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Towards a Healthy and Sustainable Economy: The Impact of Tobacco Taxes on Social Equity and Public Health in Mexico

Hacia una economía saludable y sostenible: el impacto de los impuestos al tabaco en la equidad social y la salud pública en México

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ABSTRACT

Context. This review analyzes recent studies (2019–2024) on the persistent public health crisis caused by smoking, especially in low- and middle-income countries such as Mexico, where poverty exacerbates its impact. Current health effects are examined according to the use of tax revenues, the impact of updating taxes with inflation, cessation rates, and variation in consumption with new socioeconomic evidence.

Problem. Tobacco use in Mexico remains inelastic, perpetuating health and economic burdens for low-income families and increased consumption among the wealthiest. This generates secondary poverty, where incomes fall below the poverty line after spending on tobacco.

Purpose. This study seeks to promote greater equity and sustainability in the country's public health system, providing evidence based on a multidisciplinary and innovative approach to strengthen fiscal policies on tobacco.

Methodology. Our primary objective was to analyze the effectiveness and implications of tobacco taxation policies between 2019 and 2024 due to fiscal policy changes in the current government. We conducted the literature search through PubMed, utilizing **VosViewer** software.

Theoretical and Practical Findings. In the theoretical field, it combines health economics, behavioral economics, and fiscal policy to analyze tax equity and impact on health. In practice, it provides evidence to design taxes that reduce consumption, increase incomes and improve public health, aligning with Sustainable Development Goals (SDGs) **3** (Good health and well-being) and **10** (Reduced inequalities).

Originality based on a multidisciplinary approach that promotes innovation for sustainable development. This work integrates health economics, behavioral economics, and fiscal policy, aligning with the guidelines of the Oslo Handbook on innovation in public policy. The combination of these approaches allows for a more comprehensive assessment of the economic and social impact of tobacco taxes, offering new tools for the formulation of effective and sustainable public policies.

Conclusions and limitations. This literature review provides a timely update for decision-making studies and offers relevant insights for academia and policymakers. The COVID-19 health crisis deprioritized the treatment of tobacco-related illnesses like lung cancer and acute myocardial infarction, among fifty other diseases, potentially affecting data from 2020–2021.

RESUMEN

Contexto. Esta revisión analiza estudios recientes (2019-2024) sobre la persistente crisis de salud pública causada por el tabaquismo, especialmente en países de ingresos bajos y medianos como México, donde la pobreza exacerba su impacto. Se examinan los efectos actuales sobre la salud según el uso de los ingresos fiscales, el impacto de la actualización de los impuestos con la inflación, las tasas de abandono y la variación del consumo con nueva evidencia socioeconómica.

Problema. El consumo de tabaco en México sigue siendo inelástico, perpetuando cargas sanitarias y económicas para familias de bajos ingresos y un mayor consumo entre los más ricos. Esto genera pobreza secundaria, donde los ingresos caen por debajo del umbral de pobreza tras el gasto en tabaco.

Objetivo. Este estudio busca promover una mayor equidad y sostenibilidad en el sistema de salud pública del país, proporcionando evidencia basada en un enfoque multidisciplinario e innovador para fortalecer las políticas fiscales sobre el tabaco.

Metodología. Nuestro objetivo principal fue analizar la efectividad y las implicaciones de las políticas fiscales al tabaco en México entre 2019 y 2024, a través de PubMed, utilizando el software **VosViewer**.

Hallazgos Teóricos y Prácticos. En el ámbito teórico, combina economía de la salud, economía del comportamiento y política fiscal para analizar la equidad tributaria e impacto en la salud. En lo práctico, proporciona evidencia para diseñar impuestos que reduzcan el consumo y mejoren la salud pública, alineándose con los **ODS 3** (Salud y bienestar) y **10** (Reducción de desigualdades).

Originalidad basada en un enfoque multidisciplinario que promueve la innovación para el desarrollo sostenible. Este trabajo integra economía de la salud, economía del comportamiento y política fiscal, alineándose con las directrices del Manual de Oslo sobre innovación en políticas públicas. La combinación de estos enfoques permite una evaluación más completa del impacto económico y social de los impuestos al tabaco, ofreciendo nuevas herramientas para la formulación de políticas públicas efectivas y sostenibles.

Conclusiones y limitaciones. Esta revisión ofrece información clave para académicos y tomadores de decisiones en el desarrollo de políticas eficaces en el contexto del control del tabaco. La crisis por **COVID-19** afectó la atención de enfermedades relacionadas con el tabaco, influyendo en los datos de 2020-2021.

1. INTRODUCTION

Due to the excess demand for services caused by smoking-related sicknesses and mortality, smoking is a major global driver of economic inequality in the public health sector. This inequality results in significantly differing lifespans based on social class.

For the Ministry of Health in Mexico, medical expenses related to tobacco consumption generated a direct cost of \$5.66 billion USD, a large increase compared to the expenditure of 3.9 billion USD in 2020. In addition, about 51,000 Mexicans die each year from diseases related to smoking (Gómez et al., 2020).

A significant portion of Mexico's population lives in poverty, with wealth concentrated in the hands of a few. Most Mexican families struggle to make ends meet, lacking sufficient income to cover essential needs such as education, healthcare, and housing. According to the National Occupation and Employment Survey (**ENOE**), in Mexico in 2022, 46.5% of the working population only earned one minimum wage, which monthly was the equivalent of only \$371 USD, in contrast, with the 1% of the population in Mexico with five or more minimum wages (ENOE, 2023).

The Evaluation of Social Development Policy (**CONEVAL**) reported in 2022 that 36% of people in Mexico had at least one social deprivation and had an insufficient monthly income to purchase necessary services (CONEVAL, 2023). From 2018 to 2022, the population without access to medical services increased from 16.2% to 28.2% (CONEVAL, 2023). It is also important to consider that being affiliated with healthcare services does not ensure effective access to care. In 2022, the National Institute of Public Health (**INSP**) reported that 24.6% of the population had health requirements, and only 44% received health care in public services due to deficiencies (Bautista-Arredondo et al., 2023). According to **CONEVAL**, the highest percentage of the population requiring medical services are the ones with the lowest incomes (CONEVAL, 2023).

Low-income populations spend an average of \$528.45 USD quarterly on cigarettes and 13.45% of their income is spent on treatments related to smoking, in contrast to only 5.26% for higher-income households (Macías Sánchez & García Gómez, 2023). In these cases, it is crucial to study consumer behavior, a concept that primarily examines how consumers, including families and households, make decisions regarding the allocation of their available resources, such as time, money, and effort, on items related to consumption (Hernández-Islas et al., 2024).

