Need for Global Partnership in Cancer Care: Perceptions of Cancer Care Researchers Attending the 2010 Australia and Asia Pacific Clinical Oncology Research Development Workshop

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Abstract

Purpose: To understand the diversity of issues and the breadth of growing clinical care, professional education, and clinical research needs of developing countries, not typically represented in Western or European surveys of cancer care and research.

Methods: A cross-sectional survey was conducted of the attendees at the 2010 Australia and Asia Pacific Clinical Oncology Research Development workshop (Queensland, Australia) about the most important health care questions facing the participant's home countries, especially concerning cancer.

Results: Early-career oncologists and advanced oncology trainees from a region of the world containing significant low- and middle-income countries reported that cancer is an emerging

health priority as a result of aging of the population, the impact of diet and lifestyle, and environmental pollution. There was concern about the capacity of health care workers and treatment facilities to provide cancer care and access to the latest cancer therapies and technologies. Although improving health care delivery was seen as a critical local agenda priority, focusing on improved cancer research activities in this select population was seen as the best way that others outside the country could improve outcomes for all.

Conclusions: The burden of cancer will increase dramatically over the next 20 years, particularly in countries with developing and middle-income economies. Cancer research globally faces significant barriers, many of which are magnified in the developing country setting. Overcoming these barriers will require partnerships sensitive and responsive to both local and global needs.

Introduction

Cancer and cancer care are increasingly recognized as a major worldwide challenge given their global financial, social, and health implications.¹ The prevalence of cancer, primarily a disease of aging, is increasing in step with the increasing lifespan in both high- and low-income nations. In 1970, 15% of newly reported cancers were in developing countries, compared with 56% in 2008.² Today, almost two thirds of the 7.6 million annual cancer deaths worldwide occur in low- or middle-income countries. Furthermore, by 2030, the proportion of newly reported cancer in developing countries is expected to be 70% of the worldwide total.²⁻⁴

Cancer is a leading cause of global mortality, which is increasingly pronounced in countries with limited health care resources.^{3,4} Disparities in infrastructure to detect and manage chronic disease lead to an increased burden of advanced stages of cancer detected and managed in low-income countries. This burden is becoming more pronounced as improved survival rates in high-income countries are benchmarked against lower survival rates in low-income countries. Case fatality from cancer (approximated by the ratio of incidence to mortality in a specific year) is approximately 46% in high-income countries,³ compared with 75% in low-income countries.

Perversely, there is also great disparity across cancer types in the distribution of resources directed toward research and care, but it is not aligned with the global burden of cancer. For example, cancer prevention research in low- and middle-income countries may focus on areas such as early detection of cervical and oral cancer through clinical exams and human papillomavirus testing but discount screening for breast cancer, despite the prevalence of patients diagnosed with advanced stages of breast cancer at presentation.⁵ Furthermore, the vast majority of resources addressing cancer care are delivered to high-income nations, although the vast majority of burden is borne by low- and middle-income nations, particularly in Asia with its large population.⁴ Addressing these challenging inequities requires the partnership of health care providers, health funders, nongovernmental organizations, scientists, and the worldwide community. In response, a global workforce for cancer care is developing, and cancer care research and innovation in health services delivery are important components of a forward-looking agenda.⁶ Given the diverse populations and diverse health care infrastructures that exist around the globe, research directed toward optimizing treatment, symptom relief, prevention, early detection, and resource distribution is needed.

As a starting point, workshops to address the growing need for well-trained cancer clinical investigators have been developed and are actively training early-career faculty and senior trainees under the sponsorship of well-recognized and distinguished cancer research and care organizations, such as the American Association for Cancer Research (AACR), ASCO, the National Cancer Institute, the European Society of Medical Oncology (ESMO), and the Medical Oncology Group of Australia. Examples of these workshops include the AACR/ASCO Program for Methods in Clinical Cancer Research in Vail, CO; the ECCO-AACR-EORTC-ESMO Workshop Methods in Clinical Cancer Research in Flims, Switzerland (ECCO, European Cancer Organization; EORTC, European Organisation for Research and Treatment of Cancer); and the Australia and Asia Pacific Clinical Oncology Research Development (ACORD) Workshop in Queensland, Australia.⁷⁻⁹ Each is designed as an on-site, intensive training program, engaging hundreds of professionals at the beginning of their professional career, and each is committed to diverse education across tumor types, providing hands-on instruction and guidance by a world-renowned faculty. Workshop attendees are generally preparing themselves for a future of leadership in cancer care and cancer clinical research, and are in a critical position to address opportunities and challenges ahead. Attendees are competitively selected on the basis of their training, letters of recommendation from supervisors and mentors, and research interests. Travel scholarships are offered, but participants tend to be geographically aligned.

