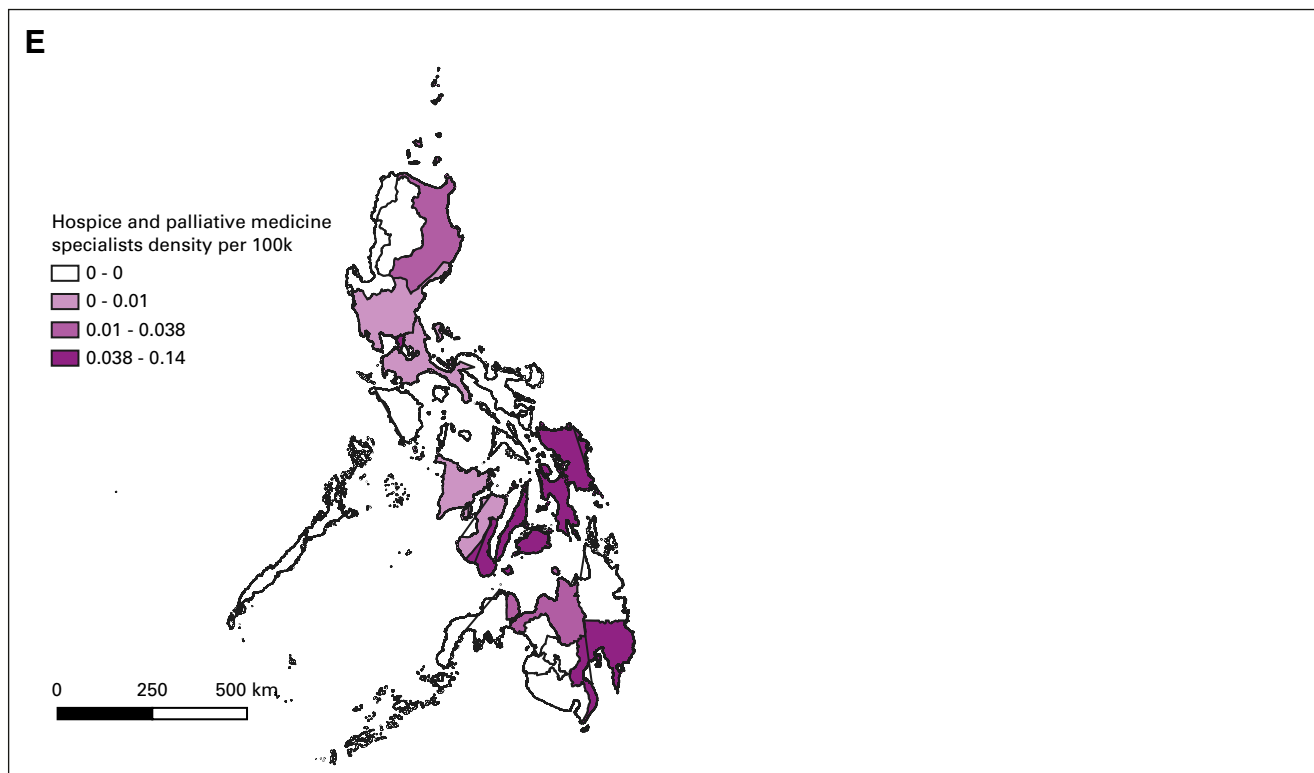


FIG 1. (Continued)

density is at 0.36, but per 50,000 Filipinos (0.18 per 100,000 Filipinos).

B. A modeling exercise from Spain pegged the benchmark for full-time medical oncologists at 2.79 per 100,000 inhabitants¹⁵; for the Philippines, the national density is 0.24 per 100,000 inhabitants. Even in the largest urban center, NCR, where medical oncologists are most dense, the ratio is at a mere 1.22 per 100,000 inhabitants.

C. A global study recommended that for a LMIC such as the Philippines the lower bound for optimal cancer surgical workforce should be at 166,000¹⁶; in the Philippines, there are currently 164 surgical oncologists.

D. A US study asserts that 30 Hospice and Palliative care physicians per 100,000 elders in the population is a reasonable target¹⁷; at the moment, 35 of these specialists serve the entirety of the Philippines, where a little over half are concentrated in NCR.

The WHO recommends at least 10 doctors for every 10,000 people¹⁸; Philippine data from 2017⁵ shows an average of 3.9 doctors working in health institutions for every 10,000 Filipinos. Regional disparities in physician density are also evident, where doctors are most dense in NCR (10.6 doctors/10,000 population) and least dense in BARMM (0.9 doctors/10,000 population). This is consistent with our data on cancer care providers.

Oncology training opportunities in the Philippines are limited. There are only 10 medical oncology, nine general surgical oncology, nine radiation oncology, two gynecologic

oncology, and two HPM residency programs for the entire country. Training spots per program are limited as well. The two gynecologic oncology subspecialty programs combined only take in approximately five new fellows per year. The nine radiation oncology residency training programs each accept one to two residents per year.

