

The Cost the Tobacco Industry Does Not Account For!

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A Conta que a Indústria do Tabaco Não Conta!

¡La Cuenta que la Industria del Tabaco No Cuenta!

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ABSTRACT

Introduction: In Brazil, tobacco industry companies seek to maximize profits at the expense of a high disease and economic burden attributable to smoking. **Objective:** To estimate, based on the most recent national data on smoking behavior and the costs of tobacco-related diseases, the updated equivalence between the profit earned by the tobacco industry and the average cost to Brazilian society. **Method:** For the year 2019, two pieces of information from Brazil's tobacco epidemic monitoring system were combined: (1) the equivalence between the gross profit of the tobacco industry and the deaths of smokers who contributed to generating this profit, with (2) the equivalence between the costs (both direct treatment costs and indirect costs) of tobacco-related diseases and deaths attributable to tobacco use. **Results:** For every R\$1.0 of profit earned by the tobacco industry, Brazil spends 2.3 times that amount on the direct costs of treating tobacco-related diseases and 5.1 times that amount on the total costs of these diseases. **Conclusion:** It is essential to assess the impact of tobacco industry product sales on the current direct and indirect costs to Brazilian society in order to seek its accountability and compensation. A portion of the tobacco industry's profit in Brazil may be allocated to initiatives that encourage smoking initiation among youth and children, ensuring the replacement of current users who will fall ill or die, thus also generating future costs.

Key words: Tobacco Industry/statistics & numerical data; Tobacco-Derived Products Publicity; Tobacco Use Disorder/mortality; Social Media; Costs and Cost Analysis.

RESUMO

Introdução: No Brasil, as empresas do setor fumageiro buscam maximizar lucros, em detrimento de elevadas cargas econômica e de doença atribuíveis ao tabagismo. **Objetivo:** Estimar, a partir dos dados nacionais mais recentes de comportamento de fumar e de custos das doenças tabaco-relacionadas, a equivalência atualizada entre o lucro obtido pela indústria do tabaco e o custo para a sociedade brasileira. **Método:** Combinaram-se, para o ano de 2019, duas informações oriundas do sistema de monitoramento da epidemia do tabagismo no Brasil: (1) a equivalência entre o lucro bruto da indústria do tabaco e as mortes de fumantes que contribuíram para a geração desse lucro com (2) a equivalência entre o custo (direto de tratamento e indireto) das doenças relacionadas ao tabagismo e as mortes atribuíveis ao uso do tabaco. **Resultado:** Para cada R\$ 1,00 de lucro obtido pela indústria do tabaco, o Brasil gasta 2,3 vezes esse valor com o custo direto do tratamento de doenças relacionadas ao tabaco e 5,1 vezes esse valor com o custo total (direto e indireto) dessas doenças. **Conclusão:** É fundamental mensurar o impacto da venda dos produtos comercializados pela indústria do tabaco sobre os custos diretos e indiretos atuais para a sociedade brasileira para buscar sua responsabilização e ressarcimentos. Uma parcela do lucro obtida com essa venda pode, eventualmente, ser usada em ações de estímulo à iniciação de jovens e crianças no tabagismo, a fim de repor os usuários atuais que irão adoecer ou falecer; isso, por sua vez, também gerará custos futuros.

Palavras-chave: Indústria do Tabaco/estatística & dados numéricos; Publicidade de Produtos Derivados do Tabaco; Tabagismo/mortalidade; Mídias Sociais; Custos e Análise de Custo.

RESUMEN

Introducción: En el Brasil, las empresas tabacaleras buscan maximizar las ganancias a costa de altas cargas económica y de enfermedades atribuibles al tabaquismo. **Objetivo:** Estimar, a partir de los datos nacionales más recientes sobre el comportamiento de fumar y los costos de las enfermedades relacionadas con el tabaco, la equivalencia actualizada entre las ganancias obtenidas por la industria tabacalera y el costo para la sociedad brasileña. **Método:** Se combinaron, para el año 2019, dos informaciones provenientes del sistema de monitoreo de la epidemia del tabaquismo en el Brasil: (1) la equivalencia entre las ganancias brutas de la industria tabacalera y las muertes de los fumadores que contribuyeron a la generación de estas ganancias, con (2) la equivalencia entre los costos (directos de tratamiento e indirectos) de las enfermedades relacionadas con el tabaquismo y las muertes atribuibles al consumo de tabaco. **Resultado:** Por cada R\$ 1,00 de ganancia obtenida por la industria tabacalera, el Brasil gasta 2,3 veces esta cantidad en los costos directos del tratamiento de enfermedades relacionadas con el tabaco y 5,1 veces esta cantidad en el costo total (directo e indirecto) de estas enfermedades. **Conclusión:** Resulta fundamental medir el impacto de la venta de los productos comercializados por la industria tabacalera sobre los costos directos e indirectos actuales para la sociedad brasileña, para buscar su responsabilidad y compensaciones. Una parte de las ganancias obtenidas de esta venta puede ser utilizada, eventualmente, en acciones de estímulo a la iniciación al tabaquismo de jóvenes y niños, para reemplazar a los usuarios actuales que van a enfermarse o fallecer, lo que, a su vez, también va a generar costos futuros.