With the increase in tobacco taxes in Mexico in 2011, studies have emerged showing that the consumption of tobacco cigarettes decreased, but the fall ceased. However, it was not until 2020 that the Special Taxes on Production and Services (**IEPS**) was changed by adjusting its specific component, and it will increase according to inflation every year; this change implies that the proportion of total taxes raised to 70% as a percentage of the sale price currently, including Value Added Taxes (**VAT**) (DOF, 2022).

Therefore, this review attempts to compile information from the most recent publications about tobacco consumption and how it is affected by the increase in the price of this harmful product. It also provides information on whether this benefits Mexico's poorest population.

2. CONTEXT DESCRIPTION

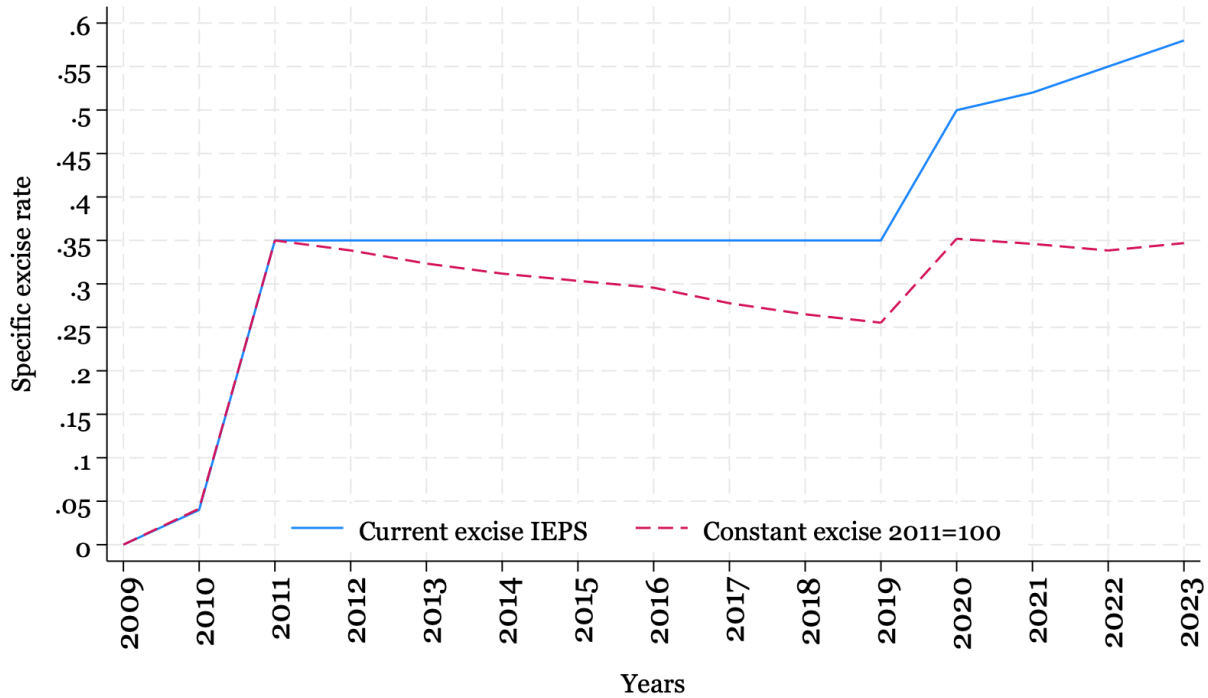
The purpose of this review is to analyze published studies on the impact of tobacco taxation on economically vulnerable populations in Mexico and to examine tax policy proposals related to health that could contribute to achieving **SDG3** (Good health and well-being) and **SDG10** (Reduced inequalities), ultimately fostering greater equity and sustainability in Mexico's public health system.

One of the most important characteristics of this review is that a new amendment in the tax law did not propose an **IEPS** tax update on tobacco products until 2020. This year, the Economic Package modified the specific component of the tax by cumulative inflation from the 2011–2019 period but kept the ad valorem component unaltered (García, 2020). In Mexico, tobacco products are taxed by 3 different types of taxes: **VAT**, the import tax, and the excise-specific tax on **IEPS**.

The **VAT** rate on tobacco is 16% of the consumer sales price (DOF, 2021). According to the general import and export law, smoking in Mexico is subject to an import tax of 67%; in 2011, the **IEPS** established a rate of 160% on the production value and a specific tax of 0.35 Mexican pesos for each cigarette (equivalent to 7 Mexican pesos or .35 USD per pack with 20 cigarettes). In 2020, the particular component was modified from 0.35 to 0.4944 Mexican pesos per cigarette due to an update by inflation of its value over time. This change implies that the proportion of total taxes will increase to 70% as a percentage of the sale price of a pack (Huesca et al., 2020) currently, this tax has a value of 0.6166 Mexican pesos (DOF, 2023); however, as shown in **Graph 1**, when the specific **IEPS** was implemented in 2011, it was \$0.35 Mexican pesos, and it was maintained at the

same level from 2011 to 2019; therefore, fiscal policy was not updated in real terms. It can also be seen that between 2020 and 2023, the adjustment for inflation applied on this tax component barely compensated for the level it had for 9 years without having changed in real terms, which calls for a real fiscal policy adjustment that adequately would increase its rate.

Graph 1. Specific excise cigarette tax: Current vs. constant 2011-2023 (2011=100)



Source: own elaboration

In 2021, a study of particular relevance was published, *"Impact of Tobacco Taxes on the Poverty Rate in Mexico."* The analysis reveals that the implementation of an increase in tobacco taxes near the limit established by the **World Health Organization (WHO)** could raise the poverty rate in these tobacco consumers' households by approximately 2.6 percentage points. This finding is important as it highlights the deleterious effect of tax policy on tobacco on certain sectors of the population, where spending on tobacco products competes directly with other essential goods (Huesca et al., 2021). The authors offer a solution to compensate for the tax share paid by low-income tobacco consumers by receiving a subsidy to counteract their crowding out in necessary goods. Specifically, this adverse effect on the poverty rate could be completely neutralized if

subsidies were implemented on the prices of basic foodstuffs, thus allowing lower-income households to offset their expenditures without compromising their general well-being. This recommendation points to a comprehensive fiscal public policy strategy that, in addition to reducing tobacco consumption through higher taxes, would increase revenues and offer support measures that protect the food security of vulnerable households (Huesca et al., 2021).

