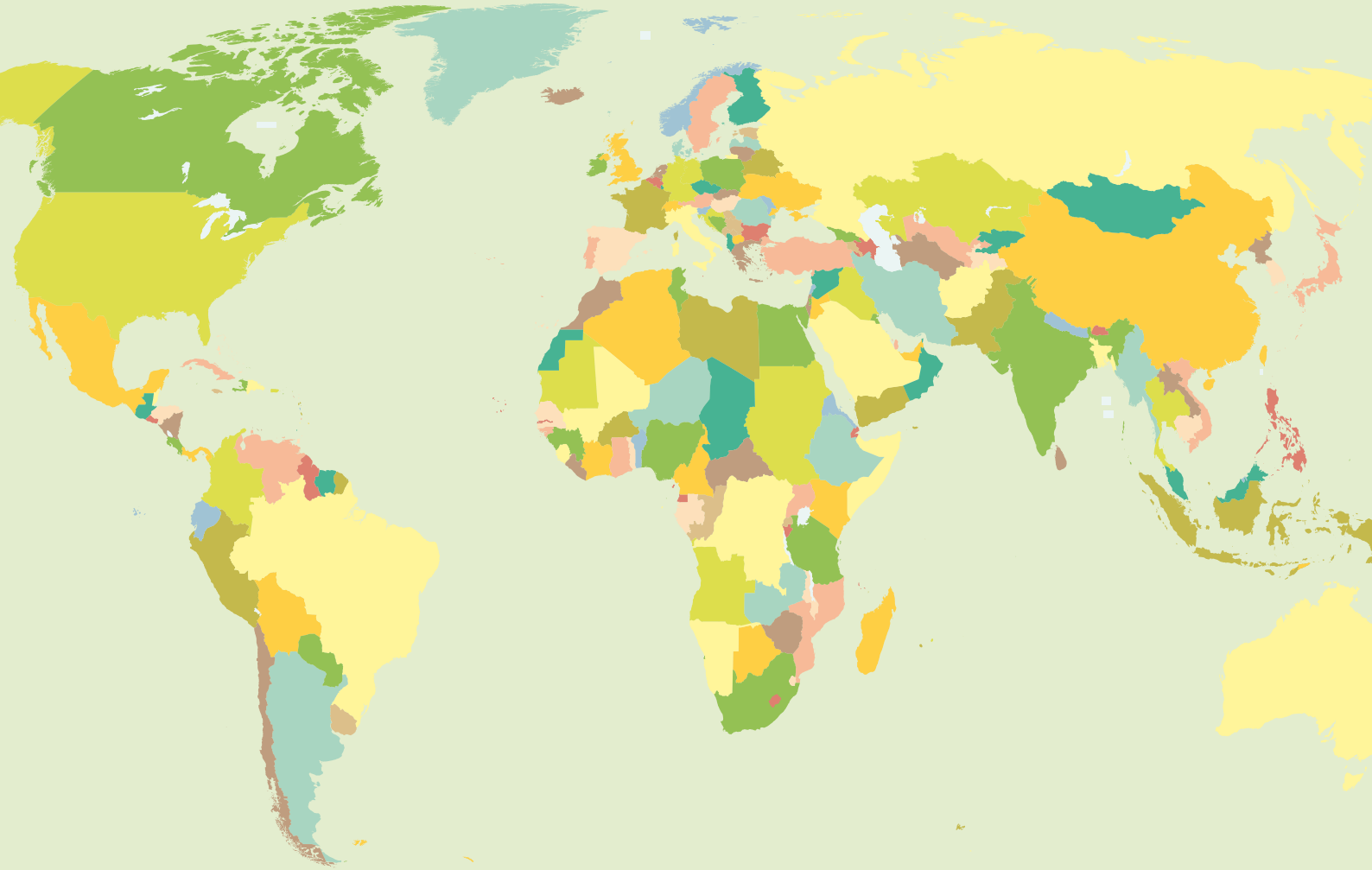
The ESMO Developing Countries Task Force

Developing Countries Oncology Survey (DC-OS) report 2006

Phase I

Prepared by Purvish Parikh on behalf of the ESMO Developing Countries Task Force



ESMO | European Society for Medical Oncology

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1. Introduction:

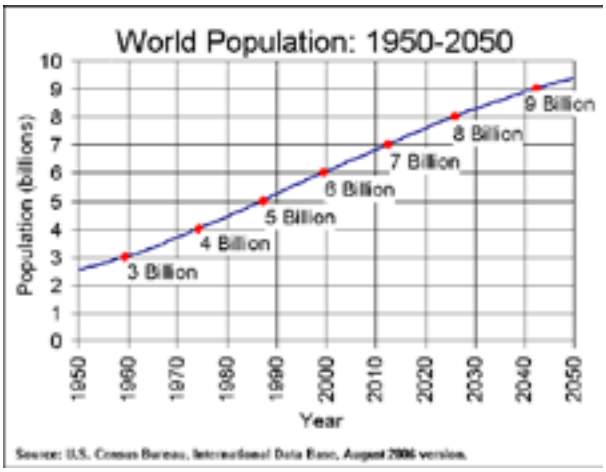
The incidence of cancer is increasing globally. However, its pace in developing countries is of particular concern. More than 66% of newly diagnosed cancers will be in these regions which have the least resources to tackle them.

