

Smoking and cancer: Brazil and the Global Burden of Disease initiative

Fumo e câncer: Brasil e a iniciativa “Carga Global de Doenças”

Paulo Andrade Lotufo¹

Faculdade de Medicina da Universidade de São Paulo (FMUSP), São Paulo, Brazil

¹MD, DrPH. Full Professor, Department of Internal Medicine, Faculdade de Medicina da Universidade de São Paulo (FMUSP), São Paulo, Brazil.

The Global Burden of Disease (GBD) study is an initiative from the World Health Organization and Harvard University. It was launched in 1996 as an initiative by Alan Lopez and Christopher Murray. The aim was to provide systematic epidemiological estimates for an unprecedented 150 major health conditions and, from this, indispensable global and regional data for health planning, research and education.¹ Subsequently, with financial support from the Bill and Melinda Gates Foundation, the University of Washington embraced the proposal for an Institute of Health Metrics. Since then, the GBD initiative has sought to “synthesize all available epidemiological data using a coherent measurement framework, standardized estimation methods and transparent data sources to facilitate comparisons of health loss over time across causes, age-sex groups and countries.”²

The GBD initiative has been developed along two important lines of action. One is to involve a considerable number of researchers around the world, in order to establish a continuous collaboration with interchangeability of information. The other summarizes measurements such as disability-adjusted life years (DALYs) and healthy life expectancy (HALE), in order to enable comparison of epidemiological variables over time and across countries. A further line of action, which is to be launched in 2016-2017, will describe epidemiological patterns according to states/provinces/departments in the US, Mexico, Kenya, China, India and Brazil (personal information).

This Editorial provides a brief overview of the smoking epidemic in Brazil, in comparison with other countries that have relevance to our country, either due to the geopolitical context or because of geographical and historical ties. Thus, we chose the following for comparison purposes: Argentina, China, Germany, India, Italy, Japan, Mexico, Portugal, Russia, South Africa, Spain, the United Kingdom (UK) and the United States of America (USA). We restricted the comparison only to DALY information for traditional cancer types that are linked directly to smoking exposure.

Table 1 shows results published previously by the GBD team regarding smoking prevalence.³ The prevalence rate for the smoking habit in 2010 was lower in Brazil than the rates in those countries, with the exception of Mexico and India. The decline of smoking prevalence rates from 1980 to 2010 was faster in Brazil (-34%) than the average decline among the other countries (-28%). The smoking data for Brazil was derived from VIGITEL, an annual survey by means of telephone calls in the 27 state capitals, in which the overall prevalence matched that of the Brazilian National Health Survey.⁴

Table 2 shows the DALYs for cancer for both sexes, according to estimates from the GBD team published recently.⁵ The cancers analyzed related to:

1. lung, trachea and bronchus;
2. stomach;
3. esophagus;
4. lip and oral cavity;
5. pharynx;
6. larynx; and
7. urinary bladder.

The following initial observations can be made:

#1: Although lung cancer is the leading cause of cancer mortality in Brazil, accounting for 12% of the almost 200,000 cancer deaths in 2013,⁶ comparison with these other countries revealed that the frequency of this type of malignant neoplasm among Brazilians was lower.

Table 1. Temporal trends of prevalence rates for the smoking habit (percentage) in selected countries, according to the compilation of the Global Burden of Diseases initiative. Reproduced from Ng et al.³

Country	1980	1996	2006	2012	Difference 1980-2012
Spain	36	34.2	28.6	26.3	-27
Germany	33.2	28	26	25	-25
Italy	33.1	26.7	24.1	24.4	-26
China	30.4	29.5	23.9	24.2	-20
Portugal	22.5	21.3	23.7	23.6	5
Japan	36.2	32.1	27	23.3	-36
UK	38.4	30	24.6	21.6	-44
Argentina	26.6	25.5	23.4	19.8	-26
Overall	25.9	23.4	19.7	18.7	-28
USA	30.6	24.6	18	15.8	-48
South Africa	25	23.4	15.5	15.3	-39
Brazil	20.7	17.8	15.3	13.7	-34
India	18.9	17.7	15.5	13.3	-30
Mexico	25.9	19	10.2	10	-61

#2: The DALY values due to upper aerodigestive cancers (nasal, oral, pharyngeal, laryngeal and esophageal) were relatively higher in Brazil than in these other countries. For oral cancer, Brazil was ranked third.