Palabras clave: Industria del Tabaco/estadística & datos numéricos; Publicidad de Productos Derivados del Tabaco; Tabaquismo/mortalidad; Medios de Comunicación Sociales; Costos y Análisis de Costo.

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INTRODUCTION

Despite the considerable reduction of the proportion of smokers in the last decades, the most recent national estimates of 2019 revealed that there are still 20.0 million adult smokers¹. Furthermore, since 2016, there has been an annual increase in the number of cigarettes produced for domestic consumption². The tobacco epidemic causes 174 thousand deaths annually in Brazil, representing R\$ 153.5 billion per year of direct and indirect costs to the country³.

Although the current Brazilian legislation limits the sale of tobacco products to physical points of sales, banning any additional form of publicity, promotion and advertising beyond the mere display of products⁴, it is noticed that, similar to other foreign countries, the tobacco industry continues investing in illegal marketing to circumvent the existing legislation⁵.

In this context, digital media has become a fertile ground for promoting tobacco product consumption, mainly due to the difficulty of monitoring it and its cross-border impact, driven by technological advancements in recent decades^{5,6}. Tobacco industries seek to maximize profits and expand their market, investing in corporate social responsibility strategies (for instance, social, cultural, and environmental projects) or opinion formation, using the media and digital influencers on their behalf⁵⁻⁷; said strategies strengthen the social acceptance of tobacco industry while pulling away the individual from health damaging effects related to the products traded, luring novel users and/or keeping current ones.

Measuring current costs associated with the treatment of patients affected by tobacco-related diseases and of the smoke cessation programs is a key step to pursue accountability and financial compensation from tobacco industries^{3,7-9}. The existing data provided by the monitoring system of the tobacco epidemic in Brazil allowed to establish that since 2013, for each R\$1.00 of profit earned by tobacco industry, Brazil spent nearly the double in direct costs with treatment of tobacco-related diseases¹⁰. Part of this profit of the tobacco industry may, occasionally, be used in actions of encouragement to young adults and children to initiate smoking and to replace the current users who will die or get sick, which, on its turn, will generate future profits^{8,10}.

The aim of this article is to update the equivalence between profit earned by the tobacco industry and the direct and indirect cost for the Brazilian society based on the most recent national data on smoking behavior and direct and indirect costs of tobacco-related diseases.

METHOD

The present article proposes to update the methodology earlier published⁸ which allowed to combine two information: (1) the equivalence between the profit of the legally established tobacco industry in Brazil and the deaths of smokers who contributed to the generation of that profit, and (2) the equivalence between the costs of tobacco-related diseases and the deaths attributable to tobacco use^{3,11}.

The smoking-attributable mortality fraction stratified by sex was updated using data on smoking behavior among Brazilians aged 35 and older from the 2019 National Health Survey (PNS)¹. This update also incorporated information on age-adjusted mortality rates for specific diseases stratified by sex and smoking status (smoker, former smoker, and non-smoker), based on the 2019 Brazilian population distribution^{10,12,13}.

The diseases selected were those with greater impact on deaths and costs^{3,8,10}: ischemic heart diseases, chronic obstructive pulmonary disease (COPD), stroke and lung cancer. Therefore, the number of deaths attributable to smoking was calculated by the multiplication of the fraction attributable to selected diseases by the number of total deaths collected from mortality information system^{10,13}.

To estimate the death of smokers who purchased legal cigarettes in Brazil in 2019, first, the prevalence of current smokers of legal cigarettes was added to the proportion of never smokers (it was considered the contrafactual scenario where the firsts had never smoked legal cigarettes); next, the total number of deaths estimated in this “contrafactual scenario” was subtracted from the total number of deaths attributable to all current and ex-smokers (legal or illegal cigarettes)¹⁰.

The estimate of the gross profit of the tobacco industry earned with the sale of legal cigarettes in Brazil in 2019, considering the six legal tobacco companies officially registered to market their brands within the country² was obtained from a previous methodology that utilized, in addition to data of prevalence of legal smokers per sex and age, information from the Federal Revenue Service on domestic cigarette production and distribution, mean price of the legal cigarette and state and federal tax rates^{1,10,14}.