This information leads us to the research question that guides this study: What is the impact of tobacco taxes on Mexican families? The research hypothesis posits that a substantial increase in tobacco taxes—leading to at least a 34% rise in tobacco product prices—would reduce smoking prevalence, generate public revenue, and improve health outcomes without disproportionately impacting low-income consumers. This aligns directly with **SDG 3 (Good Health and Well-being)** by promoting disease prevention and reducing the burden of tobacco-related illnesses, ultimately strengthening public health systems. Simultaneously, it supports **SDG 10 (Reduced Inequalities)** by ensuring that tax policies do not exacerbate economic disparities, but rather contribute to social equity through targeted fiscal and health interventions.

3. LITERATURE REVIEW

This chapter explores the **SDGs** to which this study contributes **SDG3** (Good health and well-being) and **SDG10** (Reduced inequalities), highlighting how effective tobacco tax management can foster greater social equity in Mexico, particularly in the realm of public health. One of Mexico's most pressing challenges is economic inequality, a significant portion of the population has experienced poverty, while wealth remains concentrated among a small elite. Many families struggle to afford essential services such as education, healthcare, and housing. Therefore, it is crucial to implement equitable public policies that bridge social disparities and promote a sustainable and inclusive economy.

3.1. ODS 3: Good health and well-being

Sustainable Development Goal (**SDG**)3, entitled "*Good health and well-being*", has among its goals to "*Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries*"(UNDP, n.d.-a). This convention is a fundamental instrument in the fight against smoking, as it establishes measures to reduce both tobacco consumption and

exposure to second-hand smoke, thus contributing to the improvement of public health at a global level.

One of the most effective strategies to reduce tobacco consumption is to increase taxes on these products. Studies have shown that increases in tobacco prices discourage tobacco purchase, especially among young people and lower-income groups, who tend to be more sensitive to price changes. Reducing tobacco consumption has a positive impact on reducing noncommunicable diseases such as cancer, cardiovascular disease, and chronic respiratory diseases, which in turn eases the burden on health systems and reduces the costs associated with treating these conditions.

3.2.ODS 10: Reduced inequalities

Sustainable Development Goal (SDG)10, entitled "*Reduced inequalities*", seeks to promote equity within and between countries, ensuring that all people, regardless of their socioeconomic status, have access to fair opportunities. Among its main goals is to "*Adopt policies, especially fiscal, wage and social protection, and progressively achieve greater equality*" (UNDP, n.d.-b) . Tobacco use is closely linked to socioeconomic inequalities, as its financial impact can be disproportionate for lower-income households. The costs of purchasing tobacco products reduce the ability of families to meet basic needs such as food, education, and medical care, thus perpetuating cycles of poverty and social vulnerability.

Although increasing taxes on tobacco is an effective measure to reduce tobacco consumption, it can also generate adverse effects on the most vulnerable sectors, since these households allocate a greater proportion of their income to this product. To mitigate these impacts, studies indicate that the implementation of compensatory policies, such as economic support programs, access to free treatment for smoking cessation, and educational campaigns aimed at the most affected groups, is crucial.

3.3.The design of the final instrument

We undertook a literature review encompassing studies that explored various aspects of tobacco control measures implemented in Mexico. Our primary focus was to examine the effectiveness and implications of tobacco product taxation from 2019 to 2024. This review involved a meticulous analysis of multiple studies encompassing diverse methodologies and

outcomes related to tobacco control efforts within the Mexican context. The statistical program **STATA 18** was used to make graphical representations of the data obtained.

4. METHODOLOGY

This section outlines the methodology used to select the publications analyzed in this document, as well as the connections between different authors. Following the collection and synthesis of data, we critically evaluated the findings to assess these measures' overall impact and effectiveness. This included a comparative analysis of results from different studies, aiming to provide a consolidated perspective on the outcomes of tobacco taxation policies in Mexico.

4.1. Inclusion-exclusion criteria phase, databases, and keywords

For the included publications, the following research criteria were considered:

- Source: database PubMed.
- Area: Social and economic.
- Publication year: 2019-2024.
- Context: The article should refer to the impact of tobacco taxes on different percentiles of the Mexican population.

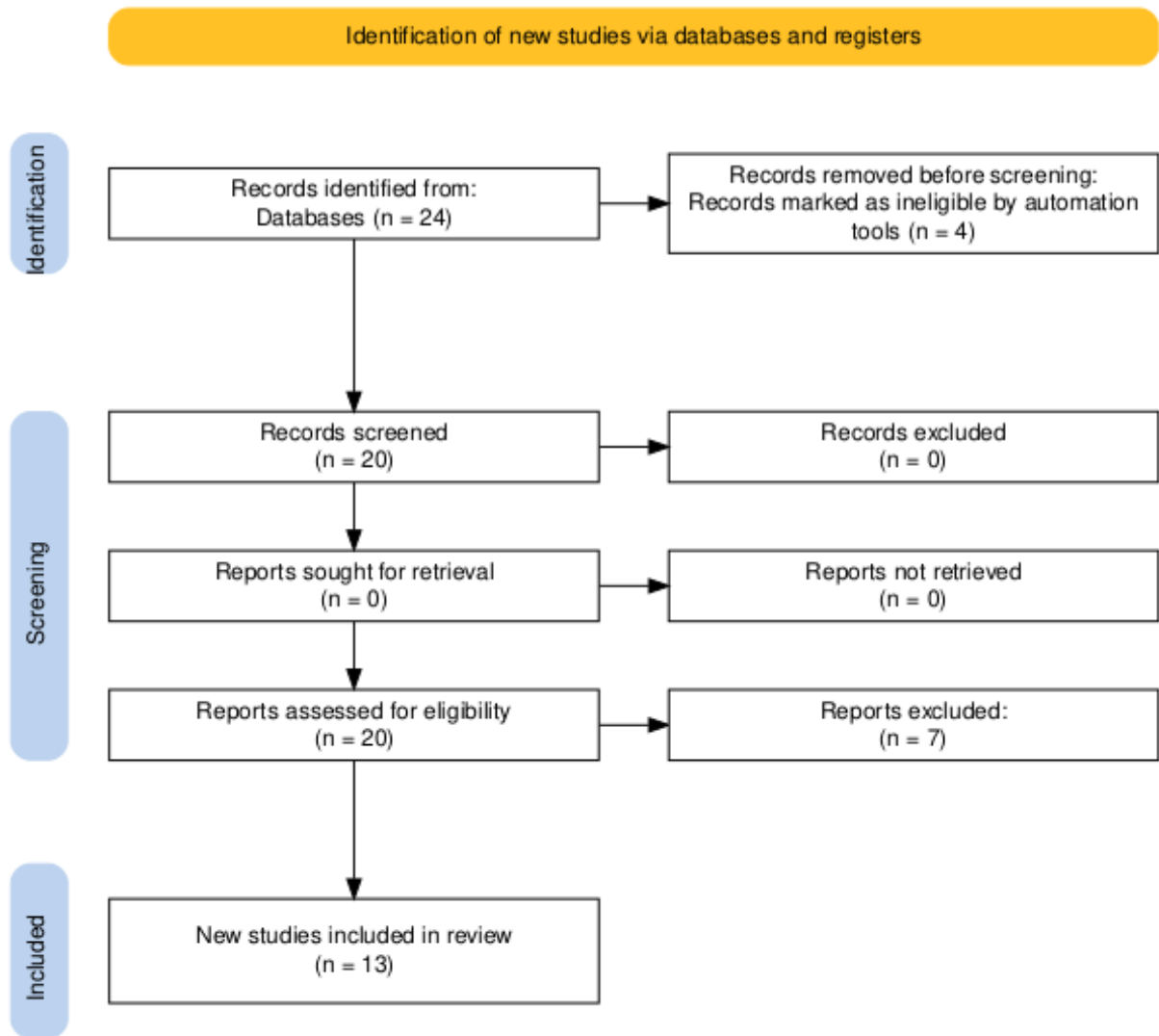
The reviewers implemented a systematic approach by defining key concepts pertinent to tobacco taxation in Mexico, as shown in **Table 1**, these concepts were the foundation for initiating comprehensive searches across scientific databases such as PubMed.

