Program Against Cancer in India

El Hadji Seydou Mbaye
International Agency for Research on Cancer, World Health Organization, Dakar, Senegal

Abstract

Worldwide, one in eight deaths is thanks to cancer. Projections supported the GLOBOCAN 2012 estimates predict a substantive increase new cancer cases per annum by 2035 in developing countries if preventive measures aren't widely applied. consistent with the planet Health Organization (WHO), many lives might be saved annually if countries made use of existing knowledge and therefore the best cost-effective methods to stop and treat cancer. Therefore, the aim of this study is to estimate a provisional budget against cancer in low and middle incomes countries, according the GNI-PPP, the cancer incidence and therefore the number of population. Economically country classification is determining with the Gross value (GNI), per capita, Purchasing power parity (PPP), according the administrations of the International fund (IMF), the planet Bank (WB) and therefore the Central intelligence (CIA). Cancer incidence data presented are supported the foremost recent data available at IARC. However, population compares estimates from the US Bureau of the Census. The provisional budget is establishing among the rules developed by WHO for regional and national cancer control programs consistent with national economic development. Provisional budget against cancer is estimated to 17,036,185.5 (thousands of U.S $) for a population of 1,281,935,911 persons in India.

Keywords: Cancer Program; Cancer Control; Prevention; Early Detection; Institutional Reinforcement; Diagnosis; Treatment; Low and Middle-Income Countries; India.

1. Introduction

Worldwide, one in eight deaths is thanks to cancer. Cancer causes more deaths than AIDS, tuberculosis, and malaria combined [1]. When countries are grouped consistent with economic development, cancer is that the leading explanation for death in developed countries and therefore the second leading explanation for death in developing countries [2]. Rates of cancers common in Western countries will still rise in developing countries if preventive measures aren't widely applied [3-5]. Projections supported the GLOBOCAN 2012 estimates predict a substantive increase to 19.3 million new cancer cases per annum by 2025, thanks to growth and ageing of the worldwide population. Incidence has been increasing in most regions of the planet , but there are huge inequalities between rich and poor countries. quite half all cancers (56.8%) and cancer deaths (64.9%) in 2012 occurred in less developed regions of the planet , and these proportions will increase further by 2025 [6]. By 2030, the worldwide burden is predicted to grow to 21.4 million new cancer cases and 13.2 million cancer deaths [7]. Rates of cancers will still rise by 2035 with 23,980,858 new cancer cases [3-5].

In addition to the human toll of cancer, the financial cost of cancer is substantial [8-10]. Cancer has the foremost devastating economic impact of any explanation for death within the world [10]. Data limitations don't allow estimating the worldwide economic costs of cancer. However, portions of the entire costs of cancer are estimated to be as high as $895 billion (US) worldwide [9,10]. it's estimated that quite half all cancer cases and deaths worldwide are potentially preventable [3-5,7].

In India, the amount of latest cancer cases is estimated to 1,095,134 with 739,274 deaths in 2015 [5]. Almost 70% of the worldwide burden cervical cancer falls in areas with lower levels of development and quite one fifth of all new cases are diagnosed in India [6]. By 2025, incidence is predicted to grow to 1,401,697 with 959,868 deaths. Rates of cancers will still rise to 1,737,973 new cancer cases by 2035 with 1,209,245 deaths if preventive measures aren't widely applied [3-5]. consistent with the planet Health Organization (WHO); Entitled: National Cancer Control Programs: Policies and Managerial Guidelines, many lives might be saved annually if countries made use of existing knowledge and therefore the best cost-effective methods to stop and treat cancer [11].

"An urgent need in cancer control today is to create powerful and moderate ways to deal with the principal identification, analysis, and treatment of carcinoma among ladies living in less created nations," clarifies Dr Christopher Wild, Director of IARC. "It is critical to bring morbidity and mortality in line with progress made in recent years in additional developed parts of the planet." [6].

With the info highlighting an outsized variability of GNI/capita even within similar income levels within the various world regions, it's expected that additional investment in resources and costs could also be more hooked in to income level of the country than on the GNI group or the geographical area of the planet [12]. Therefore, the aim of this study is to estimate a provisional budget against cancer in India, according the GNI-PPP, the cancer incidence and therefore the number of population.

2. Methods

2.1. Economically Country Classification

The economics states are established among the means of GNI-PPP according the administrations of the International fund (IMF); the planet Bank (WB) and therefore the Central intelligence (CIA) [13-15]. The difference concerning an equivalent country are often considerable among the info origin. These variations are explaining by:

- GNI-PPP is estimated

- Anterior projection of an depression changes GNI-PPP data

- The estimation of the population included within the local population

- The choice elements for GNI-PPP evaluation have some subjective part.

These data must be crazy precaution

Economically Country is split consistent with the gross value (GNI) per capita 2016, Atlas method and PPP [15].

- Estimated to be low income ($1,005 or less)

- Estimated to be lower middle income ($1,006 to $3,995)

- Estimated to be upper middle income ($3,956 to $12,235)

- Estimated to be high income ($12,236 or more).

2.2. Gross value (GNI), Per Capita, Purchasing Power Parity (PPP)

Gross national product is gross domestic product (GDP) plus net (employee compensation and investment income) from abroad. GNI, per capita is GNI divided by mid-year population.