The updated data of associated costs with the use of tobacco products were collected from a study of economic burden and of diseases attributable to tobacco conducted in 2022 in Brazil^{2,11}. The study estimated the mortality, morbidity and direct medical costs, indirect costs due to loss of productivity, premature death, impairment and loss of productivity of the informal caretakers attributable to

tobacco of individuals aged 35 years or older for the four diseases selected based on a probabilistic microsimulation mathematical model. The costs were corrected between 2022 and 2019 by the inflation measured by the Extended Consumer Price Index of “*Instituto Brasileiro de Geografia e Estatística (IPCA/IBGE)*”¹⁵.

Therefore, while combining the information of costs (direct medical costs and indirect) associated with tobacco related deaths with gross profit of the tobacco industry obtained from the same tobacco-related deaths, the equivalence between the total gross profit of the legally established tobacco industries in Brazil and the costs to the society is established.

In compliance with Directive number 510/16 of the National Health Council¹⁶, the approval by the Ethics Committee was waived because only public, unidentified and aggregate information have been utilized.

RESULTS

In Brazil in 2019, each R\$ 0.156 million of profit earned by tobacco industries established in the country with sales of legal cigarettes was equivalent to one death per ischemic heart diseases, stroke, COPD or lung cancer attributable to smoking. The mean direct cost and the mean total cost (direct and indirect) equivalent to one death for selected diseases have been estimated in R\$ 0.361 million and R\$ 0.796 million, respectively (Table 1).

While combining these equivalences, for each R\$ 1.00 of profit earned by tobacco industry, Brazil spends 2.3 times this value with direct costs of tobacco-related diseases and 5.1 times this value with total costs (direct and indirect) of these diseases (Table 1 and Figure 1).

DISCUSSION

The main objective of tobacco industries legally operating in Brazil is to sell cigarettes and other tobacco products, and, like any other business, maximize their profits and expand their market share¹⁰. To do this, they may, occasionally, direct part of the profits from cigarette sales to strategies that undermine tobacco control policies, keep current smokers and/or lure new users, ensuring the continuity and growth of their businesses⁵⁻⁷. The findings of the present study indicate that the profit earned by the tobacco industry with cigarette sales translates into a much higher cost to the Brazilian society.

It is evident that Brazil is facing challenges to protect its tobacco control policy against the tobacco industry interference, based on the most recent report of the global index of the tobacco industry interference¹⁷.

For instance, it is noteworthy that the lawsuits of the tobacco industry have succeeded in blocking the implementation of a pioneer directive of the Brazilian Health Regulatory Agency (Anvisa) of 2012 to ban the sale of tobacco products with any addictive that could change the flavor and make them more attractive to young adults and adolescents¹⁸.

Furthermore, the tobacco industry is investing resources to push the approval of e-cigarettes (electronic nicotine delivery systems – ENDS) added with flavors and aromas¹⁹. In that line, the tactics adopted in social medias take advantage of the opportunity of exploring the illegal sale of tobacco products and dissemination of misinformation on a privileged space due to the difficulty of effective oversight^{5-7,20}.

The negative impacts of the tobacco industry interference initiatives on new Brazilian generations and, consequently, on the anticipated future costs are quite evident: for instance, a 700% increase of new registers of tobacco products for hookah with additives between 2014 and 2020 was followed by a 300% increase of the proportion of use of hookah among youngsters in Brazil between 2013 and 2019^{1,18}. Furthermore, the PNS found that, in 2019, the proportion of pregnant women using ENDS was 50% higher than that of non-pregnant women, reinforcing the spread of the tobacco industry's illegal marketing around both active and passive harm reduction associated with their use^{1,21}.

The continuous monitoring of the strategies used by the tobacco industry in political, legal, knowledge-production and social acceptance-shaping spheres⁷ – aimed at interfering with the actions of Brazil's National Tobacco Control Policy (PNCT), is essential for the country to achieve the United Nations Sustainable Development Goals²². The reduction of the proportion of smokers and, consequently, of the costs associated with smoking can help, for example, to deal with other health issues, climate changes and poverty eradication. Moreover, the findings regarding the enormous disparity between the estimated gross profit of tobacco companies legally established in the country from cigarette sales and the societal costs in terms of illness and death reinforce the need to advance the implementation of measures involving the civil and criminal accountability of the tobacco industry⁹. Federal tax collection on cigarette sales is barely 5% of the losses caused by smoking in Brazil³.

