



GLOBOCAN 2020 Report on Global Cancer Burden: Challenges and Opportunities for Surgical Oncologists

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ABSTRACT Cancer is emerging as a major public health challenge globally. Recently, IARC (International Association of Research on Cancer) published global cancer burden using GLOBOCAN 2020 estimates for 36 cancers in 185 countries of the world. As per the estimates of the World Health Organization (WHO) in 2019, cancer is the first or second leading cause of death in 112 of 183 countries. The major takeaways of the GLOBOCAN 2020 report relevant to the surgical oncology community include the rising global burden of cancer, global disparity in cancer incidence and mortality in different geographic regions, and the impact of the human development index (HDI) on cancer incidence and projected global cancer burden by 2040. In this article, we discuss the implications of the GLOBOCAN report on future global cancer control strategies and the role of surgical oncologists in the fight against cancer.

GLOBAL CANCER BURDEN AND STRATEGIES FOR CANCER CONTROL

As per GLOBOCAN 2020, the number of new cancer cases diagnosed in 2020 was 19.3 million, and almost 10.0 million died due to cancer. GLOBOCAN predicts that the number of cancer cases will increase to 28.4 million in 2040.¹ Worldwide, female breast cancer has surpassed lung cancer as the most common cancer (11.7%) followed by lung (11.4%), colorectal (10.0%), prostate (7.3%), and

stomach (5.6%). As far as cancer-related mortality is concerned, lung cancer is the leading cause, responsible for 1.8 million deaths (18%) followed by colorectal (9.4%), liver (8.3%), stomach (7.7%), and female breast (6.9%). Lung, prostate, and colorectal are the leading cancer types among men, whereas breast, colorectal, and lung are the leading cancers among women. Overall, the top 10 cancers account for more than 60% of cancer incidence and 70% of cancer mortality.

The GLOBOCAN report also highlights the disparity and heterogeneity of cancer burden in transitioned (very high and high HDI countries) versus transitioning (low and medium HDI) countries. Current cancer incidence rates for men and women in high-income countries (HIC) are three times higher than the incidence in low- and middle-income countries (LMIC). However, LMICs will contribute to most of the increase in global cancer incidence in the next 50 years.² Emerging economies are facing a dual burden of lifestyle and poverty-related cancers. Rapid urbanization, lifestyle factors, and increasing life expectancy are significantly influencing cancer incidence rates. Asia contains 60% of the global population 50% of cancer cases and is estimated to account for 58% of cancer deaths. Europe and the Americas account for 22.8% and 20.9% of cancer cases and 19.6% and 14.2% of cancer mortality.

As far as cancer control policy perspective is concerned, this report is a “wake-up call” for governments and policymakers to revisit the drawing boards and prepare innovative and smart strategies for future cancer control programs. There is a need to move away from a “one-size-fits-all” strategy to a country or region-specific policies depending on cancer burden and availability of resources. There is an urgent need to strengthen cancer registry programs for gathering accurate and real-time data by leveraging information technology networks. Governments and policymakers should invest in initiatives for mapping cancer care resources and the oncology workforce. This

will enable them to plan and strengthen a need-based and region-specific cancer care infrastructure and oncology workforce based on GLOBOCAN projections. There is an urgent need to prioritize and implement cancer prevention strategies, especially targeted against common cancers, such as lung, prostate, breast, and colorectal cancers. Country or region-specific screening programs should be initiated for specific cancers, such as oral cancer, which is highly prevalent in India.³ Steps initiated for cancer prevention will benefit in the long run; however, a lot depends on the political will and ability to take hard decisions with a long-term perspective. Governments have an uphill task in balancing the economic growth of the country and the health needs of the population.² Most of the cancer screening programs initiated by HIC, such as screening mammography for breast cancer, low-dose CT scan for lung cancer, and colonoscopy for colorectal cancers, are neither feasible nor cost-effective for implementation in LMICs due to resource constraints and lack of trained manpower. There is a need and opportunity to develop technology-driven, low cost, and simple point-of-care screening and diagnostic tools. We can learn from the success story of cervical cancer prevention. Interventions, such as awareness campaigns, visual inspection, Pap smear, and vaccination had a significant impact on the cervical cancer burden, and many LMICs are reporting decreasing cervical cancer trends in recent times.⁴ A recent trial by Mittra et al. has shown a 30% mortality reduction for breast cancer by adopting clinical breast examination (CBE) by trained healthcare workers for screening.⁵ Similar low cost, point-of-care, and practically feasible approaches are likely to pay rich dividends in the fight against cancer.

Outcomes of cancer therapy are dependent on timely access to high-quality, safe, and affordable cancer care. One of the pressing priorities of policymakers and healthcare providers is optimal utilization of available resources to benefit the maximum number of patients. There is a lack of equitable distribution of cancer care resources and the oncology workforce in different parts of the world. Most of the countries in Asia and Africa lack basic infrastructure to diagnose and treat cancer,⁶ whereas the focus of cancer research in resource-rich HIC is on genome-targeted therapies and immunotherapy.⁷ These interventions are prohibitively expensive and beyond the reach of many cancer patients. There is a need to critically analyze health economics to promote value-based cancer care. Treatment guidelines developed by HICs may not be logistically and financially feasible to implement in countries with limited resources. This realisation has led to the development of resource-based treatment guidelines by NCCN.⁸ There is a need to perform cost versus benefit analysis as some of the high-cost interventions add minimal survival benefit. Many

pragmatic clinical trials have shown comparable benefits with short duration (3–6 months) over long duration (6–12 months) adjuvant therapies; the best examples are trials related to short-duration Herceptin for HER2-positive breast cancer and 3 months adjuvant chemotherapy for colorectal cancer.^{9,10} Similarly, hypo-fractionated radiotherapy trials have shown equal efficacy compared with conventional fractionation trials for breast cancer, and preoperative, short-course radiation has shown equal efficacy to long course radiation for rectal cancer.^{11,12} Countries with limited resources can adopt short duration therapies to optimize resource utilization. Initiatives, such as “Choosing Wisely,” are helping to cut healthcare costs by giving up low-value interventions in routine practise.¹³ Attention also should be paid to strengthen and expand palliative care services, especially in underserved areas. A well-developed hospice and homecare program for terminal cancer patients needing end-of-life care is extremely important to avoid unnecessary hospitalization and lower healthcare costs.

