



NATIONAL CANCER INSTITUTE

NCI TOBACCO CONTROL
MONOGRAPH SERIES

21

The Economics of Tobacco and Tobacco Control

IN COLLABORATION WITH
WORLD HEALTH ORGANIZATION

Executive Summary

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NCI Tobacco Control Monographs

To cite this monograph in other works, please use the following format:

U.S. National Cancer Institute and World Health Organization. *The Economics of Tobacco and Tobacco Control*. National Cancer Institute Tobacco Control Monograph 21. NIH Publication No. 16-CA-8029A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; and Geneva, CH: World Health Organization; 2016.

This monograph and its supplemental materials may be found electronically at <http://cancercontrol.cancer.gov/brp/tcrb/monographs/21/index.html>.

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The Role of the Media in Promoting and Reducing Tobacco Use. Tobacco Control Monograph No. 19. NIH Publication No. 07-6242, August 2008.

Greater than the Sum: Systems Thinking in Tobacco Control. Tobacco Control Monograph No. 18. NIH Publication No. 06-6085, May 2007.

Evaluating ASSIST: A Blueprint for Understanding State-level Tobacco Control. Tobacco Control Monograph No. 17. NIH Publication No. 06-6058, October 2006.

Acknowledgments

This monograph and executive summary were developed by the National Cancer Institute and the World Health Organization. The monograph is the culmination of efforts of more than 60 authors, who are listed below along with the monograph's editors and editorial teams. The monograph went through an extensive peer-review process involving more than 70 reviewers, who are acknowledged in the full monograph.

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This Executive Summary is a synopsis of *The Economics of Tobacco and Tobacco Control*. It describes the monograph's purpose and organization, provides an overview of the major volume and chapter-level conclusions, and discusses research needs for each topic area. Readers are encouraged to access the full report for an in-depth synthesis of scientific evidence on the economics of global tobacco and tobacco control. Readers can find the supporting references and other documentation in the full report.

Introduction

Tobacco use remains one of the world's leading causes of preventable premature death. Today it is also a global public health issue which is increasingly seen in economic and geopolitical terms as well as in social, cultural, and biomedical contexts. These factors have played key roles in the current policy interventions for tobacco control worldwide, most notably the World Health Organization (WHO) Framework Convention for Tobacco Control (WHO FCTC).¹

This monograph, the 21st volume in the series of monographs on tobacco control produced by the National Cancer Institute (NCI) of the National Institutes of Health, an agency of the U.S. Department of Health and Human Services. NCI's Tobacco Control Monograph series examines the economics of global tobacco control and features the contributions of many leading researchers in the field. It examines the current research and evidence base surrounding the economics of tobacco control—including tobacco use, tobacco growing, manufacturing and trade, tobacco product taxes and prices, and tobacco control policies and other interventions to reduce tobacco use and its consequences—and the economic implications of global tobacco control efforts.

This report follows in the steps of a growing literature base on global economic issues in tobacco control. As early as 1992, the U.S. Surgeon General's report *Smoking and Health in the Americas*² included a chapter reviewing international data on the economic costs of smoking, the economics of growing and manufacturing, and the impact of tobacco taxes. This was followed by the 1999 World Bank publication *Curbing the Epidemic: Governments and the Economics of Tobacco Control*³ and the companion volume, *Tobacco Control in Developing Countries*,⁴ which contained the background papers produced for the World Bank report.

Why is a global economics of tobacco and tobacco control monograph needed today? There are several reasons, including:

- Extensive new evidence from low- and middle-income countries (LMICs), much of it derived from research supported by international agencies
- New questions raised by emerging political, supply-side, and health concerns
- New infrastructure issues ranging from privatization to trade liberalization
- New global economic concerns about tobacco use and tobacco control.

As the study of the production, distribution, and consumption of goods and services, economics has become integral to understanding and addressing tobacco use. The history of tobacco control has its origins in direct interventions for tobacco use, such as public education and efforts to promote smoking cessation. In the 21st century, however, it is increasingly recognized that the economic and consumer

behavioral factors common to all goods are intimately involved in the process of making further reductions in global tobacco use.

Knowledge from specific subdisciplines of economics has led to new ways of controlling the use of addictive consumer goods such as tobacco. As examples: public finance theory has increased understanding of the powerful influence of excise taxation, and the mix of specific and *ad valorem* taxation; the economics of regulation supports arguments for government intervention in tobacco markets; health economics reveals how tobacco demand and cost modeling can drive policy change; labor economics helps address the employment impact of effective tobacco control policies; and consumer behavioral theories such as the rational choice model of addiction help us understand how pricing and other correlates such as warning labels and product attributes influence consumption. At a global level, international trade principles provide insight into the mechanics of licit and illicit trade in cigarettes.

Specific chapters of the monograph examine these and other areas in detail, aided by global data sources compiled by various stakeholders, such as WHO, the World Bank, the United Nations Food and Agriculture Organization, the Centers for Disease Control and Prevention (an agency of the U.S. Department of Health and Human Services), private organizations, and others.

WHO FCTC: A Framework for Action

A milestone in the implementation of evidence-based tobacco control interventions has been the entry into force of the legally binding WHO FCTC,¹ which provides a set of actions to reduce demand for, and supply of, tobacco products. The WHO FCTC, which was negotiated between 1999 and 2003¹ and entered into force as international law in February 2005,⁵ is an extraordinary public health tool. It is a trend-setting instrument in global, regional, and national tobacco control which has changed the paradigm of health promotion policies. As of November 2015, 179 countries and the European Union were Parties to the WHO FCTC.

The WHO FCTC represents the culmination of years of collaborative, multidisciplinary engagement by governments, elements of civil society, and international organizations to address the tobacco epidemic using international law. It offers a comprehensive set of affordable, evidence-based tobacco control measures that involve many sectors of society and operate in both the demand-reduction and supply-restriction areas. An international instrument for tobacco control policy interventions, the WHO FCTC reflects the gravity of the worldwide tobacco epidemic, the relative weakness of domestic regulatory agencies in most WHO Member States, and the economically driven spread of tobacco marketing strategies at the country level.^{6,7} It also reflects the collaboration needed among countries to counteract the globalization of tobacco industry promotional practices with cross-border effects. The transnational nature of the tobacco trade, including trade liberalization and foreign direct investment, tobacco marketing, and the flow of contraband, also points to the need for international regulatory strategies.

