



# Descriptive epidemiology of lung cancer and current status of tobacco control measures in Central and South America<sup>☆</sup>



Marion Piñeros<sup>\*</sup>, Mónica S. Sierra, David Forman

International Agency for Research on Cancer, Section of Cancer Surveillance, France

## ARTICLE INFO

### Article history:

Received 21 October 2015

Received in revised form 3 March 2016

Accepted 5 March 2016

### Keywords:

Neoplasms  
Epidemiology  
Lung  
Americas  
Tobacco control  
Developing countries

## ABSTRACT

**Rationale and objective:** Lung cancer is the most commonly diagnosed cancer and the leading cause of cancer death in the world. In Central and South America lung cancer is now one of most frequent cancers and the leading cause of cancer-related death in both sexes. We describe patterns and trends in lung cancer incidence and mortality in Central and South America and give a brief overview of the current status of tobacco control measures based on the most recent MPOWER report.

**Methods:** We obtained regional and national-level incidence data from 48 population-based cancer registries in 13 countries and cancer deaths from the WHO mortality database for 18 countries. We estimated world population age-standardized incidence and mortality rates per 100,000 person-years. Incidence of lung cancer by histological subtype were only available from high-quality population-based cancer registries for the period 2003–2007.

**Results:** The highest incidence and mortality rates in the region were seen among males in Argentina, Cuba, Chile and Uruguay. Adenocarcinoma was the most frequent histological type overall, though squamous carcinoma was more frequent in Antofagasta-Chile and Villa Clara-Cuba. Smoke-free policies and warnings are widely implemented tobacco control measures; cessation is offered but the costs are not covered by health systems in the majority of countries.

**Conclusion:** The high burden of lung cancer in the region highlights the need to improve long term information and strengthen current tobacco control policies including aggressive taxing measures and supporting smoking cessation in order to achieve the targeted reductions in smoking prevalence.

© 2015 International Agency for Research on Cancer; Licensee Elsevier Ltd. This is an open access article under the CC BY-NC-ND IGO 3.0 license (<https://creativecommons.org/licenses/by-nc-nd/3.0/igo/>).

## 1. Introduction

Lung cancer (comprising malignant tumors of the trachea, bronchus and lung) is the most commonly diagnosed cancer in the world. In 2012, 1.8 million new lung cancer cases were estimated to have occurred globally, accounting for almost 13% of all new cancer cases (excluding non-melanoma skin cancer) [1]. In Central and South America nearly 75,000 new cases are diagnosed each year

and it is the second most common cancer among men (9.6% of the total) after prostate cancer and the fourth most common among women (5.5% of the total) [1]. With almost 1.6 million cancer deaths, it is also the leading cause of death from cancer in the world (19% of all cancer deaths); similarly, in Central and South America it also represented the leading cause of death among both sexes accounting for 12% of all cancer deaths (65,736 overall) [1].

Although, among men, a gradual decline in lung cancer mortality rates has been reported in the past few decades in Central and South America, mortality for this malignancy has been increasing among women in most countries in the region [2,3]. Thus, a recent comparative study in 11 Latin American countries, examining cancer mortality from 1980 to 2010, indicated decreasing lung cancer mortality rates among men in all countries with the exception of Colombia, Cuba and Venezuela. In women, lung cancer mortality rose by 1% to 3% per year in all Latin American countries except Mexico and Costa Rica [3].

Given the overwhelming evidence concerning tobacco smoking as, by far, the principle risk factor for lung cancer, much of the interpretation in changing lung cancer incidence (or mortality)

<sup>☆</sup> This is an Open Access article published under the CC BY-NC-ND 3.0 IGO license which permits users to download and share the article for non-commercial purposes, so long as the article is reproduced in the whole without changes, and provided the original source is properly cited. This article shall not be used or reproduced in association with the promotion of commercial products, services or any entity. There should be no suggestion that IARC endorses any specific organisation, products or services. The use of the IARC logo is not permitted. This notice should be preserved along with the article's original URL.

<sup>\*</sup> Corresponding author at: Section of Cancer Surveillance, International Agency for Research on Cancer, 150 Cours Albert Thomas, 69008 Lyon, France.

E-mail address: [pinerosm@iarc.fr](mailto:pinerosm@iarc.fr) (M. Piñeros).

trends must take into account patterns of tobacco consumption and, related to this, governmental efforts to reduce smoking prevalence. Unfortunately, in the Latin American region, there is a lack of information concerning both long-term trends in lung cancer incidence as well as long-term smoking prevalence. The call on governments, by the 2013 WHO Assembly, to reduce the prevalence of smoking by about a third by 2025 [4], poses important challenges including long-term assessment of its prevalence. To help governments implement the WHO Framework Convention on Tobacco Control (WHO FCTC), a set of six public health tobacco control measures was launched in 2008 under the name of MPOWER [5].

In this paper, we aim to provide a comprehensive picture of the overall burden, patterns and trends in lung cancer incidence and mortality in Central and South America together with a general overview of the advances regarding the MPOWER tobacco control measures within the region.