PPP is purchasing power parity; a world dollar has an equivalent purchasing power over GNI as a U.S. dollar has within the us . PPP exchange rates are wont to account for the local prices of products and services unlisted internationally. However, PPP is employed to match across national accounts, not for creating international poverty comparisons [15].

1.1.   Cancer Incidence

Incidence is the number of new cases that occurs during a given period of time in a specified population. It can be expressed as an absolute number of cases per year or as a rate per 100,000 persons per year. The rate provides an approximation of the average risk of developing a cancer. Cancer incidence data presented are based on the most recent data available at IARC. GLOBOCAN 2012 provides a global profile of cancer that has been developed using a number of methods that are dependent on the availability and the accuracy of the data. National sources are used where possible, with local data and statistical modeling used in their absence [3-5].

1.2.   Population

Standard population (POPst) is determining to Senegal population (Western Africa) with 14,668,522 persons. India population is estimated to 1,281,935,911 persons. Population compares estimates from the US Bureau of the Census [16] based on statistics from population censuses, vital statistics registration systems, or sample surveys pertaining to the recent past and on assumptions about future trends: https://www.cia.gov/library/publications/the-world-factbook/geos/in.html

1.3.   Provisional Budget (thousands of U.S $)

The World Health Organization (WHO) emphasizes that, when developing national strategies for controlling cancer, countries should consider the following four broad approaches based on their economic development:

-        The primary prevention

-        The early detection and secondary prevention

-        The diagnosis and treatment

-        The palliative care.

The provisional budget is establishing among the guidelines developed by WHO for regional and national cancer control programs according to national economic development [11]. However, an International Atomic Energy Agency [17] report suggested that in developing countries at least 60% of cancer patients require radiation treatment.

Radiotherapy is one of the main components of modern cancer treatment and requires substantial capital investment, trained professionals in several disciplines, high precision equipment and a particular external and internal organizational structure. In High Incomes Countries, the healthcare costs can be as much as 8.4% (UK in 2007) to 18% (USA in 2009) of a country's gross domestic product [18]. Cancer consumes about 5-10% of the global healthcare budget, of which radiotherapy only consumes about 5% [18,19]; thus, more than 50% of cancer patients requiring radiotherapy in low and middle-income countries lack access to treatment. A benchmark of between 400 and 500 patients per treatment unit per year has been used to calculate machine throughput in several reports [17,20-21]. The benchmark of 450 patients per machine, which corresponds to about 8 operating hours per day, seems adequate for High Incomes Countries. For scenarios where radiotherapy demand is not satisfied, a treatment day of 10 h optimizes the utilization of equipment and decreases the number of machines needed. But, the range of needs currently covered varies from 0% and 3-4% in Low Incomes Countries in Latin America and Africa up to 59-79% in Up-Middle Incomes Countries in Europe-Central and Asia [22].

However, in this study, in order to found the best cost-effective methods to prevent and treat cancer, the number of machines needs is establishing among 3 millions of peoples and not by the number of cancer cases, according to the weakness of the countries incomes.

1.4.   Standard budget for 5 years (S0)

Standard budget for 5 years (S0) is estimated using a population of 1,000,000 persons in Senegal (POPst). Senegal has 8361 new cancer cases (CIst) in 2015 [3-5] with a means GNI-PPPst of US$ 2,551 referred to the year 2016 (low middle income country), according the administrations of the International Monetary Fund (IMF); the World Bank (WB) and the Central Intelligence Agency (CIA)[13-15]. Estimation budget is taken into account the weakness of the countries incomes.

1.5.   Standardized rapport (R0)

Standardized rapport (R0), among the GNI-PPP, CI and the number of the population, is calculated. Standardization simplifies comparisons of GNI-PPP and cancer incidence rates among populations.

$$R0 = \frac{GNI\text{-}PPP \times CI / POP}{GNI\text{-}PPPst \times CIst / POPst}$$

2.   Conclusion

Cancer has the most devastating economic impact of any cause of death in the world. Incidence has been increasing in most regions of the world, but there are huge inequalities between rich and poor countries. Projections based on the GLOBOCAN 2012 estimates predict a substantive increase to millions new cancer cases per year by 2030.

Rates of cancers will continue to rise by 2035 in India, if preventive measures are not widely applied. An urgent need in cancer control today is to develop effective and affordable approaches. It is expected that additional investment in resources and costs may be more dependent on income level of the country than on the GNI group or the geographic region of the world. However, in order to found the best cost-effective methods to prevent and treat cancer, provisional budget against cancer is estimated to 17,036,185.5 (thousands of U.S $) for a population of 1,281,935,911 persons in India, according the GNI-PPP, the cancer incidence and the number of population.

It is very important for all organizations to be aware of the complexity of cancer control. A flexible approach is needed. This account must be added to the actual supply efforts of cancer prevention and treatment. However, effective measures to reduce cancer morbidity and mortality require the active participation of cancer survivors and their local communities; the mobilization and appropriate allocation of resources; the formulation of evidence-based policies and proven interventions; and the commitment of organizations and institutions in the nonprofit, for-profit, and governmental sectors. Ultimately, cancer control goes hand in hand with efforts to promote human and economic development and to improve standards of health, education, and medical care throughout the world.