Ultimately, the WHO FCTC aims to strengthen tobacco control efforts at the country level by, among other things, facilitating ongoing information-sharing and technical assistance and by creating an international framework through which nations can address the supranational dimensions of tobacco control. A key goal of the monograph is to present the research base for countries implementing the WHO FCTC—to fill the information gap on policy-relevant issues, provide comprehensive global and

country-level evidence on the economics of tobacco control, and disseminate information that helps countries build their own tobacco control infrastructure relative to the WHO FCTC.

Preparation of The Monograph

The NCI, in conjunction with WHO, invited three experts representing the domains of economics, public health, and tobacco control to serve as the editors of the monograph. This ambitious effort included contributions from more than 60 authors selected for their individual and collective expertise. These authors are based or work in all major world regions, with an emphasis on LMICs, which have traditionally been underrepresented in tobacco control economics research.

The monograph was subjected to a rigorous review process, which began with a review of the monograph outline. As each chapter was drafted, the chapter was reviewed by many peer reviewers with expertise on the individual topic. When the entire volume was complete, the full draft was submitted to expert reviewers who evaluated the monograph as a whole, related one chapter to another, and ensured that the volume-level conclusions were supported by the monograph's content. Both NCI and WHO conducted a final review before the monograph was published. Comments from more than 70 expert reviewers formed the basis of the revisions that the authors and editors made to the monograph. These efforts have culminated in a monograph comprising 17 chapters that explore the many dimensions of the economics of tobacco and tobacco control, which are summarized and illustrated by numerous examples, tables, and figures.

Where appropriate, the data for the monograph have been analyzed and reported by geographical area. Countries are organized into WHO Regions: the African, Americas, South-East Asia, Eastern Mediterranean, European, and Western Pacific Regions. The data are also presented using the World Bank's analytical classification of countries based on gross national income per capita: high-income, upper middle-income, lower middle-income, and low-income countries.⁸ These classifications are updated each year, thus the country income groups across the monograph are based on the year that best reflects the data referenced.

Major Accomplishments

The volume accomplishes several “firsts.”

- It examines the economics of tobacco control through the lens of the rapidly emerging body of research that explores the impact of tobacco control in LMICs as well as the continually growing research evidence from high-income countries (HICs). Although much of the new evidence from LMICs corroborates the findings from work in HICs, much has been learned about the unique challenges of implementing tobacco control in LMICs and many other areas where such efforts have a potentially greater impact on economic and public health outcomes.
- The monograph is one of the first publications to examine global tobacco control efforts since the 2003 adoption and 2005 entry into force of the WHO FCTC, including the observed or projected impact of specific articles of this global public health treaty and the subsequent implementation assistance provided by the WHO MPOWER package.⁹
- The monograph presents a growing base of data on tobacco control interventions and their impact—data that were derived from public and private sources and from local and global tobacco surveillance systems. Since the publication of *Curbing the Epidemic: Governments and*

the Economics of Tobacco Control, a considerable amount of new knowledge has been generated using these data regarding the effectiveness of specific interventions and their relative impact on the economies of countries at varying income levels.

- Above all, the monograph confirms that effective, evidence-based tobacco control interventions—such as increased taxes; complete bans on tobacco marketing; comprehensive, smoke-free policies; dissemination of information on the health consequences of tobacco use; and many other types of interventions—make sense from an economic as well as a public health standpoint.

Major Conclusions

Nine broad conclusions that emerge from the volume are as follows:

1. **The global health and economic burden of tobacco use is enormous and is increasingly borne by low- and middle-income countries.** Already, around 80% of smokers live in LMICs. While smoking prevalence is falling at the global level, the total number of smokers worldwide is not decreasing, largely due to population growth. There is a strong possibility that the global target of a 30% relative reduction in tobacco use by 2025 agreed to by WHO Member States will not be met. The number of tobacco-related deaths is projected to increase from about 6 million deaths annually to about 8 million annually by 2030, with more than 80% of these occurring in LMICs.
2. **Failures in the markets for tobacco products provide an economic rationale for governments to intervene in these markets.** These market failures include (1) the public's imperfect and asymmetric information about the health and economic consequences of consuming tobacco products, particularly in LMICs, which is further complicated by the time-inconsistency of individual preferences for tobacco and the uptake of tobacco use during youth and adolescence; and (2) the externalities of tobacco use for nonusers. These externalities include the fact that nonsmokers, both children and adults, experience adverse health consequences when exposed to secondhand smoke (SHS) and that the cost of treating diseases caused by tobacco use and SHS exposure is borne, in part, by the public. The external costs of tobacco use are greater in countries where public funds are used to pay for a greater share of health care costs, given public spending to treat the diseases caused by tobacco use.
3. **Effective policy and programmatic interventions are available to reduce the demand for tobacco products and the death, disease, and economic costs that result from their use, but these interventions are underutilized.** The WHO FCTC and its implementation guidelines provide an evidence-based framework for governmental action to reduce tobacco use. Technical resources included in the MPOWER package in line with the WHO FCTC can support the implementation of tobacco control demand-reduction provisions on the ground. In addition, numerous other documents—including U.S. Surgeon General's reports, NCI monographs, and reports of the Institute of Medicine (U.S.), the WHO Tobacco Free Initiative, and the WHO International Agency for Research on Cancer—summarize the science and provide guidance on effective policy and program interventions. However, the vast majority of the world's population is still not adequately covered by the most effective of these interventions, including sufficiently high levels of tobacco taxation, comprehensive smoke-free policies, complete bans on tobacco marketing, information interventions, and cessation support.