Data from the Developing Countries Oncology Survey indicates the status of oncology in some developing countries and will enable ESMO to identify and understand inequalities in education and training of oncologists from these developing regions. This information could be used to create specific training programs, certification and encourage continued medical education, with the goal of increasing the standard of patient care - regardless of where patients are geographical located. The ultimate goal of this survey is to increase the chance of establishing national guidelines on cancer care, to improve the quality of care and to bring about the recognition of medical oncology as an independent specialty worldwide.

2. Global cancer burden:

The world's population is rapidly increasing. In the year 2000, the population crossed the 6 billion mark, estimated to have reached 6,643,381,020 by September 2006. By the year 2010, it is projected to be just under 7 billion and in 2050, it is likely to be 9.5 billion (Figure 1).

Figure 1: World population trends (1950 to 2050)

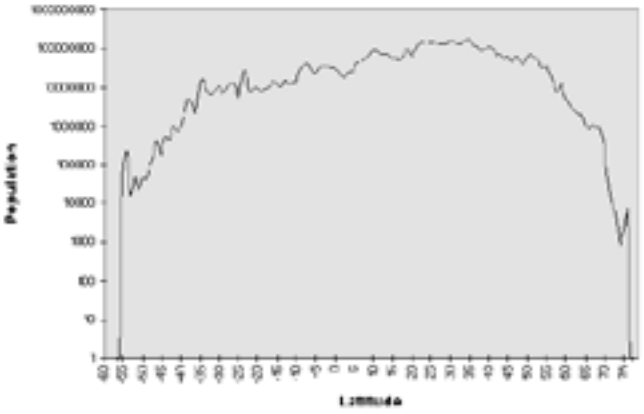


The world population is unevenly distributed across the globe. Looking at the different continents, the population distribution is highest in Asia, with Africa being a distant second (Figure 2).

Figure 2: World population: Distribution and density

Interestingly, the population distribution shows a good correlation with the earth's latitude – essentially confined from 55° south to 75° north, with a peak at 35° north (Figure 3). The most populated area is from 21° to 38 ° north, where there are more than 0.1 billion people in each 1° degree latitude strip.

Figure 3: Distribution of earth's population in relation to latitudes



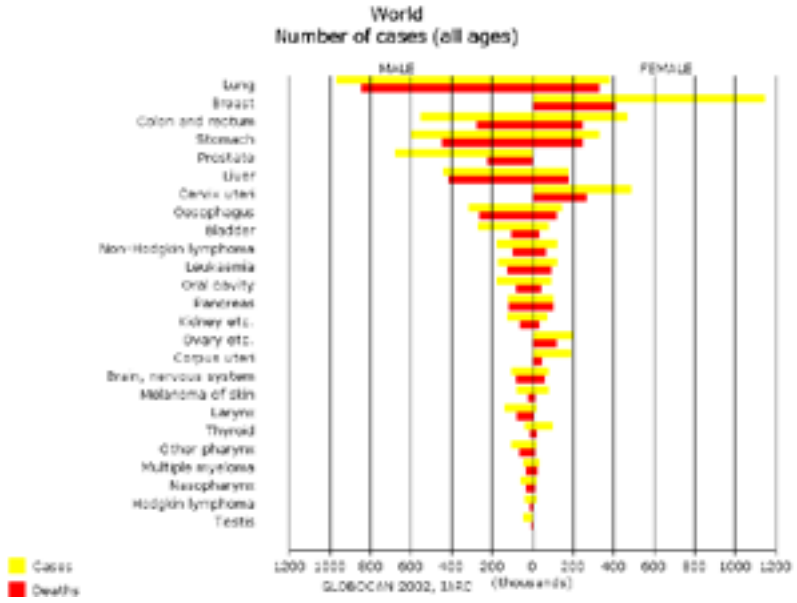
The global burden of cancer is also increasing. As per Globocan 2002 figures, the actual incidence, death rate and prevalence are shown in Table I.

Table I: Global cancer burden (Globocan 2002 data)

All cancers (other than non melanoma skin)	Incidence	Mortality	1-year prevalence	5-year prevalence
Men	5,801,839	3,795,991	3,390,545	11,547,465
Women	5,060,657	2,927,896	3,490,957	13,022,650
Total	10,862,496	6,723,887	6,881,502	24,570,115
Globocan 2002 data				

The incidence and death rates of various cancer sub-types (Globocan 2002 data) are shown in Figure 4.