#3: Despite the decline in gastric cancer mortality rates worldwide and in Brazil, this type of malignant neoplasm had higher frequency in Brazil than in other Western countries.

#4: The DALY values in Portugal were closer to those reported in Brazil for stomach, nasal, oral, laryngeal and pharyngeal cancers.

#5: The highest DALYs for nasal, oral, pharyngeal, laryngeal and esophageal cancers were in India, the country with the lowest smoking prevalence, followed by South Africa, China and Brazil.

#6: Argentina had DALY values closer to Brazil for stomach, esophageal and laryngeal cancer.

We are not discussing the causes and effects of risk factors for smoking-related cancers at this moment. We are only calling for public policy action. Successful action to control smoking in Brazil will certainly not contain the impact of other smoking-related cancers such as those located in the trachea, bronchus and lung, or the impact of upper aerodigestive malignant neoplasms.

Table 2. DALY (disability-adjusted life years) values (x 1000), according to selected countries and tobacco-related cancer sites. Source: Global Burden of Disease Cancer Collaboration⁵

Country	Lung	Country	Stomach	Country	Esophagus	Country	Oral	Country	Bladder	Country	Pharynx	Country	Larynx	Country	Nasal
USA	795	China	464	China	283	India	113	Spain	98	India	78	Portugal	62	China	55
China	792	Russia	398	South Africa	280	Russia	77	Italy	78	Portugal	53	Argentina	56	Overall	28
UK	663	Japan	390	India	176	Portugal	67	Portugal	71	Germany	51	Russia	56	India	25
Russia	649	Portugal	311	Overall	152	Brazil	62	Argentina	68	Brazil	46	Brazil	55	Portugal	13
Germany	641	Overall	278	UK	145	Overall	54	Germany	65	Russia	44	Spain	49	Spain	12
Spain	628	Brazil	235	Brazil	122	South Africa	52	Russia	65	Spain	34	India	45	Argentina	11
Italy	579	Argentina	227	Argentina	110	Germany	51	UK	63	Overall	32	Overall	33	Brazil	11
Argentina	559	Mexico	195	Japan	98	Spain	47	USA	58	Italy	24	Italy	31	Japan	8
Portugal	550	India	192	Portugal	87	Argentina	43	Brazil	55	South Africa	24	South Africa	27	USA	8
Overall	543	Italy	170	Germany	86	UK	39	Overall	51	USA	20	Mexico	26	South Africa	8
Japan	425	Spain	163	Russia	81	Italy	39	China	34	UK	20	Germany	24	Italy	8
Brazil	359	Germany	148	USA	76	USA	35	Japan	32	Japan	19	China	23	Russia	6
South Africa	326	UK	108	Spain	64	Japan	29	South Africa	32	Argentina	16	USA	22	UK	6
Mexico	198	South Africa	89	Italy	38	Mexico	23	India	29	China	9	UK	18	Germany	6
India	173	USA	76	Mexico	35	China	20	Mexico	22	Mexico	7	Japan	8	Mexico	4

REFERENCES

1. Murray CJ, Lopez AD. Global Burden of Disease. A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Cambridge: Harvard University Press; 1996.
2. Murray CJ, Lopez AD. Measuring the global burden of disease. *N Engl J Med*. 2013;369(5):448-57.
3. Ng M, Freeman MK, Fleming TD, et al. Smoking prevalence and cigarette consumption in 187 countries, 1980-2012. *JAMA*. 2014;311(2):183-92.
4. Malta DC, Szwarcwald CL. Lifestyles and chronic non-transmissible diseases of the Brazilian population according to the National Health Survey: balance of the main results. *Sao Paulo Med J*. 2015;133(4):286-9.
5. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Dicker D, et al. The Global Burden of Cancer 2013. *JAMA Oncol*. 2015;1(4):505-27.
6. Wünsch Filho V, Mirra AP, López RVMV, Antunes LF. Tabagismo e câncer no Brasil: evidências e perspectivas [Tobacco smoking and cancer in Brazil: evidence and prospects]. *Rev Bras Epidemiol*. 2010;13(2):175-87.