Program Against Cancer in Djibouti

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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. According to the World Health Organization (WHO), many lives might be saved annually if countries made use of existing knowledge and the best cost-effective methods to prevent 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 the number of population. Economically country classification is determining with the Gross national income (GNI), per capita, Purchasing power parity (PPP), according the administrations of the International Monetary Fund (IMF), the World Bank (WB) and the Central Intelligence Agency (CIA). Cancer incidence data presented are based on the most recent data available at IARC. 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 6,988.412 (thousands of U.S $) for a population of 865,267 persons in Djibouti.

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 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 continue to rise in developing countries if preventive measures are not widely applied [3-5]. Incidence has been increasing in most regions of the planet, but there are huge inequalities between rich and poor countries. The greater part all things considered (56.8%) and malignancy passing's (64.9%) in 2012 happened in less created areas of the world, and these extents will increment 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 continue to rise by 2035 with 23,980,858 new cancer cases [3-5].

Cancer has the most devastating economic impact of any cause of death in 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 is estimated that more than half of all cancer cases and deaths worldwide are potentially preventable [3-5,7].

In Djibouti, the number of new cancer cases is estimated to 609 with 463 deaths in 2015. By 2025, incidence is expected to grow to 807 with 621 deaths. Rates of cancers will continue to rise to 1,067 new cancer cases by 2035 with 836 deaths if preventive measures are not widely applied [3-5].

2. Methods

2.1. Economically Country Classification

The economics states are established among the means of GNI-PPP according the administrations of the International Monetary Fund (IMF); the World Bank (WB) and the Central Intelligence Agency (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 a financial emergency changes GNI-PPP information.

- The estimation of the population included in the local population

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

These data must be taken with precaution

Economically Country is divided according to the gross national income (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 Salary ($12,236 or more)

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

Gross national product is the gross domestic product (GDP) plus net income (employee compensation and investment income) from abroad. GNI, per capita, is GNI divided by the mid-year population. However, PPP is employed to match across national accounts, not for creating international poverty comparisons [15].

2.3. Cancer Incidence

Incidence is the number of new cases that occur during a given period of time in a specified population. It is often expressed as an absolute number of cases per annum or as a rate per 100,000 persons per annum. The rate provides an approximation of the typical risk of developing cancer.

2.4. Population

The standard population is determining to Senegal population with 14,668,522 persons. The Djibouti population is estimated to 865,267 persons. Populace analyzes gauges from the US Bureau of the Census bolstered insights from populace censuses, measurement enlistment frameworks, or test overviews concerning the ongoing past and on suppositions about future trends.

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

WHO says that, when developing national strategies for controlling cancer, countries should consider the next four broad approaches supported their economic development:

- The primary prevention

- The early detection and secondary prevention

- The diagnosis and treatment

- Palliative care

2.6. Standard budget for 5 years (S$_0$)

Standard allows 5 years (S0) is estimated employing a population of 1,000,000 persons in Senegal. Senegal has 8361 new cancer cases (CIst) in 2015 [3-5] with a way GNI-PPPst of US$ 2,551 mentioned the year 2016 (low middle-income country), according to the administrations of the International Monetary Fund (IMF); the World Bank (WB) and the Central Intelligence Agency (CIA)[13-15].

2.7. Standardized rapport (R$_0$)

Standardized rapport, among the GNI-PPP, CI, and therefore the number of the population is calculated by following. Normalization improves correlations of GNI-PPP and malignant growth rate rates among populaces.

$$R_0 = \frac{GNI\text{-}PPP \times CI / POP}{GNI\text{-}PPPst \times CIst / POPst}$$

Note: * For Radiotherapy equipment, R0 = GNI-PPP X POP / GNI-PPPst X 3 million peoples;

Senegal has installed two new radiotherapy machines in 2017. Radiotherapy equipment is estimated to US$ 2,500,000.

** For Prevention and screening infrastructure, R0 =GNI-PPPX POP / GNI-PPPst X 3 million peoples.

R_0= Standardized rapport among the GNI-PPP, CI and the number of the population

$GNI\text{-}PPP_{st}$= Standard Gross National Income Per capita Purchasing Power Parity in Senegal

GNI-PPP= Gross National Income Per capita Purchasing Power Parity of interest

CI_{st}= Standard Cancer Incidence in Senegal

CI= Cancer Incidence of interest

POP_{st}= Standard Population in Senegal

POP= Population of interest

Country	GNI per capita Purchasing power parity (PPP)				Population	Cancer incidence (CI)
	Ref.	US$	Year	Means of GNI-PPP (US$)		
Djibouti	IMF	3,351	2016	3,376	865,267	609
	WB	-	2016			
	CIA	3,400	2016			

IMF= International Monetary Fund; WB= World Bank; CIA= Central Intelligence Agency; GNI= Gross National Income; PPP= Purchasing Power Parity; Ref.= Reference.

Table 1: GNI-PPP, Cancer incidence (CI) and the number of the Population

Cancer Control	Management	Stand. budget (S$_0$)	Stand.rapport (R$_0$)	Account per (R$_0$)	General POP. budget
Cancer primary	Development of an information system	50	1.63413	81.706	70,697
	Against Tobacco	250	1.63413	408.532	353,486
	Against Infections	500	1.63413	817.065	706,973
	Against carcinogenic substances	125	1.63413	204.266	176,743
Prevention	Against environmental risks	125	1.63413	204.266	176,743
	Diet or nutrition promotion	250	1.63413	408.532	353,486
	Sport promotion	200	1.63413	326.826	282,789
	Cancer risk factors survey	50	1.63413	81.706	70,697
Cancer early detection and secondary prevention.	Breast cancer screening	150	1.63413	245.119	212,092
	Cervical cancer screening	125	1.63413	204.266	176,743
	Prostate cancer screening	50	1.63413	81.706	70,697
	Colorectal cancer screening	50	1.63413	81.706	70,697
	Others cancers screening	50	1.63413	81.706	70,697
Cancer institutional reinforcement	Rise of cancer professional	125	1.63413	204.266	176,743
	Development of cancer research	175	1.63413	285.972	247,440
	Development of cancer prevention courses	100	1.63413	163.413	141,394

Cancer diagnosis and treatment	Assistance for Palliative Care	150	1.63413	245.119	212,092
	Chemotherapy equipment	100	1.63413	163.413	141,394
	Surgical equipment	175	1.63413	285.972	247,440
	Radiotherapy equipment *	2,500	1.00	2,500	2,500
	Prevention and screening infra-structure **	400	1.3234	529.36	529.36
Total		5,700			6,988.412
Based on: World Health Organization. The National Cancer Control Programmes: policies and managerial guidelines. 2nd ed. Geneva, 2002.					
S_0= Standard budget for 5 years for a population of 1,000,000 persons; R_0= Standardized rapport among the **GNI-PPP, CI** and the number of the population; * With the weak number of population and the low income; 1 radiotherapy machine is considered. ** Prevention and screening infrastructure among only **GNI-PPP /GNI-PPPst**.					

Table 2: Estimated Budget (thousands of U.S $).

4. Conclusion

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

Rates of cancers will continue to rise by 2035 in Ecuador if preventive measures are not widely applied. It is expected that additional investment in resources and costs could also be more hooked into the income level of the country than on the GNI group or the geographical area of the world. However, in order to found the best cost-effective methods to prevent and treat cancer, the provisional budget against cancer is estimated to 630,360.93 (thousands of U.S $) for a population of 16,290,913 persons in Ecuador, according to the GNI-PPP, the cancer incidence and the number of population.

It is vital for all organizations to remember 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.

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