Figure 4: Incidence and death rates of various cancer sub-types (Globocan 2002 data)



The distribution of these cases among the various regions of the world is also uneven. Table II shows the distribution of new cancer cases among the different continents (Globocan Data) and shows the correlatation with their population and land area.

Table II: Oncology status in different continents (Figures for year 2005)

Continent	Countries	Area (Sq km in millions)	Population (millions)	New cancer cases/ year (from Globocan 2002)
Asia	44	44.58	3,879	4,876,959
Africa	53	30.07	878	649,761
Europe	46	9.94	727	2,820,774
North America	23	24.26	502	1,570,520
South America	12	17.82	380	833,062
Australia/ Oceania	14	7.69	32	111,529
Total	192	134.36	6,398	10,862,505

3. Why developing countries?

The World Health Organization (WHO) has stated that, in the near future, the majority of cancer patients will be seen in countries that have the least resources. This is a global health challenge. In order to be better equipped to handle this cancer 'epidemic' it is essential to develop cancer management strategies and infrastructure as well as optimize allocation of resources in the most cost-effective manner. This is of particular importance for developing countries. The first logical step is to have an understanding of the ground realities that currently exist. With this in mind, the ESMO Developing Countries Task Force (DCTF) decided to create a survey that would give an idea about the current status of oncology in these countries. It is hoped that this information will give a clearer picture of about oncology resources in developing countries and will be an important stepping stone to further work.

4. ESMO definition of developing countries:

Developing countries are defined by ESMO according to the latest World Bank statistics as countries with a Purchasing Price Parity (PPP) per capita of less than $10,000 per annum. More information is available online at **www.worldbank.org** Hence, 62 countries are considered as developing countries according to these criteria. (Figure 5)

Figure 5: World map of developing countries (62 countries with Purchasing Price Parity and Gross National Income of less than US $10,000 per annum. Developing countries are depicted in red in the map below)

5. Procedure:

The survey cover letter, instructions and the questionnaire were made available on the ESMO Web site. The quarterly *ESMO Newsletter*, mailed to all ESMO members, included an article on the questionnaire and its purpose, providing ESMO members from developing countries the opportunity to participate in this survey.

Members from developing countries were also personally contacted by E-mail and provided with the questionnaire and the relevant instructions.

In addition - whenever possible - members of the DCTF conducted face-to-face interviews, at regional conferences, workshops and seminars with individuals from developing countries.

When the information received was incomplete, or there was a conflict in the information provided from another individual from the same country, an attempt was made to clarify this issue. Respondents or local colleagues were contacted by E-mail, letter, fax or by phone to obtain additional information, resolve issues and verify the accuracy of the data.

6. Replies:

Of the 62 countries recognized as developing (as per the World Bank Purchasing Price Parity and US $10,000 per annum cut-off), ESMO has members from 52 countries (87%, see Figure 6).

Figure 6: World map of developing countries that have ESMO members (red denotes these 52 countries)

Responses were received for 39 of these 52 countries (75%) (See Figure 7). Thus the replies received cover countries representing 76.18% of the world population, and just over half of the global cancer patients (incidence).

Figure 7: World map of developing countries that responded (39 countries shown in red in the map below)

7. Method of analysis:

The questionnaire was designed to identify and document the current status of oncology in developing countries. Open-ended questions and space for comments were deliberately included in the design of the questionnaire, making this is essentially a qualitative research. Most of the analysis was of a descriptive nature.

8. Limitations:

This survey has several limitations, which are listed and explained below.

a. Out of 61 countries falling into the category of developing countries, 52 were representated within ESMO, and of these 39 replied to the survey. Data is available on 39/60 (65%) of the developing countries.

b. Many fields in the questionnaire were open-ended and invited comments from the participants. The information provided in the comments section is not always uniform.

c. Some of the replies were incomplete and the data could not be analyzed in its entirety.

d. When multiple replies were received from the same country, there sometimes existed conflicting data. ESMO members and/or representatives were contacted for clarification and the issue was resolved by obtaining the best information available.

e. The survey questionnaire was devised with the sole aim of documenting the current status of oncology in various developing countries. There is no hypothesis being tested.

f. Countries were assigned to continents as per the World Bank and Globocan nomenclature and it is possible that a particular country is classified in different continents. For this analysis countries were designated to a particular continent based on above criteria. This may not be 100% accurate and may not be the terminology used elsewhere.