4. **Policies and programs that work to reduce the demand for tobacco products are highly cost-effective.** Significant tobacco tax and price increases, comprehensive bans on tobacco industry marketing activities, and prominent pictorial health warning labels are generally the least costly tobacco control interventions, followed by the implementation and enforcement of smoke-free policies and the provision of population-wide tobacco cessation programs. Significant tobacco tax and price increases are the most cost-effective of these interventions. Despite the considerable revenues generated by tobacco taxes, few governments are investing more than a fraction of these revenues in tobacco control or in other health programs. WHO estimated that in 2013–2014, global tobacco excise taxes generated nearly 269 billion U.S. dollars (US\$) in government revenues, but governments spent a combined total of less than US\$ 1 billion on tobacco control.¹⁰
5. **Control of illicit trade in tobacco products, now the subject of its own international treaty, is the key supply-side policy to reduce tobacco use and its health and economic consequences.** There is broad agreement that control of illicit trade will benefit tobacco control and public health and result in broader benefits for governments. Other supply-side policies, such as support for economically viable alternatives to tobacco production and restrictions on youth access to tobacco products, can be effective, especially as part of a comprehensive strategy to reduce tobacco use.
6. **The market power of tobacco companies has increased in recent years, creating new challenges for tobacco control efforts.** The global tobacco market has become increasingly concentrated over the past 25 years and is being driven by the same forces that have contributed to globalization in other industries, including reductions in barriers to trade and foreign direct investment, privatization of state-owned tobacco enterprises, and a wave of mergers and acquisitions. Policies aimed at limiting the market power of tobacco companies are largely untested but hold promise for reducing tobacco use.
7. **Tobacco control does not harm economies.** The number of jobs that depend on tobacco has been falling in most countries, largely thanks to technological innovations, the shift from state-owned to private ownership of tobacco manufacturing, and globalization, which have facilitated efficiencies in tobacco growing and manufacturing. For the vast majority of countries, implementation of tobacco control measures will have only a modest impact on tobacco-related employment, and will not lead to net job losses. For the few countries particularly dependent on tobacco growing and tobacco leaf exports, job losses due to global tobacco control efforts are likely to be gradual, predictable, and far enough in the future to have little effect on the current generation of tobacco farmers, and programs could be implemented that help tobacco farmers make the transition to alternative livelihoods. Evidence from high-income countries and LMICs shows that smoke-free policies do not adversely affect the hospitality sector.
8. **Tobacco control reduces the disproportionate burden that tobacco use imposes on the poor.** Tobacco use is concentrated among the poor and other vulnerable groups, and tobacco use accounts for a significant share of the health disparities between the rich and poor. These disparities are exacerbated by a lack of access to health care and the diversion of household spending from other basic needs, such as food and shelter, to tobacco use. Moreover, tobacco use contributes to poverty, as illnesses caused by tobacco lead to increased health care spending and reduced income. Research indicates that tobacco control interventions lead to reductions in tobacco use among all population groups. Additionally, significant increases in tax and price lead to greater reductions in tobacco use among the poor than among the rich, and thus contribute to reducing health disparities. Tobacco taxes also provide the opportunity to dedicate tax revenues

specifically to health programs that benefit the poor, thus increasing their ability to reduce health disparities between population subgroups.

9. **Progress is now being made in controlling the global tobacco epidemic, but concerted efforts will be required to ensure that progress is maintained or accelerated.** In most world regions and country income groups, the prevalence of tobacco use is stagnant or falling. In HICs, progress in tobacco control has been ongoing over several decades; in LMICs, progress has generally been more recent and has sometimes been more rapid. Factors contributing to recent progress include the galvanizing effort of the WHO FCTC, research documenting the health and economic burden of tobacco use and evidence-based tobacco control interventions, the contributions of private funders and civil societies in promoting tobacco control policies, and broad recognition of the tobacco industry's role in promoting tobacco use around the world. Despite this progress, many threats remain, including increasing tobacco use in some world regions and the potential for tobacco use to increase in regions that are still at an early stage of the tobacco epidemic. Maintaining and increasing progress will require continued research and surveillance of the epidemic and implementation of the evidence-based strategies set forth in the WHO FCTC, as well as vigilant monitoring of the tobacco industry's tactics and strategies to undermine or subvert tobacco control efforts.

Chapter Summaries, Research Needs, and Conclusions

Chapter 1. Overview and Conclusions

Chapter 1 introduces the monograph, describes its framework, and explains how it was prepared and organized. It also presents the volume's major conclusions and the individual chapter conclusions.

Chapter 2. Patterns of Tobacco Use, Exposure, and Health Consequences

Overview

Tobacco products, both smoked and smokeless products, are used in a wide variety of forms around the world, and the patterns of use and resulting health and economic burden vary across the globe. Effective tobacco control policies and programs are aimed at reducing the demand for tobacco products and the death, disease, and economic cost of their use. This chapter examines tobacco consumption and prevalence, as well as the impact of tobacco use and secondhand smoke exposure on health and mortality. Specific topics include:

- Current patterns of tobacco use across world regions and in selected countries for smoked and smokeless products
- Exposure to secondhand smoke, the effects of this exposure on health, and the associated disease burden
- Health disparities related to tobacco use
- The impact of tobacco use on noncommunicable diseases, communicable diseases, and mortality.

This chapter describes the extent of tobacco use among youths and adults globally by drawing on national or subnational data available for various countries. The chapter also examines the health consequences of tobacco use, including data that is used in planning and evaluating tobacco control policy and program interventions in many countries.

Chapter Summary

Around the world, the health burden of tobacco use is enormous. At present, about 6 million people die each year from tobacco use; this figure is projected to grow to 8 million by 2030, with the vast majority (80%) of deaths anticipated to occur in LMICs. A wide variety of tobacco products—both smoked products (cigarettes, cigars, kreteks, bidis, and waterpipe) and a diverse group of smokeless tobacco products—are in use worldwide. Manufactured cigarettes, however, account for 92.3% of tobacco sales worldwide; thus they are responsible for the vast majority of tobacco-caused disease and death. Secondhand smoke, a mixture of sidestream smoke from the burning tip of cigarettes or other smoked tobacco products and mainstream smoke exhaled by the smoker, is a cause of disease and death in adults and children. Tobacco use and secondhand smoke exposure are now recognized as important causes of noncommunicable disease, communicable disease, and harm during pregnancy. Tobacco use is estimated to cause 12% of deaths among persons aged 30 and over worldwide; this represents about 14% of deaths from noncommunicable diseases (such as cancer, cardiovascular disease, and lung disease) and 5% of deaths from communicable diseases (such as tuberculosis and lower respiratory tract infections). Additionally, tobacco use contributes to and exacerbates poverty, which itself contributes to ill health.

About 21% of the world's population age 15 and over (about 1.1 billion people) are current smokers—about 35% of males and 6% of females. Tobacco is a highly addictive substance, and the vast majority of users smoke on a daily basis. With the exception of the African and Eastern Mediterranean Regions, smoking prevalence is declining in all world regions; about half of all smokers live in either the South-East Asia or the Western Pacific Region. Smoking prevalence is also declining when viewed from a country income group perspective (high-, middle-, and low-income). The fact that the number of adult tobacco users worldwide is not declining is primarily attributable to population growth. About 7% of youth ages 13–15 worldwide smoke cigarettes, including about 9% of boys and 4.5% of girls. In many countries, particularly low-income countries and lower middle-income countries, women's smoking prevalence remains low, often because of socio-cultural and economic factors discouraging tobacco use among women. As these barriers fall, continued efforts will be required to ensure that women's tobacco use does not rise.