Table 1. Key Concepts

English Key Concepts for Research	Spanish Key Concepts for Research
<i>"Tobacco taxes" and "low-income"</i>	<i>"Impuestos al tabaco en México"</i>
<i>"Tobacco fiscal policy" and "Low income"</i>	<i>"Impuestos saludables en México"</i>
<i>"Tobacco taxation" and "low-income"</i>	
<i>"Tobacco taxes" and "well-being"</i>	
<i>"Tobacco fiscal policy" and "well-being"</i>	
<i>"Tobacco taxation" and "well-being"</i>	

As shown in **Figure 1**, the publication selection process began with twenty-four documents identified during the initial search phase. These documents were gathered using predefined inclusion criteria aimed at capturing relevant literature on the economic and social impact of tobacco taxation in Mexico.

Figure 1. PRISMA Flow Diagram



Own elaboration utilizing **PRISMA** Flow Diagram tool (Haddaway et al., 2022).

However, upon preliminary evaluation, four publications were immediately discarded, as their titles indicated that they focused on the issue of smoking in countries other than Mexico. Since the scope of this research is limited to the national context, these studies were deemed irrelevant, reducing the sample to twenty publications.

Subsequently, these **twenty** remaining documents underwent a more rigorous and detailed review to assess their alignment with the research objectives. During this phase, seven additional publications were excluded after a thorough examination of their content, as they did not specifically address the effects of tobacco taxation in Mexico. These studies either focused on broader public health policies, explored tobacco consumption trends without a direct link to fiscal measures, or analyzed taxation in a comparative international context without providing country-specific insights.

Ultimately, the final selection consisted of **thirteen publications** that met all predefined criteria, including the requirement of temporal relevance, as they were published between 2019 and 2024. These studies specifically analyze the impact of tax policies on tobacco within Mexico from both economic and social perspectives, providing valuable and up to date insights into the effectiveness of fiscal interventions in controlling tobacco consumption.

The **VOSviewer 1.6.20** software was employed to ensure a systematic and structured interpretation of these thirteen studies. This specialized tool facilitates the construction and visualization of bibliometric maps, enabling an in-depth analysis of relationships between selected publications, the identification of key research clusters, and the detection of emerging trends in the field. By leveraging this bibliometric approach, the study enhances the reliability of its findings, ensuring that the analysis is grounded in a comprehensive and methodologically robust literature review.

Table 2 summarizes the main characteristics of **thirteen key publications** included in this review on tobacco taxes and their impact in Mexico between 2019 and 2024. Each study is categorized according to the title, authors, source of publication, year of publication, number of citations, and the main methodology used.

The studies are grouped into different methodological approaches: quantitative (7 studies), qualitative (1 study), case studies (3 studies), and simulations (2 studies). Topics addressed include fiscal progressivity, tobacco industry pricing strategies, cost-benefit analysis of fiscal policies, as

well as redistributive effects on vulnerable populations. Among the featured articles, the most cited include *"The Health and Economic Burden of Smoking in 12 Latin American Countries and the Potential Effect of Increased Tobacco Taxes"* and *"Smoking Trends in Mexico, 2002-2016: Before and After the Ratification of the WHO Framework Convention on Tobacco Control."*

Table 2. Bibliometric Review 2019-2024

No.	Title	Authors	Journal/Book	Publication Year	Cited by	Study
1	Progress and challenges in tobacco control policies in Mexico, 2003-2017: an approach using the Tobacco Control Scale DOI: 10.1057/s41271-022-00359-5	Ponce-Hernandez DJ, Sordo L, Reynales-Shigematsu LM, Regidor-Poyatos E, Henares-Montiel J, Calderón-Villarreal A.	J Public Health Policy	2022	3	CS
2	Tobacco industry in Mexico: a general equilibrium analysis DOI: 10.1136/tobaccocontrol-2021-056864	Huesca L, Llamas L, Sobarzo H.	Tob Control	2022	3	QT
3	The impact of tobacco tax reforms on poverty in Mexico DOI: 10.1007/s43546-021-00141-x	Huesca L, Araar A, Llamas L, Lacroix G.	SN Bus Econ	2021	5	QT
4	Crowding out and impoverishing effect of tobacco in Mexico DOI: 10.1136/tc-2022-057791	Macías Sánchez A, García Gómez A.	Tob Control	2024	5	QT
5	The Challenges of Tobacco Fiscal Policy Implementation in Mexico From the Perspective of Key Actors. DOI: 10.1093/ntr/ntad188	Théodore FL, González-Ángeles LR, Reynales-Shigematsu LM, Saenz-de-Miera B, Antonio-Ochoa E, Llorente B.	Nicotine Tob Res	2024	2	QL
6	The distributional effects of tobacco tax increases across regions in Mexico: an extended cost-effectiveness analysis.	Saenz-de-Miera B, Wu DC, Essue BM, Maldonado N, Jha P, Reynales-Shigematsu LM.	Int J Equity Health	2022	9	QT