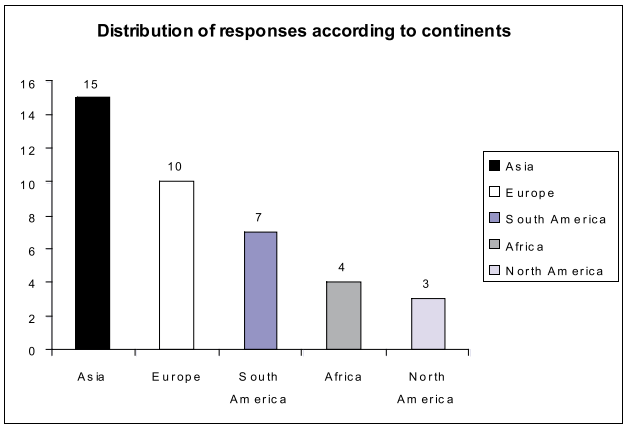
g. The survey was limited to oncologists who are ESMO members or oncologist colleagues of ESMO members. Given this information, the responses for medical oncology-related questions are likely to be more precise.

9. Results:

Of the 209 countries recognized by the United Nations (UN), 61 are labeled as developing countries as per the World Bank yardstick used by ESMO. Of these, 52 countries have representation within ESMO and were invited to participate in this survey. Replies were received from 39 of these countries (75%).

The distribution of the respondents in the 5 continents is as shown in Figure 8. There were 15 countries from Asia, 10 each from both Europe and the Americas and 4 from Africa.

Figure 8: Distribution of responding nations into the 5 continents

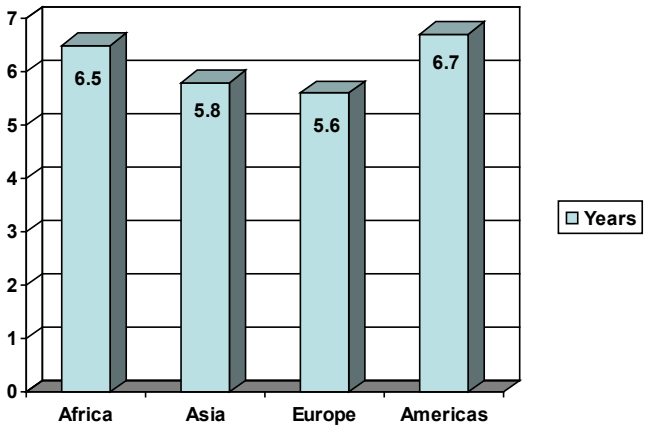


These 39 countries represent 3/4 of the world's population and 50.3 % of the global cancer burden.

The medical faculties available in these countries ranged from 1 (Macedonia, Moldova) to as many as 66,000 (China). The median number of medical facilities available was 8.

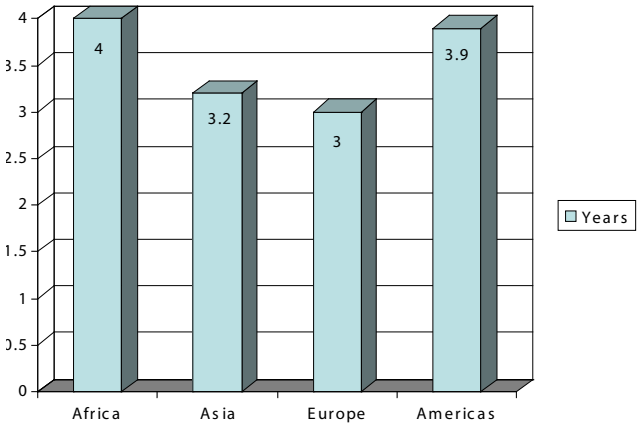
The number of years of training required to qualify as a basic doctor (graduate) ranged from 2 (Belarus) to 8 years (Uruguay). The number of years required was higher in Africa and the Americas than in Asia and Europe. (Figure 9)

Figure 9: Number of years of medical education to qualify as a basic doctor



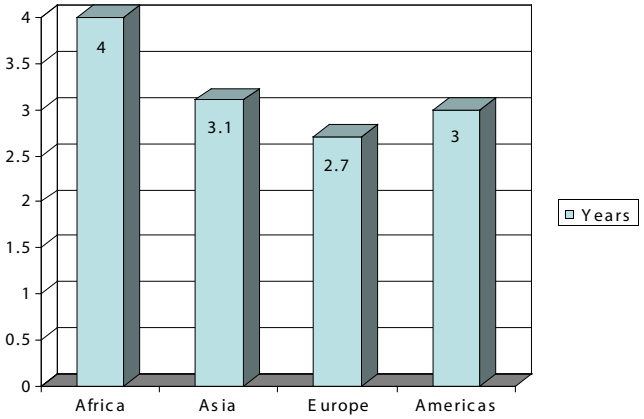
The number of years of training required by a doctor to obtain postgraduate qualification ranged from 2 (9 countries) to 6 years (Columbia, El Salvador). This was also different in the various continents. (Figure 10)