The ACORD workshop's location in Australia places it in a region of the world proximal to significant developing economies. ACORD has been training clinical cancer researchers of Asia Pacific origin since 2004, with participants from (in decreasing frequency) Australia, India, Taiwan, New Zealand, China, South Korea, Singapore, Japan, Pakistan, Philippines, Nepal, Bangladesh, the Middle East and North America. Because attendees of the ACORD workshop represent clinical oncology practitioners from regions of the world that are not typically included in American or European surveys of cancer care and research, we conducted a survey of 2010 ACORD workshop attendees about the most important health questions faced in the participants' home countries, especially concerning cancer.

We used the survey as a broad approach to understand the complexity of clinical care, professional education, and clinical research needs that respondents anticipate in the future. As an additional component, we held an open panel discussion to hear observations on research around the world from both workshop participants and faculty members.

Methods

A cross-sectional survey was conducted by means of a Web-based questionnaire on September 16, 2010. Participants were attendees at the 2010 ACORD workshop held in Queensland, Australia, all of whom had ready access to Web-enabled personal computers.

The survey was developed by the ACORD workshop faculty without pilot testing. All workshop participants were informed of the Web survey at the plenary sessions and by e-mail, and were directed to a link for the survey, which they were asked to complete by the following day. Descriptive statistics were used to analyze the data. Responses were anonymous, and participation implied consent; no names, numbers, or other personal identifiers were recorded. Respondents answered on the basis of conditions in their home country but were not asked to state their country of origin, as it was felt that this would compromise the anonymity of their responses. The participant currently training in the United States was returning to a faculty position in their home country of India. A copy of the survey is included in the Data Supplement as Appendix 1. A moderated, open-forum discussion between faculty and all workshop participants was also held. Panel members and moderators of this forum are listed in the Data Supplement as Appendix 2.

Results

Surveys were completed by 57 of the 60 workshop attendees (response rate of 95%). Table 1 summarizes the demographic characteristics of the respondents. Approximately two thirds of respondents were currently employed or training in Australia, New Zealand, or Canada, but more than 20% were from India and other countries classified as middle-income by the WHO.

The survey opened with questions about major issues facing the respondents' home countries, and the economy was consistently reported as a general concern (Table 2). Health was identified as the top concern by 48% of respondents. Another major concern identified was the environment, which was the third most significant concern of all respondents, following health and the general economy.

A series of questions about health and health care in general followed. As expected in this region of the world, the majority ($n = 51$; 90%) of respondents reported that the major mechanism for health system funding in their country was some form of nationalized health care, with or without additional fee-for-service private practice (Table 2). The majority reported that there were systems for palliative and supportive care for cancer patients in their hospital ($n = 56$; 98%) and in their country ($n = 54$; 95%).

When asked about health needs requiring the most substantial attention, the majority of respondents ranked cancer as the primary health problem facing their country. Twenty-seven respondents (54%) ranked cancer as the most critical concern, with 49 of 50 respondents reporting that it was in the top three. Cardiovascular disease was ranked in the top three of increasing major health problems by 44 of 50 respondents.

Questions regarding the respondents' opinions about the impact of cancer in their countries followed. All of the respondents who answered this question ($n = 50$) judged that the impact of cancer was increasing, and that the major reasons for this increase were aging of the population and changes in diet and lifestyle (90% and 76%, respectively; Table 2). Approximately one in three respondents (32%) judged environmental factors as an important contribution. Only 10% reported

Table 1. Characteristics of the Study Sample

Characteristic	No. (n = 57)	%
Age, years		
26-30	11	19.3
31-35	32	56.1
36-40	6	10.5
> 40	14	14.0
Sex		
Male	29	50.1
Female	28	49.9
Country		
Australia	36	63.2
Canada	2	3.5
China	1	1.8
India	10	17.5
New Zealand	3	5.3
Pakistan	1	1.8
Singapore	2	3.5
Taiwan	1	1.8
United States	1	1.8
Profession		
Medical doctor	52	92.2
Statistician	2	3.5
Other health care	3	5.3
Primary area		
Medical oncology	36	63.2
Hematology	4	7.0
Palliative medicine	2	3.5
Radiation oncology	5	8.8
Surgery	6	10.5
Other	4	7.0
Time since completing professional education, years		
0-3	7	12.3
4-10	36	63.2
> 10	14	24.6

that the increasing impact was due to genetic risk among the population.