	DOI: 10.1186/s12939-021-01603-2					
7	Tobacco industry pricing strategies during recent tax adjustments in Mexico: evidence from sales data. DOI: 10.1136/tc-2024-058711	Saenz-de-Miera B, Welding K, Tseng TY, Grilo G, Cohen JE.	Tob Control	2024	1	QT
8	Unlocking the power of tobacco taxation to mitigate the social costs of smoking in Mexico: a microsimulation model. DOI: 10.1093/heapol/czae068	Saenz-de-Miera B, Reynales-Shigematsu LM, Palacios A, Bardach A, Casarini A, Espinola N, Cairoli FR, Alcaraz A, Augustovski F, Pichon-Riviere A.	Health Policy Plan	2024	0	QT
9	Smoking trends in Mexico, 2002-2016: before and after the ratification of the WHO's Framework Convention on Tobacco Control. DOI: 10.1136/tobaccocontrol-2019-055153	Zavala-Arciniega L, Reynales-Shigematsu LM, Levy DT, Lau YK, Meza R, Gutiérrez-Torres DS, Arillo-Santillán E, Fleischer NL, Thrasher J.	Tob Control	2020	40	QT
10	Recent evidence on the illicit cigarette trade in Latin America. DOI: 10.26633/RPSP.2022.111	Drope J, Rodriguez-Iglesias G, Stoklosa M, Szklo A.	Rev Panam Salud Publica	2022	1	CS
11	Measuring the illicit cigarette market in Mexico: a cross validation of two methodologies. DOI: 10.1136/tobaccocontrol-2019-055449	Saenz de Miera Juarez B, Reynales-Shigematsu LM, Stoklosa M, Welding K, Drope J.	Tob Control	2021	22	CS
12	Health, economic and social burden of tobacco in Latin America and the expected gains of fully implementing taxes, plain packaging, advertising bans and smoke-free environments control measures: a modelling study. DOI: 10.1136/tc-2022-057618	Pichon-Riviere A, Bardach A, Rodríguez Cairoli F, Casarini A, Espinola N, Perelli L, Reynales-Shigematsu LM, Llorente B, Pinto M, Saenz De Miera Juárez B, Villacres T, Peña Torres E, Amador N, Loza C, Castillo-Riquelme M, Roberti J, Augustovski F, Alcaraz A, Palacios A.	Tob Control	2024	12	SM

13	The health and economic burden of smoking in 12 Latin American countries and the potential effect of increasing tobacco taxes: an economic modelling study. DOI: 10.1016/S2214-109X(20)30311-9	Pichon-Riviere A, Alcaraz A, Palacios A, Rodríguez B, Reynales-Shigematsu LM, Pinto M, Castillo-Riquelme M, Peña Torres E, Osorio DI, Huayanay L, Loza Munarriz C, de Miera-Juárez BS, Gallegos-Rivero V, De La Puente C, Del Pilar Navia-Bueno M, Caporale J, Roberti J, Virgilio SA, Augustovski F, Bardach A.	Lancet Glob Health	2020	54	SM
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Source: own elaboration

Note: **CS.** Case Study; **QT.** Quantitative; **QL.** Qualitative; **SM.** Simulations

This table provides a comprehensive view of the state of research in the field, evidencing an increase in recent academic production and its emphasis on interdisciplinary methodologies to evaluate the impacts of fiscal policy on tobacco.

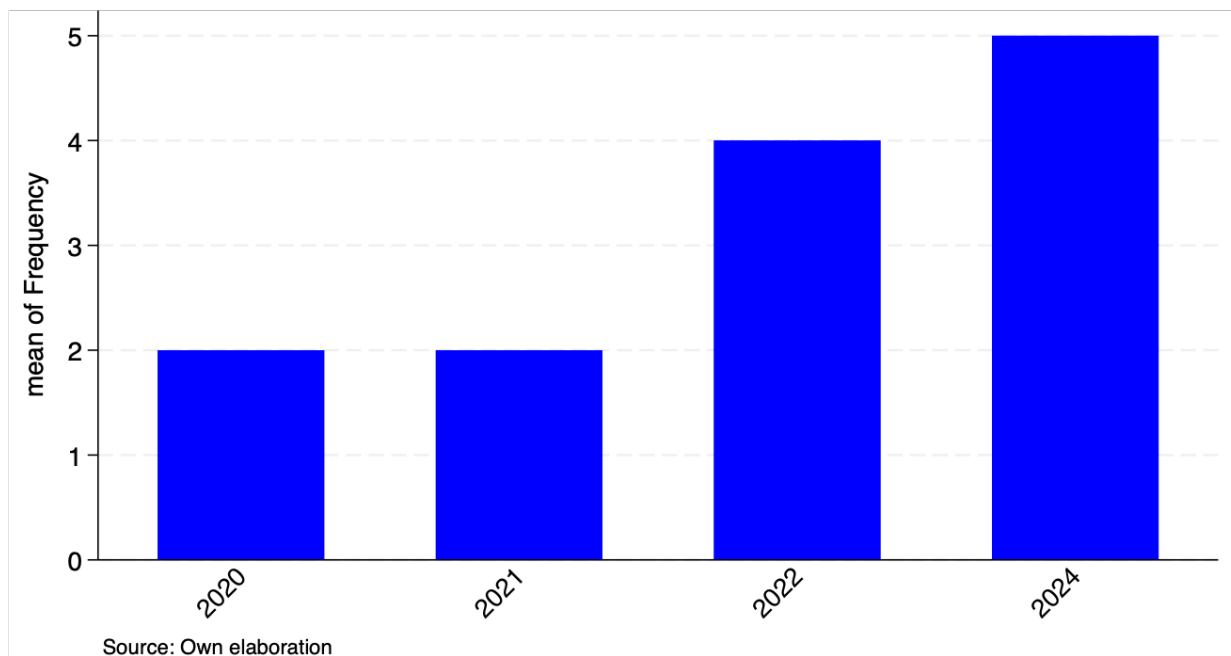
4.2. Risk of bias in studies.

Due to the **COVID-19** health crisis, treatment of tobacco-related illnesses such as lung cancer and acute myocardial infarction (**AMI**) was given a lower priority, which could have an impact on data from 2020–2021. Furthermore, there were differences in priorities, inadequate resources, and unclear duties for each state regarding healthcare spending.

5. RESULTS

Once the **thirteen** publications were selected, the data underwent analysis using two different software tools to ensure a comprehensive and multidimensional interpretation. The first analysis stage was conducted using **STATA 18**, a statistical software widely used for econometric and data analysis. This program facilitated the processing and organization of quantitative information, allowing for a more precise interpretation of the data, as illustrated in **Graph 4**.