The number of smokeless tobacco users worldwide is estimated at 346 million, most of whom (86%) live in the South-East Asia Region. Approximately 4% of youth ages 13–15 worldwide use smokeless tobacco; as with adults, most 13- to 15-year-old smokeless tobacco users live in the South-East Asia Region. An estimated 600,000 deaths worldwide in 2004 (1% of global mortality) were attributed to SHS exposure. Data from countries participating in the Global Adult Tobacco Survey show a wide range of SHS exposure at home and at work for both men and women. Data from the Global Youth Tobacco Survey also show that a substantial proportion of youth ages 13–15 years are exposed to SHS in the home and in other locations.

Studies from a number of countries document a disproportionate burden of tobacco use and SHS exposure among disadvantaged groups, which are defined by income, race/ethnicity, geography, and other factors. In most countries, poor people are more likely to smoke than their more affluent counterparts, which contributes to a disproportionate burden of disease and death among the poor. The four-stage model of the cigarette epidemic, developed by Lopez and colleagues provides a useful illustration of the stages of development of the tobacco epidemic. Implementation of strong tobacco control measures can hasten countries' progress through the stages of this model, resulting in lower prevalence of tobacco use and a lower burden of disease.

Research Needs

Ongoing surveillance of all forms of tobacco use is critical to understanding the tobacco epidemic and its shifting global impact, including the burden of disease resulting from tobacco use. It is important that surveillance systems monitor and adapt to changes in the tobacco product landscape. Information is especially needed on patterns of use of non-cigarette tobacco products, for which data are more limited. Although the body of evidence on the health effects of cigarette smoking is extensive, the long-term health effects of other tobacco products, including use of waterpipe and smokeless tobacco, are not as well understood. Finally, more information is also needed on the prevalence and patterns of electronic nicotine delivery systems (ENDS) use, as well as the short- and long-term health effects of these products, including the effect of ENDS aerosol exposure on nonusers.

Chapter Conclusions

1. There are about 1.1 billion smokers in the world, and about 4 in 5 smokers live in LMICs. Nearly two-thirds of the world's smokers live in 13 countries.
2. Substantial progress has been made in reducing tobacco smoking in most regions, especially in HICs. Overall smoking prevalence is decreasing at the global level, but the total number of smokers worldwide is still not declining, largely due to population growth. Unless stronger action is taken, it is unlikely the world will reach the WHO Member States' 30% global reduction target by 2025.
3. Globally, more than 80% of the world's smokers are men. Differences in prevalence between male and female smokers are particularly high in the South-East Asia and Western Pacific Regions and in LMICs.
4. Globalization and population migration are contributing to a changing tobacco landscape, and non-traditional products are beginning to emerge within regions and populations where their use had not previously been a concern.
5. An estimated 25 million youth currently smoke cigarettes. Although cigarette smoking rates are higher among boys than girls, the difference in smoking rates between boys and girls is narrower than that between men and women. Smoking rates among girls approach or even surpass rates among women in all world regions.
6. Worldwide, an estimated 13 million youth and 346 million adults use smokeless tobacco products. The large majority of smokeless tobacco users live in the WHO South-East Asia Region. Smokeless tobacco use may be undercounted globally due to scarcity of data.
7. Secondhand smoke exposure remains a major problem. In most countries, an estimated 15%–50% of the population is exposed to secondhand smoke; in some countries secondhand smoke exposure affects as much as 70% of the population.
8. Annually, around 6 million people die from diseases caused by tobacco use, including about 600,000 from secondhand smoke exposure. The burden of disease from tobacco is increasingly concentrated in LMICs.

Chapter 3. The Economic Costs of Tobacco Use, With a Focus on Low- and Middle-Income Countries

Overview

The costs of tobacco use include illness, disability, premature death, and forgone consumption and investment. This chapter examines the estimation of the costs of tobacco use by:

- Reviewing the economic framework for cost estimation of tobacco use
- Examining cost estimates for individual LMICs by World Health Organization Region
- Analyzing recent cost estimates for HICs in the Region of the Americas, European Region, and Western Pacific Region
- Offering recommendations for addressing current gaps in data and areas for further study.

Significant obstacles to calculating comprehensive estimates of the costs of tobacco use still exist in many countries, particularly in LMICs, where markets in many economic sectors do not function well. Estimates from HICs consistently show that considerable economic costs, for both health care and lost productivity, result from tobacco use and from exposure to secondhand smoke among nonsmokers. Where sufficient data exist, they demonstrate that tobacco-related health care costs for LMICs are comparable to those for HICs when considered as a percentage of total health care costs.

Chapter Summary

Progress has been made during the past 15 years on estimating the costs of smoking. These estimates are useful in documenting the economic burden of tobacco use, designing tobacco control programs, and identifying the health care needs of vulnerable populations, and, where such studies exist, they have at times motivated policymakers to implement strong tobacco control policies. Reliable cost estimates are lacking for many countries, especially LMICs. Where sufficient data exist for these estimates, they show that the direct cost of tobacco-related disease in LMICs is comparable to that in HICs—that is, the direct health care cost of smoking is similar in terms of the percentage of total health care expenditures. The indirect cost of mortality is also high, at least in countries for which such cost can be measured. Substantial economic resources are lost to other uses because of tobacco-related illnesses, premature disability, and death. These losses are especially harmful in LMICs, where economic resources are urgently needed for economic and social investment.

In countries with underdeveloped formal health care and social insurance systems, the estimated costs of smoking vary widely among studies, most likely because (a) the formal health care system is not fully developed or is changing rapidly and (b) data on utilization and cost of treatment are incomplete or of poor quality.

Similarly, the indirect cost of smoking may be much higher than measured in existing studies. Evidence from household expenditure surveys in several LMICs and HICs shows that tobacco use displaces household expenditures on education and medical care, which are important investments to improve economic well-being. In countries with poorly developed social insurance sectors and large burdens of poverty on households, other expenditures displaced by tobacco use may have very large long-term costs.¹¹

Many estimates of the cost of direct health care attributable to smoking have some limitations. For example, cost estimates may be lacking for maternal tobacco use during pregnancy and for exposure to secondhand smoke on perinatal, infant, child, and adult health. Estimates do not always cover the full

range of tobacco-related diseases, especially in LMICs, where direct cost estimates focus on only the most prominent diseases (e.g., lung cancer, chronic obstructive pulmonary disease, and ischemic heart disease) linked to smoking. Furthermore, estimates do not always account for all of the health care costs of tobacco use and often use attributable or relative risk estimates from other countries that may not be applicable to the country under study. Finally, relatively few studies distinguish between internal and external costs of tobacco use. External costs are of particular interest and can vary considerably across countries given the differences in nonsmokers' exposure to secondhand smoke and the extent of the governments' role in providing health care.