In our study, we found that HPM specialists in the country are exceptionally few. This may be due to HPM being a relatively young specialty in the Philippines, with an espoused care paradigm that has poorly penetrated the local practice of medicine. Additionally, for a cancer care provider such as a medical, gynecologic, radiation, or surgical oncologist to pursue subspecialty training in HPM, they must first complete a Family Medicine residency, which considerably lengthens years spent in training.

Importantly, given the poorer work conditions, less available technology, limited pay and benefits despite increasingly demanding workloads, and meager government support for those who want to do research, many Filipino doctors choose to train and practice abroad. The Philippine brain drain phenomenon has been so severe that in 2015, the Philippines was the sixth largest exporter of migrant doctors.⁵

Our study demonstrates a centralization of cancer care providers in NCR, a highly urbanized region where the capital Manila is located. About two thirds of radiation oncologists practice mainly in NCR while five other regions are without a single one. The regional disparities are so

severe such that one region, BARMM, is without a single surgical oncologist, radiation oncologist, or HPM specialist.

The inequitable distribution of cancer care providers may be explained by systems-based¹⁹ limitations, including the higher number of health facilities in NCR⁵ and the availability of multidisciplinary teams and advanced medical equipment to perform specialized cancer treatments. For surgical and gynecologic oncology, operating complexes and intensive care facilities are needed among others to provide comprehensive care for patients requiring cancer surgery. For radiation oncology, the absence of a radiation therapy facility precludes the presence of a radiation oncologist in the region. Of the 50 radiation therapy facilities in the Philippines, 19 are in Metro Manila, the center of NCR, and 31 are in the provinces. Of the 25 brachytherapy facilities, 10 are in Metro Manila and 15 are in the provinces. This affects the distribution of radiation oncologists in the country.

With the limited number of well-equipped government cancer centers across the country, private institutions fill the gaps in health infrastructure. Cancer services at private hospitals come with much higher out-of-pocket costs that patients in rural and geographically isolated regions of the country would never be able to afford, given that a minimum wage earner in these regions makes less than \$10 US dollars a day.²⁰ Hence, even with a growing number of cancer centers that are run solely by private entities or through public-private partnerships, their centralization in urban areas is expected as income levels are higher and purchasing power is greater. It is likewise expected that cancer care providers will flock to these centers to establish their practice, leaving patients in rural areas at a disadvantage. Additionally, a model of localized care such as in rural areas presents an unsustainable workload burden to any single oncologist.

Concerns regarding safety also play a role in the inequitable distribution of cancer care providers in the country. In recent years, many Filipino doctors have been murdered, red-tagged, and become targets of politically motivated harassment, with most, if not all, incidents occurring in provincial regions.²¹

The lack and unequal distribution of cancer care providers delay cancer care for Filipino patients and result in poorer patient outcomes. Tertiary centers in the capital report a high proportion of patients presenting with late-stage disease²²⁻²⁵; it is likely that these patients may have presented earlier if local care were more accessible.

Studies have shown that for patients with cancer, the burden of travel from patient residence to provider has a negative impact on stage at diagnosis, appropriate treatment, outcome, and quality of life.²⁶ In the Philippines, patients residing outside the capital and major urban cities have decreased access to cancer care providers. Consequently, health-seeking behavior for cancer prevention and screening, compliance with treatment protocols, and follow-

up rates over time are much poorer for these patients. This results in upstaging of disease, worse morbidity and mortality rates, and increased costs of care. If a Filipino woman with a breast tumor must travel half a day to get into the city to the nearest oncologist, it is unlikely that she would be able to travel back and forth for multiple sessions of chemotherapy and radiation or adhere to recommended follow-up. She may not even seek consult in the first place given the burden of travel, not to mention the other direct and indirect costs of cancer treatment, including childcare and loss of productivity.²⁷⁻³⁰

Local cancer care providers are needed to inform public health policy and cancer prevention strategies.³¹⁻³³ In the Philippines, rates of smoking continue to be high; a greater number of oncologists may improve advocacy for legislation and education targeted at reducing rates of smoking. Similarly, the country does not yet have national-level human papillomavirus vaccination and cervical cancer screening efforts,³⁴ despite the high burden of cervical cancer. Oncologist-driven education of the general public and primary care providers may improve access and adherence to screening. Importantly, local cancer care providers will help ensure that interventions remain culturally sensitive and appropriate, given the diversity of cultures and populations across the Philippine archipelago.

Moreover, the great clinical burden borne by a low number of oncologists serving a large population leaves little time for research, contributing to global disparities in epistemic power.³⁵⁻³⁷ A greater number of cancer care providers, alongside their equitable distribution, is urgently needed to not only deliver clinical services but also to bolster research endeavors that are responsive to the needs of local communities. The implementation of cancer clinical trials,³⁸ community-based participatory research, and integrated knowledge translation³⁹ can only be made possible through cancer care providers who practice in the community.