Graph 4. Number of publications from 2019 to 2024

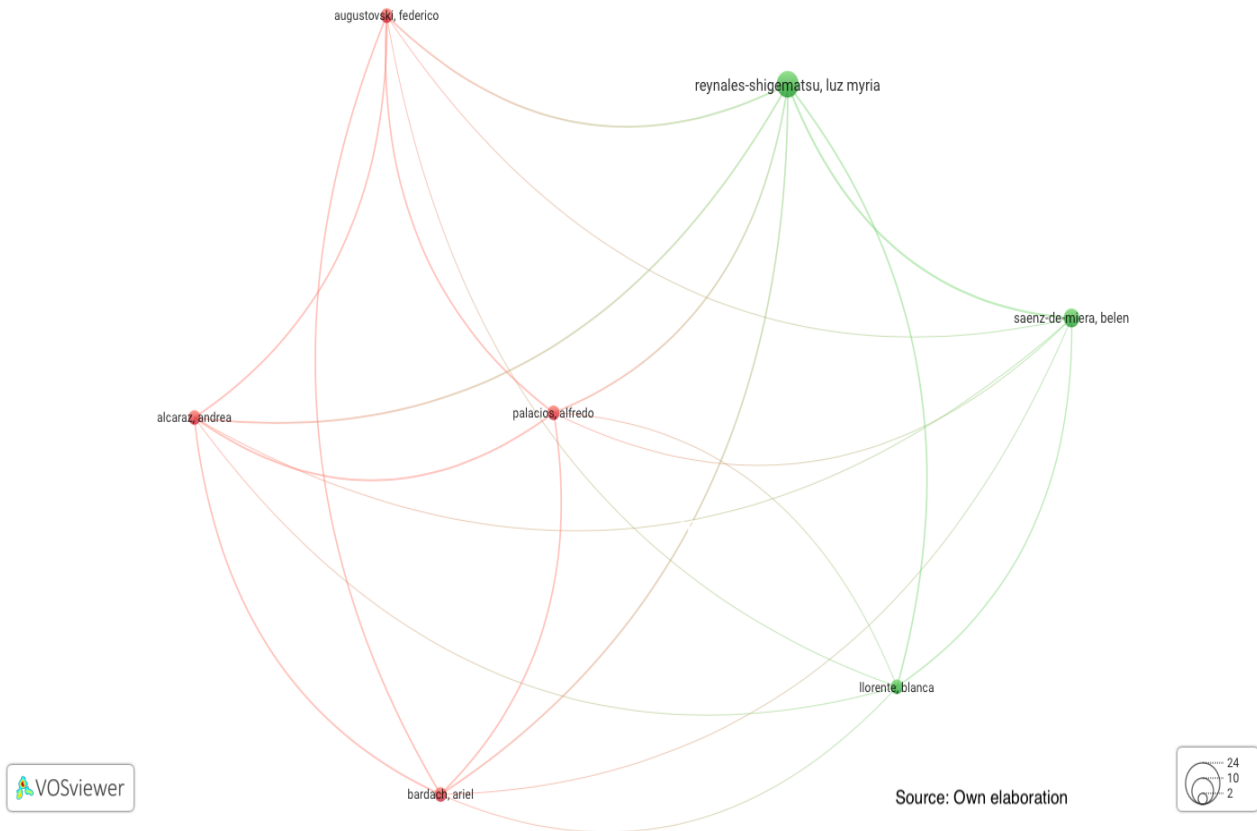


Following this initial analysis, the selected publications were further examined using **VOSviewer 1.6.20**, as illustrated on **Figure 2**, a specialized tool designed for the construction and visualization of bibliometric networks. This second stage of analysis aimed to explore the interconnections between the thirteen publications, identifying patterns, research clusters, and thematic linkages within the field.

Among the thirteen documents identified through the PubMed search, **Graph 4** shows the number of publications by year from 2019 to 2024; it was noted that no publications addressing tobacco taxes in Mexico were available for 2019. This lack of scholarly output during that year contrasts with subsequent trends. In 2020 and 2021, the research volume grew modestly, with two articles published annually. A more substantial increase was observed in 2022 and 2024, when the number of publications reached four and five articles per year, marking a significant rise in scholarly attention to the subject. This upward trend suggests an increasing recognition of the importance of tobacco taxation as a research focus, particularly in the context of its implications for public health and fiscal policy in Mexico.

As shown in **Figure 2** the bibliometric analysis conducted using **VOSviewer 1.6.20** identified two primary clusters of academic collaboration within the field.

Figure 2. VOSviewer Citation Network Visualization 2019-2024



Source: own using **VosViewer 1.6.20**

The first cluster, prominently led by Luz Myria Reynales-Shigematsu, is characterized by a strong focus on tobacco control policies in Mexico. Researchers within this network have extensively collaborated on studies examining the economic and public health implications of tobacco taxation, smoking cessation strategies, and regulatory frameworks aimed at reducing tobacco consumption in vulnerable populations.

The second cluster, centered around Federico Augustovski, appears to reflect an international or complementary perspective. This group is likely engaged in broader, cross-national research on

health economics and tobacco control, with an emphasis on comparative policy evaluations, cost-effectiveness analyses, and the socioeconomic impact of taxation measures beyond Mexico. The interconnections between these clusters suggest an exchange of knowledge between domestic and international experts, highlighting the relevance of collaborative efforts in shaping evidence-based policies.

6. DISCUSSION

After analyzing the thirteen selected publications, various perspectives and proposals emerged, all underscoring the critical role of tobacco taxation in fostering a more sustainable economy in Mexico, marked by greater social equity. To enable a structured examination of the findings, the gathered information was organized into seven key sections: tobacco taxation, the effects of secondary poverty, consumption elasticity, inequities within the healthcare system, the tobacco industry, and the theoretical and practical implications derived from this analysis. This organization facilitated a comprehensive and systematic approach to understanding the multifaceted impact of tobacco taxation on the economic and social dynamics country.

6.1 Impact of Tobacco Taxes

Between 2019 and 2024, research on tobacco control policies in Mexico and Latin America has demonstrated significant progress, though critical challenges persist. In Mexico, measures such as tax increases, smoke-free laws, and health warnings on cigarette packages have contributed to reducing smoking prevalence, reflected in the improvement of the Tobacco Control Scale score from 24/100 in 2003 to 55/100 in 2017 (Ponce-Hernandez et al., 2022). General equilibrium studies suggest that increasing tobacco taxes could decrease consumption by 26%, boost tax revenues by 49%, and create a net positive effect on national employment (Huesca et al., 2022).