Research Needs

Many of the studies profiled in this chapter lack data in one or more of the following areas:

- Epidemiological data on the incidence or prevalence of many tobacco-related diseases
- Adjusted country-specific estimates of relative risk and attributable fractions of mortality, health care costs, or disability due to tobacco use
- Total utilization and expenditures for treatment, including disease-specific costs
- Insurance, labor force participation, and earnings data that can provide market-based estimates of the productivity costs of death and disability.

Several studies in this review illustrate approaches that can be used to remedy these problems.

Comprehensive estimates of the cost of smoking at the country, region, and global levels should be a high priority. These estimates are important for documenting the economic burden of tobacco use, designing effective tobacco control programs, and identifying the health care needs of vulnerable populations. Even in countries where data are limited, estimates using the available data that can be done at relatively low cost, such as those described in the WHO toolkit on assessing economic costs,¹² can be useful in advancing tobacco control efforts.

Chapter Conclusions

1. The economic costs of tobacco use are substantial and include significant health care costs for treating the diseases caused by tobacco use and the lost productivity that results from tobacco-attributable morbidity and mortality.
2. In high-income countries, lifetime health care costs are greater for smokers than for nonsmokers, even after accounting for the shorter lives of smokers.
3. Evidence on the economic costs of tobacco use in low- and middle-income countries is limited but growing; the comprehensiveness of these studies varies greatly within and across countries, as do the existing cost estimates.
4. Past and current trends in tobacco use, together with improvements in health care systems and access to health care, suggest that the economic costs of tobacco use in low- and middle-income countries are likely to increase considerably in coming years.
5. The public's share of tobacco-attributable economic costs varies significantly among countries, reflecting differences in the role of government in providing health care.

Chapter 4. The Impact of Tax and Price on the Demand for Tobacco Products

Overview

Tobacco taxes and prices are key factors in controlling the demand for tobacco products and essential components of an integrated approach to tobacco control. This chapter examines the evidence surrounding tobacco taxation and pricing and the impact of taxation and pricing on the prevalence of tobacco use and the consumption of tobacco products. This chapter discusses:

- Models of the demand for tobacco products, including economic models of addiction
- The evidence on the impact of taxes and prices on the demand for tobacco products
- The effect of factors such as age and gender on sensitivity to changes in the price of tobacco products.

Taxes on tobacco products tend to be higher in HICs than in LMICs. Tobacco products are often more affordable in HICs than in LMICs, but over time, cigarettes have generally become less affordable in HICs and more affordable in LMICs. Significant tax and price increases can have a particularly strong impact on some of the groups most affected by the tobacco epidemic, including youth and people in LMICs.

Chapter Summary

Failures in the markets for tobacco products, including consumers' imperfect information about the health harms of tobacco use and the health and financial impacts of tobacco use, provide an economic rationale for governments to reduce tobacco use through economic interventions such as higher taxes on tobacco products and other tobacco control policies. Excise taxes on tobacco products are the most direct policy for influencing cigarette and other tobacco product prices. The total tax burden on tobacco products is defined as the sum of all taxes on the product expressed as a percentage of the retail price, and there is a close correlation between the tax burden on tobacco and the price of tobacco products, particularly in countries with a high tax burden. In general, the total tax burden on cigarettes is highest in HICs.

The retail price of cigarettes is a key determinant of cigarette consumption, and changes in the retail price induce changes in consumption. Tobacco consumption is also sensitive to changes in consumer income—the more affordable a product, the more likely it is to be purchased. As with price, consumers respond to changes in affordability. The affordability of cigarettes can be measured by either the number of minutes of labor required to purchase a pack of cigarettes or the percentage of per capita gross domestic product required to purchase 100 packs of cigarettes. In general, studies find that although cigarette taxes and prices tend to be highest in HICs and lowest in LMICs, cigarettes tend to be more affordable in HICs than in lower income countries. Since the 1990s, however, cigarettes have become relatively less affordable in HICs and relatively more affordable in LMICs, which has contributed to decreased consumption in HICs but increased consumption in LMICs.

Econometric studies of the impact of tax and price on tobacco use employ two primary measures of tobacco use: (1) macro-level aggregate measures of consumption, such as country-level data on tobacco sales (this literature developed earlier, growing rapidly before the 1990s); and (2) household or individual-level data taken from surveys, such as national surveys of drug use or health risk behavior. Over time, a substantial body of evidence has accumulated that demonstrates that higher taxes and prices lead to reductions in overall tobacco use and in the prevalence and intensity of use, with greater impact

on key subpopulations (e.g., young people and people with low incomes). Additionally, studies have assessed the impact of tax and price on specific outcomes, such as prevalence of tobacco use, smoking cessation, initiation of smoking by youth, cross-price elasticity, and health outcomes.

Changes in tobacco consumption induced by changes in the excise tax and retail price are reflected in the price elasticity of demand: the responsiveness of consumption to increased price. Much of the recent evidence indicates that demand for tobacco products in LMICs is at least as responsive to price as demand in HICs, and likely more responsive. In HICs, most estimates of elasticities of demand range from -0.2 to -0.6 , clustering around -0.4 . In LMICs, elasticity estimates range from -0.2 to -0.8 , clustering around -0.5 . Thus, in HICs a 10% increase in the price of cigarettes may be expected to decrease tobacco consumption by 4%, while in LMICs a 10% increase in price may be expected to decrease consumption by 5%.

An extensive and increasingly sophisticated body of research clearly demonstrates that higher tobacco product taxes and prices lead to reductions in tobacco use by motivating current users to quit, preventing young people from taking up tobacco use, and reducing the frequency and intensity of consumption among those who continue to use tobacco. In addition, research generally shows that vulnerable populations, most notably young people and lower income population, are more responsive to tax and price increases than older people and higher income populations. Finally, a small but growing literature demonstrates that the reductions in tobacco use that result from higher taxes and prices reduce the morbidity and mortality caused by tobacco use.

Research Needs

Much is known about the impact of taxes and prices on tobacco use, particularly in HICs, but further research could be useful. Reliable estimates of overall price elasticities of demand for tobacco products and estimates of the effects of price on prevalence, initiation, and cessation are not available for many LMICs. Relatively little is known about how price elasticity changes over time, at different levels of tax and price, or for larger and smaller price changes. Although cigarettes are the predominant form of tobacco used around the world, other tobacco products (smokeless tobacco, waterpipe tobacco, bidis, and others) are commonly used in some countries. However, few studies have assessed the price elasticity of demand for tobacco products other than cigarettes, and even fewer have estimated cross-price elasticities; where applicable, these studies will be very useful. Although a small but increasing number of studies have emphasized the importance of affordability of tobacco products, more research is needed to understand how changes in affordability affect tobacco use.