Figure 10: Number of years to qualify as a basic doctor among survey respondents in 4 continents



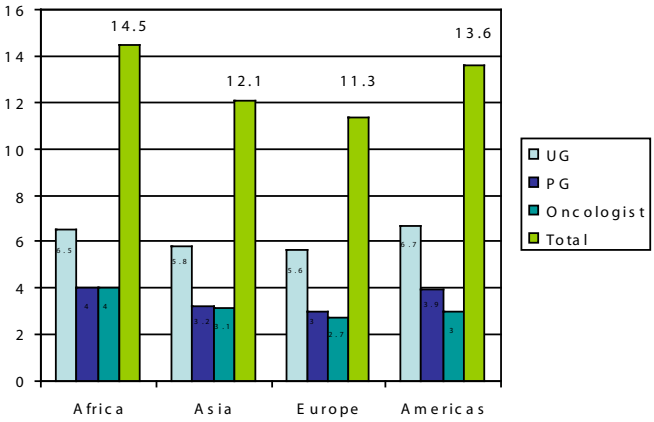
Oncology was officially recognized as a separate specialty in 38 of the 39 countries (not in El Salvador). Years of training required to obtain oncology qualification ranged from 6 months (Ukraine) to 5 years (Romania). A longer duration was required in Africa and the Americas. (Figures)

Figure 11: Number of years to obtain postgraduate qualification after basic medical qualification among survey respondents in 4 continents



The total duration of medical education required to become an oncologist was 14.5 years in Africa, 13.6 years in the Americas, 12.1 years in Asia and 11.3 years in Europe. (Figure 12)

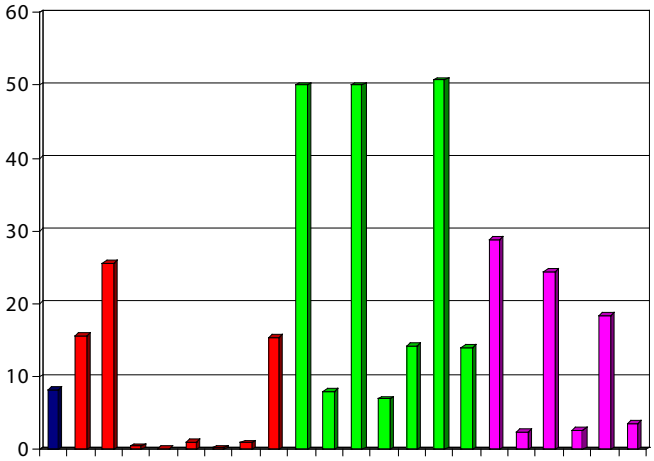
Figure 12: Number of years of training to be recognized as an oncologist after obtaining postgraduate qualification among survey respondents in 4 continents



Only slightly more than half the respondents could provide information on the number of oncologists in their country. For the 22 countries where this data was available, the figures ranged from 9 in Myanmar, to 20,000 in China.

The ratio of qualified oncologists to the population of these countries shows interesting figures. It ranges from as few as 0.17 oncologists per million (of the total population) in Myanmar, to as many as 50.71 in Belarus. The ratio was particularly sub-optimal in the 8 Asian countries where data was available (0.17 in Myanmar, 0.30 in Indonesia, 0.52 in Nepal, 0.98 in India, 1.14 in Iran, 15.39 in China, 15.71 in Lebanon and 25.63 in the Philippines). The differences were statistically significant (Chi square test; p = 0.0000). (Figure 13)

Figure 13: The ratio of oncologists to the population in developing countries (data from 22 of the 39 countries)
blue – Africa; red – Asia; green – Europe; pink – Americas



Medical oncology: Of the 39 countries, training in medical oncology was available in 32. The basic qualification required for eligibility was a postgraduate degree (equivalent of MD in Internal Medicine or Pediatrics) in 30 countries and a graduate degree (equivalent of MBBS) in 2 countries. Formal examinations at completion of medical oncology training were conducted in 24 countries. These examinations were conducted by the government in 12 of the countries, universities in 10 and oncology societies in 2. The results, by continent, of the requirement of an official examination are shown in Table III.

Table III: Whether examination is necessary or not to qualify as medical oncologist among developing nations

	Africa	Asia	Europe	Americas	Total
Yes	2	9	7	6	24
No	2	3	1	2	8
NA	0	3	2	2	7

Hemato-oncology: Of the 39 countries, training in hemato-oncology/hematology was available in 32. The basic qualification required for eligibility was a postgraduate degree (equivalent to MD in Internal Medicine or Pediatrics or Pathology) or graduate degree (equivalent to MBBS). Formal examinations at the completion of the hemato-oncology/hematology training were conducted in 23 countries. These examinations were conducted by the government in 15 countries, universities in 7 countries and hematology societies in 1 country.