In 2019, the Philippine Universal Health Care Act and the National Integrated Cancer Control Act were passed. To implement these laws and ensure universal access to cancer care, it is critical that both the lack and uneven distribution of cancer care providers across the country be addressed.

There are only 48 medical schools in the Philippines,⁴⁰ mostly centered in urban regions such as NCR; residency and fellowship programs mirror this distribution. Medical education and training programs must be ramped up and equitably distributed across the country to achieve recommended benchmarks. For medical oncologists, to reach the recommended benchmark of 2.79¹⁵ per 100,000 Filipinos by the year 2040, roughly 150 graduates would have to be produced annually, beginning with the current number of 348 medical oncologists. Targets for other specialties must be determined by consensus in official medical societies. A national cancer registry would

immensely contribute to this endeavor since benchmarks are often developed as ratios of cancer care providers to patients of specific cancers. A national cancer registry has been started but is by no means completely developed.

Across the globe, physicians are centralized in urban communities, reflective of both personal preference and local health system capacity to deliver specialized health services.⁴¹ This suggests the need to (1) incentivize medical practice in rural and underserved areas and (2) develop local health systems.

Specialists in the Philippines must be incentivized to practice outside NCR. As the majority of physicians tend to settle down and establish practice where they completed their medical training,⁴² it appears that the first challenge would be to entice young doctors to train in underserved areas. The United States has found success in this endeavor by offering both medical students and family practice residents generous monthly stipends for as long as they commit to practice exclusively in a rural community. Loan forgiveness and tax benefits may likewise be contemplated.

A systematic review of strategies in recruiting and retaining primary care doctors found mixed evidence on financial incentives but supported the use of postgraduate placements in underserved areas, undergraduate rural placements, and recruiting students to medical schools in rural areas. Marketing campaigns were found to be less effective.⁴³

In the Philippines, some progress has been made to incentivize medical practice in rural areas. Under the Doctors to the Barrios program, physicians are assigned to underserved municipalities in the Philippines and are given the opportunity to pursue a practice-based family medicine residency training and masters degree in public health during their three-year contract period.⁴⁴ In addition, the Doktor Para Sa Bayan Act of 2020 aims to establish a medical scholarship and return service program so that students who wish to pursue a medical degree may receive financial assistance, and in return, they shall render medical services in government facilities in underserved municipalities.⁴⁵

Local health systems across the country must also be capacitated to serve a greater number of Filipino patients with cancer and to provide cancer care providers with a conducive place to establish their medical practice. It is critical that public cancer centers outside of NCR be developed to avoid increasing the out-of-pocket costs of cancer care. At the very least, these cancer centers must be fully equipped to diagnose cancer and provide basic treatments and must include operating rooms, chemotherapy infusion rooms, diagnostic imaging equipment, and linear accelerators. In such cases

that these cannot be provided for in a particular geographic region, coordination with higher centers for referrals is needed to ensure patients are not lost in the process of transfer. This has also been called the hybrid centralized-dispersive model of care, where surgical services requiring multidisciplinary teams and support facilities are carried out in centers of excellence. Thereafter, treatment delivered over time like routine chemotherapy can be coordinated with local providers in the region.¹⁹

Finally, the safety of cancer care providers, alongside all health care workers, must also be ensured, particularly in provincial regions where acts of violence against health care workers have been increasing.

To our knowledge, this is the first study to review the geographic distribution of cancer care providers in the Philippines. However, this study has some limitations. First, we only used data from the Surgical Oncology Society of the Philippines to determine the distribution of surgical oncologists. However, surgeons outside of this society, including general surgeons, head and neck surgeons, pediatric surgeons, ophthalmologists, neurosurgeons, and urologic surgeons may also perform cancer surgery. Second, the lack of sex- and age-disaggregated regional population data from the Philippine Statistics Authority precluded a more accurate determination of the ratio of gynecologic oncologists per 100,000 patients, who are commonly women of reproductive age. Third, the provision of comprehensive cancer care is a multidisciplinary effort and is not limited to physicians. Other essential members of a cancer care team include pathologists, nurses, radiation therapists, medical physicists, and even mental health professionals, given the growing recognition that mental illness is a significant comorbidity among patients with cancer.⁴⁶ Patients with cancer also interact with other health care providers, including pharmacists, nutritionist-dietitians, and medical and radiologic technologists. Social workers and health insurance officers assist patients in mitigating the financial toxicities that often accompany cancer diagnosis and treatment.²⁷⁻³⁰ Hospital chaplains and other support personnel attend to religious and spiritual needs. An account of disparities in access to these important care providers is merited. Nevertheless, we have successfully determined the geographic distribution of key cancer care providers in the Philippines. These data may guide future policy to optimize the country's cancer care workforce and ensure universal access to comprehensive cancer care.

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AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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