Chapter Conclusions

1. A substantial body of research, which has accumulated over many decades and from many countries, shows that significantly increasing the excise tax and price of tobacco products is the single most consistently effective tool for reducing tobacco use.
2. Significant increases in tobacco taxes and prices reduce tobacco use by leading some current users to quit, preventing potential users from initiating use, and reducing consumption among current users.
3. Tobacco use by young people is generally more responsive to changes in taxes and prices of tobacco products than tobacco use by older people.

4. Demand for tobacco products is at least as responsive and often more responsive to price in low- and middle-income countries as it is in high-income countries.

Chapter 5. Design and Administration of Taxes on Tobacco Products

Overview

Tobacco taxation has become a critical component of tobacco control policy as well as an effective tool for raising government revenue. This chapter examines the impact of the design and administration of tobacco tax policies on both public health and revenue outcomes. The following topics are considered:

- Tobacco taxation approaches, with examples of the way tobacco excise taxes are implemented around the world
- The effects of types of excise taxes on factors such as pricing, product substitution, product differentiation, and tax avoidance
- The challenges of tobacco tax administration, particularly for low- and middle-income countries with limited resources
- Political considerations in formulating tobacco tax policy.

At present, tobacco taxes and tax policies vary widely across different countries. Further increases in tobacco taxes remain a promising avenue in the global effort to reduce tobacco use.

Chapter Summary

Tobacco products, particularly cigarettes, are subject to a number of taxes, including excise taxes, value-added taxes (VAT) or sales taxes, and import duties, with excise taxes accounting for the largest share of retail prices in most countries. Since excise taxes increase the prices of tobacco products relative to other goods and services, they are considered an important tobacco control tool. A majority of countries tax cigarettes, but the structure of excise taxes varies greatly across countries.

Higher taxes on tobacco products increase tax revenues and improve public health, but they are an underused intervention. Governments can promote public health and collect higher revenues in an efficient and effective way by selecting and imposing the appropriate types and rates of tobacco excise taxes. Compared to ad valorem taxation, specific taxation better achieves public health objectives because it increases retail prices and narrows price gaps, thus reducing consumers' incentives to change from higher priced to lower priced brands or to other (non-cigarette) tobacco products.

Tobacco products are often subject to differential tax treatment. Typically, higher taxes are levied on cigarettes and lower taxes are levied on other tobacco products. Increasing excise taxes on cigarettes but not on other tobacco products (or increasing excises on other tobacco products at a lower rate) will result in lower prices for those tobacco products relative to the price for cigarettes. Consequently, the overall reduction in tobacco use will be smaller than if taxes on cigarettes and other tobacco products are increased by comparable amounts. To reduce the already existing price gap, lessen the likelihood that consumers will switch to less expensive tobacco products, and maximize the public health impact, tax increases may need to be greater for other tobacco products than for cigarettes.

The various types of excise taxes each have their relative advantages and disadvantages. Although specific excise taxation improves public health and tax administration more than ad valorem excises,

which type of tax should be relied on is less clear when revenue is the primary objective. Specific excises are better for predicting both the level and stability of revenues, especially when adjusted regularly to keep pace with inflation. Governments may prefer one type of tax over the other, or prefer a combination of both, depending on tobacco industry characteristics and political considerations.

A well-designed tax system is one that is simple and easy to administer in order to minimize tax avoidance and evasion, generate expected revenues, and result in tax increases being passed on to consumers as price increases. Simplicity in tax systems improves transparency and limits opportunities for tax avoidance and tax evasion. However, being well-designed is not enough to ensure that a tax system will have a positive impact on public health and revenues. To ensure high compliance levels, strong tax administration is needed to implement and administer tax policies efficiently. Compliance can be strengthened by adopting state-of-the-art monitoring and tracking and tracing systems combined with strong enforcement.

Research Needs

Much is known about the advantages and disadvantages of specific and *ad valorem* taxes with respect to their impact on consumption, prices, and government revenues. However, additional research on how the tobacco industry's pricing strategies are influenced by tax structure, tax increases, and market structure would be informative. Guidance for tax authorities on best practices in tax administration would also benefit from further research. As more new products, such as ENDS, emerge, research will be needed to inform the optimal strategies for taxing these products.

Chapter Conclusions

1. Governments have a variety of reasons for taxing tobacco products, including generating revenue and improving public health by reducing tobacco use. Although price and tax measures are among the core demand reduction measures of the WHO FCTC, they are among the least implemented.
2. Almost all governments tax tobacco products, applying a variety of different taxes and using different tax structures. The different taxes and tax structures vary in their impact on public health. Relying on import duties to generate revenue is not an effective tax policy and does not substantially affect public health. More reliance on high, uniform, and specific excise taxes on tobacco products will have the greatest public health impact.
3. Because of the low share of tax in the retail prices of cigarettes and the relative inelasticity of demand for tobacco products, increases in tobacco taxes will ensure higher revenues.
4. A number of countries dedicate part of their tobacco tax revenues for health promotion and/or tobacco control. Dedicating part of tobacco tax revenues for comprehensive tobacco control or health promotion programs (i.e., earmarking) increases the public health impact of higher tobacco taxes.
5. An effective tax system is one that is well-designed and -administered. A well-designed system sets appropriate tax rates to achieve public health and revenue objectives; a well-administered system ensures high tax compliance and minimizes tax avoidance and evasion.

Chapter 6. The Impact of Smoke-Free Policies

Overview

Secondhand smoke exposure causes numerous serious adverse health effects in adults and children. Movement toward comprehensive smoke-free policies—those that, by law, completely prohibit smoking in all indoor workplaces, indoor public places, and forms of transportation—has intensified on an international scale in response to growing awareness of the negative economic and health consequences of SHS exposure. This chapter examines:

- The economic rationale for comprehensive smoke-free policies
- The effect of comprehensive smoke-free policies on SHS exposure, demand for tobacco, and health outcomes
- The economic implications of comprehensive smoke-free policies for various stakeholders
- The cost-effectiveness of comprehensive smoke-free policies
- The implications of the current literature for low- and middle-income countries.

The evidence clearly demonstrates that comprehensive smoke-free policies reduce exposure to SHS, have high public support and compliance levels, and do not have negative economic effects on businesses. These policies also generate reductions in smoking, improve health outcomes, increase productivity, and reduce health care costs. The tobacco industry has long recognized the potential for comprehensive smoke-free policies to reduce tobacco use and has sought to weaken or delay implementation of these policies around the world. Today, however, comprehensive smoke-free policies are increasingly the norm.