## 2. Material and methods

In the present analysis lung cancer was coded as C33-34 according to 10th edition of the International Classification of Diseases (ICD-10). Until the year 1991, the underlying cause of death was categorized according to the ICD 9th revision however all data were converted to the ICD 10th revision. The data sources and methods are described in detail in an earlier article in this issue. In brief, we obtained regional and national-level incidence data from 48 population-based cancer registries in 13 countries and cancer deaths from the World Health Organization mortality database for 18 countries. We estimated age-standardized incidence (ASR) and mortality (ASMR) rates per 100,000 person-years using the direct method and the World standard population, as proposed by Doll et al. [6,7]. We estimated national ASRs by aggregating the data from the available cancer registries using a weighted average of local rates. To describe incidence and mortality time trends, we calculated the estimated annual percent change (EAPC) using the method proposed by Esteve et al. [8]. Trends in incidence and mortality and EAPCs were estimated only for 4 countries (Table 1). All of the EAPCs were tested for equality to zero by using the corresponding standard errors. We considered EAPCs statistically significant if the  $p$ -value  $\leq 0.05$ . We conducted the data analysis in Stata version 12.1 (StataCorp) [9].

In addition to the general methods described above, we considered information by histological subtype as coded in ICD-O-3. Unfortunately, this information was incomplete for most registries in the region and we decided to include, for this analysis, only registries which qualified for publication in CI5 volume X [10].

Given the importance of tobacco smoking as a risk factor we also provide an overview of smoking prevalence and tobacco control measures in the region. Information on adult and adolescent tobacco smoking prevalence was taken from the Global Health Observatory Data Repository [11,12]. Information on the advancement of prevention policies was taken from the last available WHO reports on the global tobacco epidemic [2013, 2015] following the MPOWER components, which represent six public

health policy measures that have been established by the WHO FCTC to assist countries in the implementation of effective interventions to reduce the demand for tobacco [13].

## 3. Results

### 3.1. Age-standardized incidence and mortality rates

In the region, lung cancer incidence rates (per 100,000) ranged from as high as 50.1 among males in Uruguay, to as low as 1.1 among females in El Salvador. In Central America, Cuba had by far the highest incidence of lung cancer for both males and females (39.2 and 18.9, respectively), with lung cancer also ranking in the first place for cancer incidence among males. The South American countries where the highest male incidence rates were observed were the so-called “Cono Sur” countries: Uruguay (50.1), Chile (33.8) and Argentina (30.5); in all three countries lung cancer ranked second for male cancer incidence. Among females, the pattern was slightly different with the highest incidence rates found in Chile (12.1) and Brazil (11.5). The highest male-to-female incidence ratio was found in Uruguay (5.5) and the lowest in Bolivia (0.6) (Table 2).

For mortality, the countries with the highest rates (per 100,000), among both males and females in Central America, were Cuba (39.0 and 18.1), Belize (15.9 and 6.5) and Mexico (13.2 and 5.4). Among males, lung cancer mortality ranked in the first two places in half of the Central American countries and in 80% of the South American countries. In the latter, male mortality patterns closely followed those for incidence, with the highest rates (per 100,000) in Uruguay (44.5), Argentina (30.8) and Chile [18]. In females the pattern was slightly different; countries with the highest lung cancer mortality rates were Venezuela (9.3), Argentina (7.8), Colombia (7.7) and Brazil (7.6). In almost all countries, mortality rates were very similar to incidence rates with the exception of Peru, where female lung cancer mortality rates were only half (4.7) those of the incidence rates (8.9). The highest male-to-female mortality ratios were found in Uruguay (6.1) and the lowest in El Salvador, Guatemala and Peru (ratios from 1.4 to 1.5) (Table 2).

### 3.2. Time trends

In Argentina, Brazil, Chile and Costa Rica, there was a decline in lung cancer incidence and mortality rates among males for the 1997–2007 period (Fig. 1). The reduction in incidence was only statistically significant in Argentina and Brazil, with estimated annual percent changes of  $-5.2\%$  and  $-3.8\%$ , respectively (Fig. 2). Incidence rates among females in Argentina and Chile also declined over time, with an estimated annual percent change that ranged from  $-4.6\%$  to  $-1.4\%$  respectively, though these changes were not statistically significant. Lung cancer incidence in Costa Rican females remained almost constant over time, while mortality showed a decreasing trend for both male and females. In contrast, there was an increase in lung cancer mortality rates over time among females in Brazil, Argentina and Chile, although these

**Table 1**  
Countries and cancer registries included in the analysis of time trends.

Country	Name of registries included	Period	% of the population covered
Argentina	Bahia Blanca	1993–2007	0.8
Brazil	Aracaju, Fortaleza, Goiania, Sao Paulo	1997–2006	8
Chile	Valdivia	1993–2008	2.2
Costa Rica	National registry	1985–2007	100.0

Download English Version:

<https://daneshyari.com/en/article/5524900>

Download Persian Version:

<https://daneshyari.com/article/5524900>

[Daneshyari.com](https://daneshyari.com)