The constant time relation between treatment/care costs of tobacco associated events for Brazil and tobacco industry profit depends, obviously, on updating the parameters utilized for the estimates presented herein. In despite of this, the relation between direct cost and profit did not present significant changes between 2013 (1.927)⁸



Table 1. The equivalence between the cost attributable to cigarette use and the profit of the tobacco industry in Brazil, 2019

Selected diseases	Portion of the profit of the tobacco industry equivalent to one death ^{a,b,c}			Cost attributable to cigarette use ^a				Mean total cost equivalent to one death (R\$ million) ^d	Relation of mean direct cost of treatment vs. Gross Profit	Relation mean total cost vs. Gross Profit ^d
	Deaths attributable to use of legal cigarettes	Total Gross Profit (R\$ million)	Portion of the profit equivalent to one death to one death (R\$ million)	Deaths attributable to cigarette	Direct cost of treatment (R\$ million)	Total cost (R\$ million) ^d	Mean direct cost of treatment equivalent to one death (R\$ million)			
Ischemic heart diseases	7,564	na	na	21,728	3,754	11,716	na	na	na	na
Stroke	4,950	na	na	9,513	12,915	21,850	na	na	na	na
COPD	2,602	na	na	40,567	14,974	34,972	na	na	na	na
Lung Cancer	2,216	na	na	26,583	38,88	9,752	na	na	na	na
Total	17,332	2,709	0.156	98,391	35,531	78,290	0.361	0.796	2.314	5.103

Captions: na = not applicable; COPD = chronic obstructive pulmonary disease; ^a = individuals aged 35 years or older; ^b = distribution of relative risks (RR) adjusted by age and fractions attributable to tobacco use (FAT) for selected diseases per sex: men, RR smokers, RR ex-smokers and FAT: lung cancer (ICD-10 C33-C34) (22.8/5,9/83.5); COPD (ICD-10 J40-J44) (32.2/9,0/88.3); CVD (ICD-10 I60-I69) (1.8/1.2/16.2); ischemic heart diseases (ICD-10 I20-I25) (2.7/1.7/33.3); women, RR smokers, RR ex-smokers and FAT: lung cancer (ICD-10 C33-C34) (19.6/5,0/76,0); COPD (ICD-10 J40-J44) (23.4/7,7/81.4); CVD (ICD-10 I60-I69) (2.0/1,1/11.4); ischemic heart diseases (ICD-10 I20-I25) (2.3/1,4/20.0); ^c = gross profit = production of cigarettes * (mean price-(production costs + distribution costs + specific tax rate + mean price* *ad valorem* rate + mean price*margin retailer profit)); ^d = total cost = direct costs of medical care, indirect due to loss of productivity by premature death, impairment and loss of productivity of informal caretaker attributable to tobacco use.



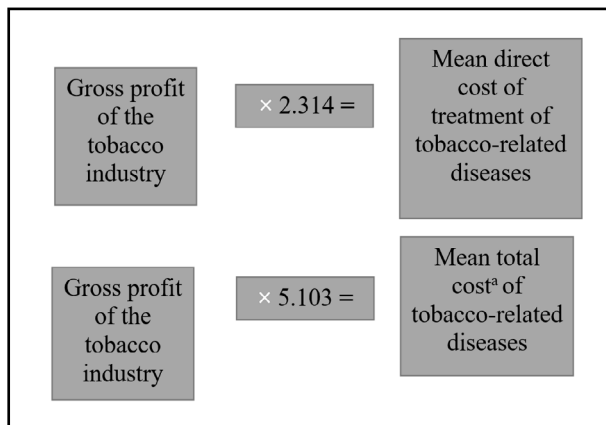


Figure 1. “Disproportion” between gross profit earned by tobacco industry and treatment expenses in Brazil

Caption: (a) = Mean total costs – direct medical costs, indirect cost due to loss of productivity by early death, impairment and loss of productivity of the informal caretaker attributable to smoking.

and 2019 (2.314), both revealing a great negative impact for the Brazilian society.

While estimating the equivalence between the profit earned with the sale of legally registered cigarettes brands in the country and the cost of selected deaths associated with legal cigarettes smokers, it was not possible to consider the impact of the treatment of current users of illegal cigarette brands on the Brazilian health system that accounts for 40% of the smoker population²³. Unfortunately, there are no publicly available information on the extent of what the legal tobacco industry spends with marketing actions and/or interference on PNCT.

CONCLUSION

To measure the impact of direct and indirect costs of the sale of tobacco products that fall upon the Brazilian society is important to pursue accountability and financial compensation. While associating current and future deaths with tobacco industry earned profits, these findings can also help to increase the moral pressure over individuals and institutions, helping Brazil to stop the tobacco industry interference on health policies.

CONTRIBUTIONS

All the authors contributed substantially to the study design, acquisition, analysis and interpretation of the data, writing and critical review. They approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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