Chapter Summary

SHS exposure is an important cause of disease and death among both children and adults, and imposes substantial external costs on individuals, governments, and societies. Key information failures, including inadequate public knowledge of the health hazards of SHS exposure and inefficiencies in the tobacco market, provide an economic rationale for governments to intervene to reduce the harms caused by SHS exposure.

Increasingly, national and subnational jurisdictions are adopting comprehensive smoke-free laws in order to eliminate the negative health effects of SHS exposure on the population. Article 8 of the WHO FCTC requires Parties to the treaty to adopt and implement effective measures to protect people from exposure to tobacco smoke in indoor workplaces, indoor public places, public transportation, and, as appropriate, other public places. The guidelines for Article 8 provide practical guidance for countries to enact and implement smoke-free policies, and stress that smoke-free legislation should be simple, clear, and enforceable and should involve civil society as an active partner. Despite recent progress, much of the world's population continues to be exposed to SHS in the workplace, in public places, or in the home. Additionally, in many countries smoking is still permitted in hospitals and other health care settings, a situation that is particularly important to address because health care professionals and health care workplaces often serve as examples for other professions and settings. Around the world, the tobacco industry has been a key factor impeding the enactment of comprehensive smoke-free laws, because these laws work to reduce tobacco use prevalence and consumption and decrease its social acceptability, and thus pose a serious threat to the tobacco industry.

Abundant evidence conclusively demonstrates that the implementation of comprehensive smoke-free policies improves the public's health. Hospitality industry workers, because of the intensity and duration of their exposure, often experience the most immediate benefits of smoking restrictions, including rapidly improved respiratory and cardiac health. Positive health outcomes associated with smoke-free policies are observable immediately and are sustained over time. Research also shows that smoke-free homes yield a double dividend: they reduce exposure to SHS for nonsmoking family members, and they lead to increased cessation rates among smokers.

Partial restrictions on smoking may reduce SHS exposure but are insufficient to fully protect the health of exposed individuals. In contrast, comprehensive smoke-free policies are far more effective in reducing exposure to SHS and improving health outcomes, and are also easier to implement and enforce.

A consensus across much of the literature, particularly among those studies that adhere to rigorous methodological criteria, is that implementation of smoke-free policies does not cause negative economic effects for businesses, including hospitality venues such as bars and restaurants. Rather, benefits may accrue to businesses, including improved productivity, reduced absenteeism, and lower employee health care costs.

The current research literature is largely focused on the experience of implementing smoke-free laws in HICs. Fewer studies have been conducted in LMICs, where smoke-free laws have generally been enacted more recently. With the recent proliferation of smoke-free policies throughout the world, it is expected that more studies will be conducted in LMICs, which will increase our understanding of how best to implement laws in these countries and document their health and economic impact.

Research Needs

The WHO FCTC requires Parties to the treaty to implement comprehensive smoke-free policies; the experience of HICs in implementing these laws has been extensively studied. As these policies become more common in LMICs, additional research could help determine how best to maximize the ability of these laws to reduce exposure to SHS, improve health outcomes among nonsmokers, and reduce smoking. Studies should also assess the economic impact of these laws, both on health care costs and business revenues, particularly for hospitality sector businesses. Exposure to SHS is not limited to workplaces and public places; significant exposure—especially of infants and young children—also occurs in the home, including multiunit housing settings, in HICs and LMICs. Research is needed to enhance understanding of how best to encourage individuals, landlords, and governments to ban smoking in these private indoor settings, and to assess the health and economic consequences of these bans. The question of how comprehensive smoke-free policies affect overall government revenues remains an area for further study. Finally, as smoking bans in outdoor locations such as beaches, parks, and other settings become more common, it will be important to understand the health and economic implications of these measures.

Chapter Conclusions

1. Comprehensive smoke-free policies reduce exposure to secondhand smoke; compliance with these policies is generally high, and public support for them is strong.
2. Comprehensive smoke-free policies in workplaces reduce active smoking behaviors including cigarette consumption and smoking prevalence.

3. Overall, rigorous empirical studies (largely from high-income countries) using objective economic indicators find that smoke-free policies do not have negative economic consequences for businesses, including restaurants and bars, with a small positive effect being observed in some cases. Findings from the limited existing research conducted in low- and middle-income countries are generally consistent with those from high-income countries.
4. Around the world, the tobacco industry is the greatest obstacle to enacting comprehensive smoke-free policies, often by arguing, despite strong evidence to the contrary, that smoke-free policies harm businesses.
5. Other economic benefits of smoke-free policies for businesses include increased worker productivity, health care savings, reduced cleaning and maintenance costs, and reduced insurance costs.

Chapter 7. The Impact of Tobacco Industry Marketing Communications on Tobacco Use

Overview

The tobacco industry employs a wide array of communications tools to market its products to the public, from mass media advertising, sponsorship, sales promotions, and packaging, to Internet and new media strategies. Researchers have examined the influence of industry communications strategies on tobacco use, particularly among young people, as well as policy interventions to restrict tobacco industry marketing. Topics covered in this chapter include:

- Econometric studies of the impact of tobacco marketing on tobacco use
- Econometric studies of tobacco marketing bans and related policies
- Population-level cross-sectional and longitudinal studies on consumer response to tobacco marketing, particularly among young potential smokers and current smokers
- The impact of other tobacco marketing efforts such as sponsorship, loyalty incentives, and tobacco advertising and placement in entertainment media.

An extensive body of research shows that tobacco marketing and tobacco use are causally linked, and that comprehensive marketing bans are effective in reducing tobacco use. Findings from this research support the implementation of the World Health Organization Framework Convention on Tobacco Control, which, under Article 13, legally binds Parties to the treaty to implement a comprehensive ban on tobacco advertising, promotion, and sponsorship, or restrictions for Parties that are not in a position to implement a comprehensive ban due to their constitution or constitutional principles.

Chapter Summary

Scholars in many countries and from many disciplines have investigated the relationship between tobacco marketing and tobacco use, particularly youth use of tobacco products. The extensive body of evidence on this topic includes econometric studies, population-level cross-sectional and longitudinal analyses, and others. Several authoritative reviews, including those conducted by NCI, the U.S. Surgeon General, and the Cochrane Collaboration, have concluded that advertising and promotion are causally linked to youth smoking initiation. Studies conducted since these reviews confirm and extend these findings.