Respondents reported which areas of cancer care were lacking and needed to be addressed. Two thirds of respondents (66%) reported that “personnel to give cancer care” was one of the top five areas that needed to be addressed (Figure 1A). Also among the top five areas of deficiency in cancer care were “access and funding for cancer services” (52%), “funding for cancer research” (50%), “treatment facilities” (50%), and “access to latest cancer therapies” (42%).

Finally, respondents were asked, “What would be the best way(s) of improving outcomes for cancer patients in your country?” “Improve general healthcare delivery” was the highest ranked item; 14 (28%) of 50 ranked it as the first priority (Figure 1B). In addition, the majority of respondents (39 of 50, 78%) selected “improve cancer research” as one of the top five ways to improve outcomes for patients. When asked what oth-

Table 2. Health Care Survey Response Results

Survey Responses	No. (n = 57)	%
Major mechanism for health system funding		
National health care with additional fee for private practice	46	81
National health care alone	5	9
Private without health insurance	5	9
No insurance	1	2
Systems for palliative and supportive care for patients in your care		
Hospital	56	98
Country	54	95
	No. (n = 50)	%
Greatest needs to be addressed in your country, No. ranked highest		
Health	24	48
Economy	12	24
Environment	11	22
Other	2	4
Health problems increasing in your country, No. ranked highest		
Cancer	27	54
Cardiovascular disease	14	28
Mental health	4	8
Other	3	6
Impact of cancer in your country in the next 10-15 yr?		
Increasing dramatically	27	54
Increasing somewhat	23	46
Reasons why the impact of cancer will be changing		
Aging population	45	90
Diet and lifestyle	38	76
Environmental exposure	16	32
Control of infectious causes of death/morbidity	14	28
Genetic risk	5	10
Other	4	8

ers (outside their country) could do to improve cancer outcomes, the overwhelming response was to “improve cancer research,” which 23 respondents (46%) ranked as the first priority and 46 respondents (92%) ranked within the top five.

A qualitative panel discussion followed the survey and confirmed the priorities of the attendees and respondents. Most discussion centered on case studies and/or examples in which cancer research provided an opportunity to improve cancer care and health care delivery in general. No new concerns were offered. In relation to conducting cancer research in a global context, discussions focused on the need for streamlined protocols, pragmatic trial designs, a trained workforce including research coordinators and data managers, and assistance with managing regulatory hurdles. The cost of designing and conducting clinical trials was repeatedly reported as a major impediment to cancer research within respondents’ home countries.

Figure 1. Distribution of the five highest ranking responses to survey questions (A) “What are the most important areas that are LACKING related to cancer to address in your country?” and (B) “What would be the best way(s) of improving outcomes for cancer patients in your country?”

Discussion

According to these survey results, young oncologists from a region of the world containing significant low- and middle-income countries judge that cancer is an emerging health priority resulting from aging of their home countries’ populations, changes in diet and lifestyle, and environmental pollution. A significant shortcoming of this survey is the limited information regarding respondent demographics. Although many respondents resided in the high-income countries of Australia and New Zealand, a significant proportion of them were there for training and were originally from Asian countries with lower income. Thus, they had a sound knowledge of the barriers to

care and research in the region and the additional perspective of contrast between developed and developing countries. Despite the lack of country-of-origin data, the standard deviation of the responses suggested relatively uniform opinions from the respondents, rather than a bimodal distribution suggestive of two different sets of responses. These responses were distinct from those of surveys of US and/or European oncologists,¹⁰ which prioritized academic and clinical research but did not highlight the need for basic medical delivery and care, which could be affected by education, training, and clinical research.

This survey underscores that health care is a critical world-wide concern, and that even in developing nations there is

broad consensus that cancer is already one of the top three health care concerns and is growing rapidly. Low- and middle-income countries now bear a majority of the global cancer burden, but their health systems are particularly ill prepared to meet this challenge.⁴ The rising proportion of cases in these countries is caused by both population growth and aging. Therefore, although cancer is not always listed as the top health concern of low- and middle-income countries, it is rapidly increasing and will soon surpass other health concerns. Participants in the 2010 ACORD workshop, preparing themselves for a future in cancer care and research, are attentive to the growing health impact of cancer, and their responses are consistent with these international trends. Although the current survey was limited to participants from the 2010 ACORD workshop, participants from past workshops could also be queried in future studies, including 57 from countries other than Australia, New Zealand, or Canada as shown in the Data Supplement (Appendix 3). Although not representative of the average oncology provider in their home country, the attendees are likely to be important members of the oncology care network in their regions and can provide important insights on the basis of their current roles.