Surgical oncology: Of the 39 countries, training in surgical oncology was available in 29. The basic qualification required for eligibility was a postgraduate degree (equivalent to MS in General Surgery, ENT or Orthopedics) or graduate degree (equivalent to MBBS). Formal examinations at the completion of the medical oncology training were conducted in 17 countries. These examinations were conducted by the government in 11 countries, universities in 5 and oncology societies in 1.

Radiation oncology: Of the 39 countries, training in radiation oncology was available in 33. The basic qualification required for eligibility was a graduate degree (equivalent to MBBS) or sometimes postgraduate degree (equivalent to MD in Radiology, Medicine or Pediatrics in 6 instances). Formal examinations at completion of medical oncology training were conducted in 22 countries. These examinations were conducted by the government in 14 countries, universities in 7 countries and oncology societies in 1 country.

There have been oncology societies in at least 19 countries for the last 3 to 60 years (median 32 years), with membership ranging from 14 to 2,000 oncologists - an average of 281 members. Similary, there have been oncology societies in at least 15 countries for the last 1 to 54 years (median 15 years), with membership ranging from 63 to 550 - an average of 245.

The process of continuing medical education (CME) exists in 21 countries and is mandatory in 13. CME programs are usually carried out by government/health authorities (12), oncology societies (7) and/or universities (2).

National guidelines for the treatment of cancer patients exist in 15 countries. Of these, in 11 countries, oncology societies contributed to the development of such guidelines. These guidelines are followed in 11%, partially in 71% and not at all in 18 % of the 15 countries.

ESMO Minimum Clinical Recommendations are adapted in 6 countries and they are partially used in 3 others. Thirty countries do not use them at all.

Nine countries indicated that the actual treatment of cancer patients was based on some formal guidelines. An additional 22 countries indicated that it was partially based on guidelines. There was no response from 1 country and the remaining 7 countries did not follow any formal treatment guidelines at all.

Oncology treatment based on guidelines was too expensive in 8 countries and partly so in an additional 15. There was no financial limitation to the implementation of guidelines in 12 countries and there was no answer from the remaining 4 countries.

An audit process of oncology care exists in 17 countries. It does not exist in 11 others, and there was no answer from the remaining 11. Where an audit process exists, in most cases, it is conducted by hospitals. The government is involved in the audit process in 9 countries, and oncology societies are part of the process in 3 countries. In 4 countries, more than one body was involved in the process.

Those participating in the survey were very interested and almost all respondents requested to have feedback on the survey results (38/39). Respondents from 32 countries provided contact details of 1 additional colleague. In 27 instances, contact details of the oncology society office representatives were provided. When asked for the details of the government health official responsible for oncology, information was provided from only 23 countries.

10. Discussions:

The burden of cancer in developing countries is well recognized. The WHO estimates that 2/3 of future cancers will be seen in nations having the least amount of resources to tackle this menace. In view of this major health challenge, ESMO established the Developing Countries Task Force (DCTF) to address the specific, educational needs of oncology healthcare specialists in developing countries. It is clear that there is a significant lack of information regarding understanding actual on-site situations – be it infrastructure, human resource or national policies. It is obvious, that such insights are mandatory to begin logical planning of long-term strategies for cancer control in developing countries. Hence the DCTF initiated this survey, with the objective of obtaining basic information regarding the current status of oncology in such countries.

As stated, we have followed the World Bank criteria for defining developing countries. A total of 39 such countries covered in this survey represent 76.18 % of the world's population and 50.3% of global cancers. The country-wide distribution of cancer cases is shown in Table IV.

Table IV: Cancer cases in the 39 developing countries included in this survey

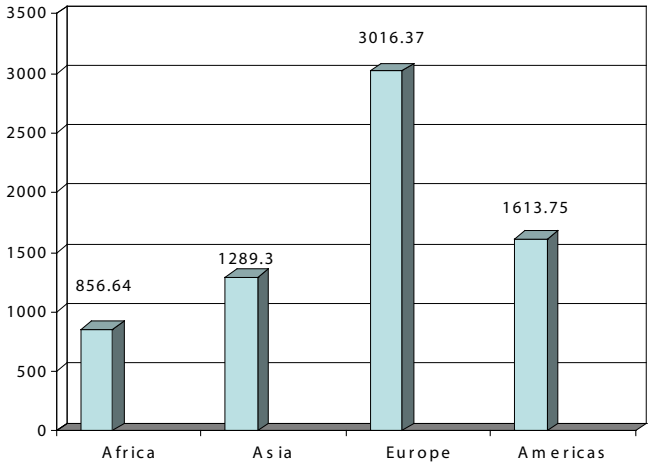
All cancers (except non-melanoma skin)
Based on data from GLOBOCAN 2002, IARC