6.2 Effects on Secondary Poverty

Tobacco expenditure has been linked to secondary poverty, particularly affecting low-income households, which often fall below the poverty line after accounting for tobacco-related spending, one of the key studies estimated that around 909,132 people in Mexico would be in extreme poverty due to this phenomenon (Macías Sánchez & García Gómez, 2023). Well-designed fiscal policies

could mitigate these negative effects, as higher tobacco prices through taxation yield distributional benefits favoring lower-income regions and population quintiles (Saenz-de-Miera et al., 2022).

6.3 Elasticity of Consumption

Elasticity refers to the percentage change observed in the dependent variable in response to percentage changes in the independent variable (Rebollar et al., 2022). The studies analyzed indicate that a 34% increase in the price of tobacco products could lead to a consumption reduction of as much as 36%, economic simulations show that this effect is most pronounced among the lowest income quintiles, according to economic simulations, this effect is most pronounced in the lowest income quintiles (Saenz-de-Miera et al., 2024). Studies on cigarette consumption elasticity suggest that low-income consumers who quit or reduce smoking due to price increases experience substantial savings, improving their financial stability and mitigating secondary poverty (Théodore et al., 2024).

6.4 Health Inequalities

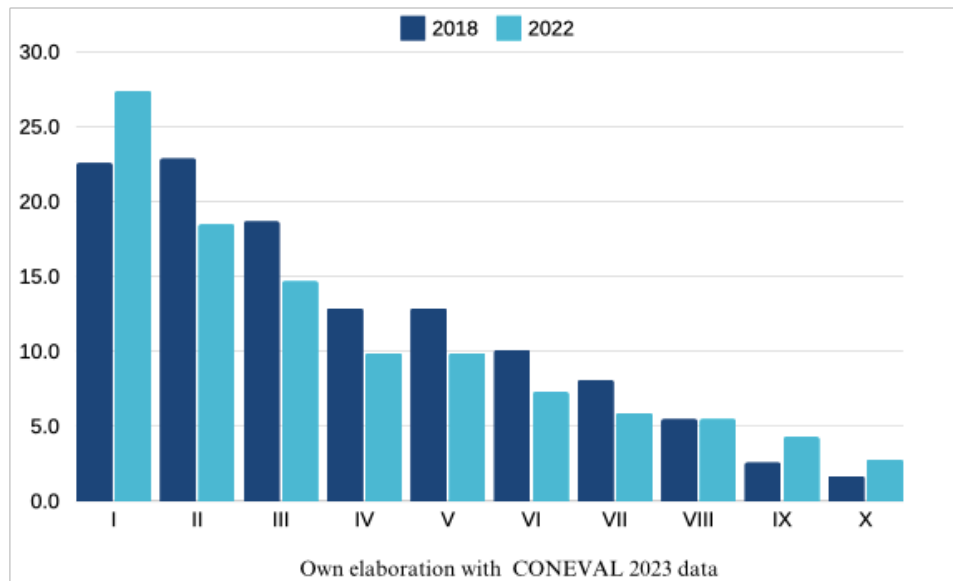
Graph 5 illustrates the proportion of the population lacking access to medical services in Mexico, disaggregated by income deciles for 2018 and 2022 (CONEVAL, 2023). The findings show an overall decline in the percentage of individuals without medical coverage across most income deciles, reflecting improvements in healthcare accessibility. The lowest-income deciles (I, II, and III) showed the highest levels of deprivation, with decile I exceeding 25% in 2018, decreasing significantly by 2022, yet remaining the most affected. In contrast, the highest-income deciles (IX and X) consistently exhibited the lowest levels of deprivation, close to 5%, with minimal variation between years. Despite the observed progress, these results highlight persistent inequalities in healthcare access, particularly among low-income households.

In 2020, Mexico's health expenditure on treating tobacco-related diseases for populations not covered by social security institutions reached approximately 48.223 billion Mexican pesos (around 2.76 billion USD). This amount was 19 times greater than the budget allocated for the prevention and treatment of smoking-related illnesses.

It even exceeded the total revenue generated by the tobacco excise tax (IEPS), which was estimated at 46 billion Mexican pesos (approximately 2.63 billion USD) (Gómez et al., 2020). The

COVID-19 pandemic intensified the spread of non-communicable diseases, so it is essential to prevent harmful consumption habits (Guimond-Ramos et al., 2023).

Graph 5. The percentage of the population with a lack of medical service



6.5 Tobacco industry

The tobacco industry employs strategies such as gradual price adjustments and market segmentation to reduce the impact of tax increases, emphasizing the need for stronger regulatory measures (Saenz-de-Miera et al., 2024). Other barriers, including a lack of political will and industry interference, hinder the full implementation of the WHO Framework Convention on Tobacco Control (Saenz-de-Miera et al., 2022).

Tobacco consumption exacerbates poverty among the most vulnerable, diverting household spending from essential goods like food and healthcare to cigarettes, thereby reducing families' ability to address medical expenses and increasing the risk of premature death for breadwinners (Ponce-Hernandez et al., 2022). The tobacco industry has perpetuated the false claim that higher tobacco taxes disproportionately harm low-income families by forcing them to spend a larger share of their income on cigarettes or resort to the black market. For instance, after the 2011 tobacco tax

hike in Mexico, industry representatives frequently cited unsubstantiated claims that the illicit cigarette trade accounted for 17% of the total market; However, independent surveys from that period showed that the actual share of illicit trade was less than 5% (Drope et al., 2024).

These findings highlight tobacco taxation's crucial role in promoting a more sustainable and equitable economy in Mexico. This aligns directly with **SDG 3 (Good Health and Well-being)** by emphasizing the public health benefits of reducing tobacco consumption and alleviating the strain on healthcare systems. Higher tobacco taxes have been shown to lower smoking prevalence, decrease tobacco-related diseases, and ultimately improve overall health outcomes, reinforcing the broader goal of disease prevention and health equity. Additionally, the discussion ties into **SDG 10 (Reduced Inequalities)** by addressing the socioeconomic dimensions of tobacco taxation. The analysis of secondary poverty, consumption elasticity, and healthcare inequities underscores how taxation policies can be designed to avoid disproportionately burdening low-income populations while generating public revenue for social programs.