Effective symptom relief and treatments are available for several cancers that are highly prevalent in high-income countries, especially at early stages. Unfortunately, because of limited infrastructure and awareness, early detection, treatment, and symptom relief remain limited or suboptimal in many low- and middle-income countries. In fact, major risk factors such as tobacco use and chronic infection with known oncogenic viruses remain unaddressed. Improved prevention strategies such as tobacco control and vaccination against viruses such as human papillomavirus and hepatitis B virus could have a major impact on the cancer burden. Without this long-term view, cancer will remain an underfunded health problem and an important cause of premature death in low-income countries. Nonetheless, cancer is notably absent from the global health agenda, including key global health targets such as the Millennium Development Goals.¹¹

Although remarkable progress has been made in other aspects of global health and the development of health care infrastructure in many parts of the world, there has been less effort directed toward cancer. Given the impact of cancer, cancer control should also hold a place in the global health agenda and priorities and be aligned with an overall improvement in health care delivery. This survey was interesting in that most respondents' countries of origin had national health systems in which access to general health care was not a major concern. Nonetheless, there were concerns about the capacity of health care workers and treatment facilities to provide cancer care, and about access to the latest cancer therapies and technologies.¹²

Whereas improving health care delivery was seen as a critical local agenda priority, focusing on improved cancer research activities was seen as the best way that others outside the country could improve outcomes for all. Improved research requires a global collaboration among cancer experts to help local researchers identify priorities, frame questions, and conduct

high-quality studies that address the most pressing local health care problems. It also requires recognition that the research being conducted can and should have global implications, with studies correspondingly designed to accommodate global implementation.

Cancer research globally faces significant barriers, many of which are magnified in the developing countries. The cost of conducting clinical trials, the complexity and delays associated with regulatory approval of new products, and the need to ensure ethical research conduct are major challenges that need to be overcome so that clinical research is effective and efficient in delivering the evidence necessary to improve cancer care. Researchers in emerging economies face the additional challenge of ensuring that the research they conduct is relevant to the needs of their population and that information can be applied to the populations they serve. Overcoming these barriers will require partnerships sensitive and responsive to both local and global needs.

An international research agenda could fulfill several vital functions in improving the quality, reach, and outcomes of cancer care globally. Such an agenda is needed to set priorities for cancer research, to identify strategies for overcoming barriers to cancer research, and to develop a workforce focused on the needs of participating countries. The research questions and agenda cannot be set by foreign researchers asking questions that do not address relevant local concerns. Each country and region has its own needs and priorities, and the focus of research and clinical care activities should be defined "on the ground." For example, most oncology professionals attending the ACORD workshop had ready access to high-quality peer-reviewed information about state-of-the-art treatments from journals and from proceeding of local and international conferences. However, many felt that these resources did not always address the unique needs of their own country, nor were they practically achievable in the context of their health care delivery system.

Furthermore, one of the specific survey questions addressed the sources of professional education in the home countries. Although most respondents confirmed that major cancer conferences and peer-reviewed journals were a critical source, many were concerned that evidence is often delivered through professional education provided by the pharmaceutical industry, and thus may neglect issues related to the effectiveness of older therapies, cost reduction, or aspects of care unrelated to drug development (such as prevention or improved health service delivery). Hence, professional education and clinical research agendas in low- and middle-income countries may be unaligned with those in high-income countries. Professional workforce education, training, and research agendas must be developed with a focus on relevant regional issues and an appreciation of the global questions being addressed and prioritized by leadership in the cancer care community.

Farmer et al¹ proposed that "cancer care and control become rapidly and broadly available as quickly as possible, with the focus on cancers that can be prevented, . . . cured, . . . or palliated." We suggest that a research perspective must also be con-

sidered in this call to action. Despite the differences in clinical questions to be addressed, the global cancer care workforce must be able to speak a common language of clinical research. Appropriate partnerships must set priorities, design trials, ensure quality data gathering and management, ensure efficient analysis, and disseminate results. A major question raised by this survey and the panel discussion is how to develop approaches to clinical research that are more pragmatic but maintain scientific excellence, rigor, and integrity.

The burden of cancer will increase dramatically over the next 20 years, particularly in countries with developing and middle-income economies. Exponential growth in our understanding of cancer is leading to rapid advances in cancer treatments, and even more rapid increases in the costs of cancer treatment, costs that even the wealthiest of economies are struggling to afford. Global collaborative research designed to answer the world's high-priority questions will be a crucial element of meeting these challenges of reducing the global burden of cancer and are essential for ensuring that we minimize the suffering of those affected by cancer worldwide.

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