Country/Region	Incidence	Mortality	Prevalence	Prevalence
	Cases	Deaths	1-year	5-year
World	**10,862,496**	**6,723,887**	**6,881,502**	**24,570,115**
Developing countries (World Bank criteria)	**5,827,505**	**4,022,187**	**3,109,518**	**10,259,008**
Developing countries in ESMO survey (N=39)	**5,462,914**	**3,784,140**	**2,972,308**	**9,948,077**
Africa	**130,124**	**96,983**	**66,623**	**202,400**
Egypt	47,776	38,457	22,989	70,638
Libya	3,610	2,838	1,817	5,658
Morocco	20,390	15,900	10,764	33,406
South African Republic	58,348	39,788	31,063	92,698
Americas	**685,520**	**386,344**	**431,209**	**1,394,292**
El Salvador	7,910	4,624	4,702	15,297
Mexico	114,239	66,614	70,861	232,815
Panama	3,917	2,289	2,483	8,007
Argentina	99,051	56,150	62,165	197,949
Brazil	283,060	149,400	181,093	586,605
Colombia	70,750	42,050	43,433	139,696
Ecuador	17,000	11,305	10,364	33,025
Peru	46,122	28,670	28,339	91,442
Uruguay	12,640	7,466	7,765	24,308
Venezuela	30,831	17,776	20,034	65,418
Asia	**4,313,368**	**3,078,434**	**2,254,647**	**7,597,541**
China	2,190,623	160,1050	959,717	3,119,947
Indonesia	181,283	119,263	112,961	400,506
Myanmar	47,860	33,791	27,361	93,223
Philippines	94,128	67,682	55,752	192,513
Thailand	76,598	54,662	40,411	136,678
Vietnam	75,150	54,642	41,252	138,696
Bangladesh	90,447	58,086	57,363	201,738
India	851,901	579,416	53,0766	1,812,347
Iran	50,820	35,554	29,127	99,965
Kazakhstan	37,477	24,974	20,740	69,615
Nepal	17,280	11,352	10,757	37,304
Pakistan	141,299	89,797	90,723	327,238
Russian Federation	387,524	297,329	24,7340	832,766
Lebanon	5,182	3,508	3,198	11,268
Turkey	65,796	47,328	3,7179	123,537
Europe	**333,912**	**222,376**	**219,829**	**753,844**
Belarus	30,497	19,844	19,428	64,969
Armenia	7,802	5,062	4,703	16,302
Georgia	11,585	7,402	6,979	24,148
Bulgaria	23,610	14,893	15,409	52,492
Moldova	9,413	5,424	6,470	22,891
Romania	59,939	41,502	39,251	133,935
Ukraine	141,102	97,079	91,133	308,538
Bosnia Herzegovena	12,336	7,380	9,029	33,371
Macedonia	5,620	3,048	4,145	15,407
Serbia and Montenegro	32,008	20,742	23,282	85,791

Based on data from Globocan 2002, IARC

It is clear that there is a tremendous variation in the absolute burden of new cancer cases as well as its correlation with the population of individual countries. (Figure 14)

Figure 14. Cancer cases per million (population) in the 4 continents for the 39 developing countries included in this survey



It was decided to group the Americas together. The developing countries from the Americas included in this survey were mainly from South America. Those from Central America and Mexico were considered to have a similar profile and socioeconomic background and were therefore analyzed as a group.

It is encouraging to note that 38 of the 39 countries had official recognition of oncology as a subspecialty. This indicates that one of the most important initial steps for a successful cancer control program has already been taken in all but one of these countries.

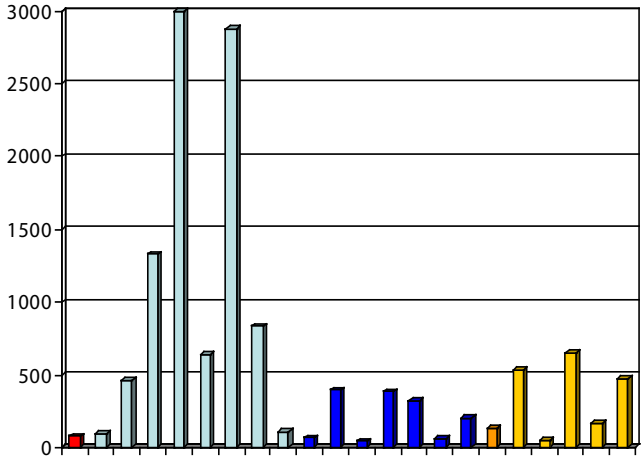
The duration of the training required for an individual to qualify as an oncologist was calculated in 2 ways:

a. From the time of entry into medical school until final qualification as an oncologist
b. From the time of obtaining admission into the oncology training program until its completion

There was some variation in the duration between the continents, specifically: longest for Africa and shortest for Europe (Figure 12, above).