6.6 Theoretical implications (*Scientia*)

The study innovates in the design of fiscal policies for tobacco control, offering a scientific basis for equitable and sustainable tax reforms. Its multidisciplinary and evidence-based approach supports the formulation of public policies aligned with the principles of sustainable development, ensuring a positive impact on both public health and economic equity.

The theoretical analysis of the 13 publications highlights the relevance of addressing the problem of tobacco addiction from an economic perspective. This is not only a matter of public health but also represents a significant impact on the economic situation, not only of tobacco users but also of their families, especially in those households living in conditions of multidimensional poverty (Macías Sánchez & García Gómez, 2023).

In Mexico, both the prevalence of smoking and the tax burden have remained stable for more than a decade, limiting progress in controlling this problem. Therefore, it is imperative to carry out economic studies that not only reflect the current panorama but also, through simulation models, evaluate how the increase in the prices of tobacco products can reduce consumption and significantly benefit public health in the country (Saenz-de-Miera, Welding, et al., 2024).

Evidence derived from simulation models underscores the effectiveness of tax increases in reducing premature deaths attributable to smoking, increasing tax revenue, and reducing direct health costs and indirect productivity losses associated with tobacco use. In addition, the essential role that these tax increases play in mitigating the economic and health burdens derived from smoking is highlighted (Saenz-de-Miera, Reynales-Shigematsu, et al., 2024).

From the perspective of **SDG 3**, the research emphasizes how fiscal policies can serve as powerful tools for public health by reducing smoking prevalence and its associated disease burden. The analysis of tobacco taxation highlights its potential to decrease premature deaths, alleviate healthcare costs, and improve overall population health, particularly through evidence-based simulation models. By demonstrating that tax increases can lead to significant reductions in tobacco-related illnesses and healthcare expenditures, the study reinforces the importance of integrating economic strategies into public health policy.

At the same time, the study aligns with **SDG 10** by addressing the economic inequalities linked to tobacco consumption. It underscores that smoking is not just a public health issue but also a socioeconomic challenge, particularly for households living in multidimensional poverty. The research highlights how tobacco use disproportionately affects vulnerable populations by diverting financial resources away from essential needs such as food, education, and healthcare.

Furthermore, it points to the stagnation of tobacco taxation in Mexico over the past decade, emphasizing the need for fiscal reforms that do not disproportionately burden low-income consumers but instead promote equity through well-designed tax policies and compensatory measures.

By incorporating an interdisciplinary approach and leveraging economic simulations, the study provides a robust framework for developing fiscal policies that advance both public health and economic justice, thereby contributing to the broader goals of sustainable development in Mexico.

6.7 Practical implications (*Praxis*)

Although Mexico has improvements in tobacco control, they have been piecemeal, but those that perform better in cessation are related to increasing tobacco taxes. Unfortunately, Mexico has not accomplished the **WHO** mandated recommendations on tobacco control to reach a total tax share above 75% of the final price to achieve benefits to a greater extent, the special tax would

need to increase to \$1.15 Mexican pesos per cigarette, or at least three times as high as recommended by the international community, to accomplish the *Sustainable Development Goals*.

This would increase costs to over \$110 Mexican pesos a pack in 2022, resulting in a 36% decrease in overall consumption. As this fiscal reform states, increasing tobacco prices will benefit low-income households. When the price of cigarettes exceeds \$80 Mexican pesos (around 4.57 USD), more people with lower incomes will decide to quit (Huesca et al., 2022).

This study contributes to innovation for sustainable development by proposing innovative fiscal strategies that promote equity and improve public health. These strategies align with the Sustainable Development Goals (SDGs), particularly **SDG 3** (Good health and well-being) and **SDG 10** (Reduced inequalities).

7. CONCLUSION

This study provides crucial information to advance in the fulfillment of **SDG 3** and **SDG 10**, to improve the health of Mexicans, and to reduce inequalities through tobacco taxes, contributing to the fields of economics and public health by integrating health economics, behavioral economics, and fiscal policy. It develops a multidimensional framework that allows us to understand how tax structures affect health inequalities. Given the growing urgency to address tobacco use's economic and health burdens, this study is particularly relevant for academic researchers and policymakers seeking to develop and implement effective interventions.

Ultimately, these efforts promote greater equity and sustainability in Mexico's public health system. By systematically analyzing the recent literature, the review identifies key trends, knowledge gaps, and emerging areas of interest, thereby contributing to the advancement of academic discourse and the refinement of fiscal and regulatory strategies.

Furthermore, the analysis underscores the importance of data-driven policy development by highlighting sensitive and critical information that can serve as a foundation for more effective and equitable public health measures. In the context of tobacco control, where taxation, consumption patterns, and socioeconomic disparities intersect, such insights are crucial for formulating strategies that maximize health benefits while minimizing unintended economic consequences. By synthesizing the most relevant and up-to-date research, this study provides an essential framework

for stakeholders aiming to enhance tobacco control initiatives and promote sustainable public health outcomes.

7.1. How to answer the question and explain the research hypothesis

The research hypothesis aligns directly with **SDG 3** and **SDG 10** by highlighting the role of fiscal policies in promoting public health and economic equity, showing that a significant increase in tobacco taxes leading to at least a 34% rise in tobacco product prices would reduce smoking prevalence, generate public revenue, and improve health outcomes without disproportionately burdening low-income consumers (Saenz-de-Miera et al., 2024). The study also challenges the common misconception that illicit trade is a major barrier to taxation policies by presenting evidence that it accounts for less than 5% of total tobacco consumption (Drope et al., 2024).

7.2. Research findings.

Increased taxation would generate substantial government revenue, which could be allocated to improve healthcare access and fund treatment for tobacco-related diseases contributing to the goals of **SDG3**. The study also highlights that Mexico's current socioeconomic and political context is favorable for implementing these fiscal adjustments. Importantly, evidence indicates that wealthier tobacco consumers would bear a greater share of the tax burden, ensuring a more equitable outcome contributing to the goals of **SDG10** and reducing the inequalities in the country.

7.3. Research final scope.

This study provides a timely and policy-relevant literature review, offering valuable insights for both academics and policymakers to contribute to achieving **SDGs 3 and 10**. It highlights the limited scientific evidence available, with only thirteen publications between 2019 and 2024, underscoring the need for more interdisciplinary research. The implications of the study extend beyond short-term fiscal and health benefits, advocating for long-term sustainable strategies to combat tobacco use in Mexico. Future research should investigate the intersection of taxation, socioeconomic factors, and health outcomes, aiming to develop more effective and equitable tobacco control policies, as well as a stronger focus on meeting the **SDGs** to ensure a better future.

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