STRATEGIES FOR STRENGTHENING SURGICAL SYSTEMS FOR CANCER CONTROL

Traditionally, surgery is at the forefront of the global fight against cancer, and it has a proven role in global cancer care in all resource settings. Despite many advances in the field of oncology, surgical resection remains the cornerstone for curing a significant proportion of solid tumors. During the past century, surgeons played a pivotal leadership role in the fields of education, training, cancer treatment, research, and institution building. Current generation surgical oncologists should continue the glorious legacy, and global surgical leadership should pay attention to the GLOBOCAN report and plan strategies to face future challenges.

As per the *Lancet* Commission on Cancer Surgery report, almost 80% of cancer patients will require some form of surgery for cure or palliation, and by 2030, worldwide 45 million surgical procedures are needed for cancer. Unfortunately, only 25% of cancer patients worldwide have access to safe, affordable, and timely surgery.⁶ There is a shortage of trained cancer surgeons and a wide disparity in the distribution of the surgical workforce in different regions of the world. Only 12% of the specialist surgical workforce practice in Africa and Southeast Asia, where a third of the world's population lives. Only a minority of surgical oncologists practice in nonacademic or community settings catering for the majority of the population.^{14,15} Disparities among the surgical subspecialty workforce also can influence outcomes. The reasons for the high mortality of lung cancer

and head and neck cancers patients could be due to the limited availability of trained thoracic and head and neck surgeons in some parts of the world.

Strengthening global surgical systems and capacity building to increase the surgical workforce should be one of the most critical steps in the fight against cancer. Scaling up surgical care at the global level would yield greater health gains and substantial economic benefits. Currently, the field of global cancer surgery is fragmented, and there is a lack of uniform curriculum and training pathways. There is a need for all stakeholders to deliberate on how to integrate general surgery, surgical oncology, and organ-based cancer surgery professionals into a seamless system of surgical care for cancer patients within the framework of the existing system of primary, secondary, and tertiary care. The need for an all-round general surgical oncologist with an MDT background is highly relevant in both LMIC and HIC settings. Dedicated organ-based surgeons can perform high-end and complex surgical procedures in tertiary care cancer centres. Innovative and out-of-the-box approaches, such as need-based, short-term training of general surgeons to manage common cancers like breast, colorectal, and head and neck cancers, can be explored to overcome the shortage of trained cancer surgeons in resource-constrained setups. The ultimate goal is to create a flexible multilayered pool of cancer surgeons with varying degrees of domain expertise and competence to cater to varying needs. Surgical leadership and policy-makers should critically review and plan the number of subspecialty or organ-based cancer surgery positions based on the need of a country or region. For example, countries with high head and neck cancer burden should plan for a proportionate number of head and neck cancer surgery training positions and employment opportunities.

The time is ripe for a comprehensive review of the curriculum and training programs related to cancer surgery. One such initiative is the development of a “global curriculum for surgical oncology” by the Society of Surgical Oncology and the European Society of Surgical Oncology. It provides a flexible and modular scaffolding that can be tailored by individual countries or regions to train surgical oncologists suitable for the local environment.¹⁶

Another critical domain that needs immediate attention is improving the quality and outcomes of cancer surgery. Implementation of standard perioperative care pathways, ERAS protocols, surgical safety guidelines, data documentation, and surgical audit will help to improve surgical outcomes and maximize hospital resource utilization. A significant amount of work has already been done related to these domains, and the main challenge is the integration and implementation of these protocols into routine practice. A modern and contemporary cancer surgery program is highly dependent on quality pathology, radiology, and

anesthesiology services. Hence, it is imperative to support and develop these specialities in parallel with the growth of the surgical oncology field.

We are in the era of evidence-based medicine, and a majority of oncology treatment guidelines are based on outcomes of prospective randomized studies. Surgical research lags in the field of oncology due to the inherent nature of the specialty and difficulty in performing surgical trials. For strengthening surgical systems at the global level, there is a need to focus on surgical research related to optimizing cancer treatments, health economics, resource utilization, value-based care, implementation science, and outcomes research for a transformative and long-lasting impact.

We are in the era of globalization and isolated efforts against cancer control will not succeed. GLOBOCAN report highlights the need for collaboration and networking amongst various surgical societies across countries of the world to learn from others’ experiences and share good practices. Geographic and political barriers can be overcome by leveraging technology. A few good examples of such initiatives include Globalsurg collaborative, National Comprehensive Cancer Network (NCCN), the African Cancer Coalition (ACC), and National Cancer Grid network in India (NCG).

To conclude, GLOBOCAN 2020 report is a pivotal document highlighting the challenges and opportunities in the field of global cancer control. It provides critical information needed for the global surgical oncology community to review the existing lacunae, devise innovative strategies, and prepare for the fight against cancer.

DISCLOSURE The authors declare no conflicts of interest.

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