This data has important implications. The increasing burden of cancer in developing countries compels us to rethink about how to optimize our answer to this challenge and it is evident that development of human resources will be an important part of the solution. Figure 15 shows the number of oncologists currently available, and compares it to the number of new cancer patients that have to be treated in the 39 developing countries included in this survey.

Figure 15: Number of new cancer cases per qualified oncologists among responding developing countries (red – Egypt; light blue – Asia; dark blue – Europe; yellow – Americas)



For a particular developing country or for countries as a group, we know the lag period between the launch of a new cancer control strategy and the actual availability of new trained manpower. For any future plans to be successfully implemented, this time will need to be factored in.

It is interesting to document the difference in the assessment of completion of oncology training in various specialties, as well as among the different developing countries. Several countries do not need an examination at the end of the training program. One philosophy is that the seniority of the postgraduates (years put into qualifying for entry into the oncology program), selection process, as well as the actual training schedule/curriculum, are sufficient to ensure that the output is of highly skilled and competent oncologists. On the other hand, the consequences of insufficient or incomplete training can be catastrophic. Another opinion is that a qualifying examination is essential-even mandatory. In today's age of medical tourism, it would be prudent to document the peer review process of competence, as well as provide a qualification certificate that is issued by official health authorities.

CME programs are becoming increasingly important – especially since the field of oncology is expanding rapidly. Conferences like the 31st ESMO Congress are proof that new, pertinent information is being generated every few months. The process of continuing medical education provides a comfort level to patients, oncologists, administration, and even health authorities, assuring that knowledge levels are up to date. Among the 39 developing countries partnering in this survey, this process was mandatory in a minority (13/39, 33%), though it was being conducted in as many as 21 countries. ESMO and other organizations working in this field should encourage and lobby for a compulsory qualifying examination in all countries. Emphasis should be placed on promoting the ESMO Examination in medical oncology.

It is a constant debate to arrive at a consensus of what is considered "standard care" for various cancers. Among most developing countries - and several developed - this is influenced by cost issues. Availability of national guidelines helps in the management of patients outside of clinical trials. It also functions to optimize resources as per the countries' policies. Since national guidelines exist in 15 of the 39 countries, and are followed completely only in 11%, there is lot of scope. Emphasis should be placed on promoting ESMO *Minimum Clinical Recommendations,* particularly in the countries that do not have any guidelines of their own. A formal approach to health authorities would be a good way to begin, especially if done jointly with the local oncology society(ies).

One of the recognized ways of ensuring appropriate management of cancer patients is to conduct an audit at regular intervals, if not on an ongoing basis. This process existed only in 17 countries and wider participation should be encouraged. This would be easier if the benefits for the oncologists themselves are also highlighted.

In conclusion, it is clear that the results of phase I of this survey demonstrate what is lacking or suboptimal with regards to oncology and oncology training in developing countries . This data can form the basis for several future steps (listed below). The challenge is to ensure that cost effectiveness remains the goal in any program that we develop for such countries.

11. Future direction:

a. Complete the process of collating data from the remaining developing countries, at least from the countries where ESMO is present

b. Send reports to participants who have indicated that they would like feedback

c. Use the result of this survey to tailor ESMO activities in developing countries

d. Promote ESMO Examination in medical oncolgy

e. Promote ESMO's *Minimum Clinical Recommendations* in developing countries

f. Collaborate with other oncology societies for the benefit of developing countries

g. Prepare a roadmap for tackling oncology-related problems unique to developing countries (service, education and research)

h. Plan phase II of the survey to gather more precise and accurate information which will allow for a sounder statistical analysis

i. Plan to use phase II data to write a manuscript for possible publication in *Annals of Oncology*

12. Request participants to fill in the questionnaire - attached

All oncologists from developing countries attending the 31st ESMO Congress are requested to give additional input by completing the questionnaire provided in this session. Your answers will help in making this data more complete and therefore the analysis more meaningful. We appreciate your assistance and thank you in advance.

13. Acknowledgements:

We are grateful to all members of the DCTF, the ESMO National and Regional Representatives, ESMO members from various developing countries who have actively participated in the survey and the ESMO staff who have worked tirelessly behind the scenes to make this survey and report possible.
Specifically, we would like to thank Jill Madden, Gracemarie Bricalli, Åge Schultz, Hemant Malhotra, Rajesh Dixit, Ganesh B, Purvish Parikh, Håkan Mellstedt and Adamos Adamou.

Developing Countries Task Force
ESMO Head Office
Via La Santa 7
CH-6962 Viganello-Lugano
Switzerland
www.esmo.org

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