Research has also demonstrated the effectiveness of tobacco product marketing bans, and WHO has concluded that comprehensive bans on tobacco advertising, promotions, and sponsorship (TAPS) are a “best-buy” measure to reduce tobacco use. A new analysis conducted for this chapter also confirms that comprehensive bans on tobacco advertising have a significant negative effect on consumption, reducing tobacco consumption by 28.3% in LMICs and by 11.7% in the full sample of 66 countries (HICs and LMICs) analyzed.

The WHO FCTC obligates its Parties to implement and enforce a comprehensive TAPS ban, or for those Parties that are not in a position to undertake a comprehensive ban owing to their constitutions or constitutional principles, to apply restrictions on tobacco advertising, promotion, and sponsorship that are as comprehensive as possible. As of 2014, a majority of countries, including HICs and LMICs, now ban at least some forms of tobacco marketing; bans on television and radio advertising are most common. More comprehensive bans benefit the public’s health by limiting industry’s demonstrated ability to adapt to and circumvent regulatory strategies and various types of marketing bans.

Recent studies have also looked at the impact of indirect tobacco marketing, which includes sponsorship, product sampling, promotional items and brand sharing, tobacco packaging, retail point-of-sale displays, and entertainment media and product placement. These forms of marketing also promote tobacco use, as recognized by the WHO FCTC, which defines tobacco advertising and promotion as “any form of commercial communication, recommendation or action with the aim, effect or likely effect of promoting a tobacco product or tobacco use either directly or indirectly.”¹,p.4 Research conducted in many countries has shown that the portrayal of tobacco use, including particular tobacco brands, in movies and other entertainment media normalizes tobacco use among youth. WHO has issued guidance to assist countries in countering this industry tactic.

The Internet is now a global venue for marketing and sale of tobacco products, accessible to more potential consumers every day. The Web’s transition from a static forum to one that is interactive, participatory, and often consumer driven has dramatically changed the nature of Internet marketing. Researchers have documented that tobacco products are marketed on the Internet in ways that may attract youth; given the rapidity of change and the scope for reaching young people, this is an important area for future research.

Lastly, it is now recognized that the many forms of direct and indirect marketing communications do not operate in isolation; rather, it is the combination of marketing communications that influences the consumer. In short, as regards marketing communications, the whole is much greater than the sum of its parts.

Research Needs

A large evidence base documents the causal association between tobacco industry advertising and smoking among young people. However, there are areas that warrant further research. Documentation and assessment of the impact of financial or “in-kind” contributions from the industry in exchange for sponsorship of events, media, and product placement have been limited compared to other areas of tobacco marketing, with the exception of sports sponsorship and product placement in movies. As certain segments of entertainment media become more popular and technologically advanced, such as video/virtual reality gaming, more extensive and creative documentation and study of the effects of sponsorship or product placement in these media are needed. Similarly, as new media technology

emerges and gives rise to different marketing and advertising strategies, such as through the Internet and social media, research is needed to study the impact of these new types of marketing tools on tobacco use. These media tools have been heavily used for marketing products, such as ENDS, which are available to youth in many countries. Novel digital marketing and conventional marketing strategies may have synergistic effects on tobacco product consumption, particularly by youth—a subject about which further investigation is needed.

Chapter Conclusions

1. Tobacco companies engage in a wide variety of marketing activities, ranging from traditional advertising, promotion, and sponsorship to emerging marketing techniques in the digital arena. These marketing activities have the potential to affect key populations, such as young people and women, particularly in low- and middle-income countries, who may be particularly susceptible to these efforts.
2. The weight of the evidence from multiple types of studies done by researchers from a variety of disciplines and using data from many countries indicates that a causal relationship exists between tobacco company marketing activities and tobacco use, including the uptake and continuation of tobacco use among young people.
3. In high-income countries, comprehensive policies to ban the marketing activities of tobacco companies are effective in reducing tobacco use, but partial marketing bans have little or no effect.
4. Comprehensive policies to ban the marketing activities of tobacco companies leads to larger reductions in tobacco use in low- and middle-income countries than in high-income countries.

Chapter 8. The Impact of Information on the Demand for Tobacco Products

Overview

Information failures in the tobacco marketplace provide an economic rationale for governments to intervene in the tobacco market using a variety of measures. This chapter explores the impact of information on the demand for tobacco products, including:

- Consumers' limited awareness of the risks of tobacco use, and differences in awareness by country income group
- The role of tobacco industry disinformation practices in consumers' uptake and continued use of tobacco
- Information interventions—including anti-tobacco mass media campaigns, school-based tobacco education programs, health warning labels, and interventions focused on tobacco product packaging—and their impact on the demand for tobacco products.

Research shows that consumers, especially youth, do not appreciate the magnitude of the risks of tobacco use and tend not to personalize these risks, and that these information failures are generally greater in low- and middle-income countries than in high-income countries. For this reason, programmatic interventions and policies to raise awareness of the harms of tobacco use and the addictive properties of nicotine, and to counter tobacco industry marketing and disinformation efforts are necessary to help reduce tobacco use.

Chapter Summary

Information failures provide an economic rationale for governments to intervene to increase public knowledge about the health harms of tobacco products. Studies conducted in HICs find that although most smokers demonstrate awareness of the major health consequences of cigarette smoking, significant knowledge gaps remain, and smokers tend to underestimate the magnitude of the risks of smoking and tend not to personalize these risks. Adolescent smokers are especially likely to underestimate or discount the health risks. In general, knowledge of the health risks of tobacco products is thought to be less widespread in LMICs, where limited government resources and often weak tobacco control environments make informing the public a greater challenge than in HICs. The tobacco industry's decades-long global effort to deny and distort the scientific evidence on smoking and health has contributed to the public's limited and inadequate understanding and awareness of the health consequences of tobacco use and SHS exposure.

Measures that increase public awareness of the risks of tobacco use are important tobacco control strategies. Indeed, studies conducted in both HICs and LMICs show that various types of interventions aimed at increasing public knowledge help reduce tobacco consumption. The WHO FCTC requires Parties to the treaty to adopt a variety of evidence-based measures, including warning labels on tobacco packages, and to prohibit misleading industry practices, such as the use of “light” and “low-tar” descriptors on packages. Many countries have implemented anti-tobacco mass media campaigns, and numerous scientific studies document that these campaigns can reduce smoking prevalence among both youth and adults. School-based tobacco education campaigns that are implemented as part of comprehensive tobacco control programs can help reduce tobacco use among youth; these may be especially useful in countries with low public knowledge about smoking and health. However, youth-focused campaigns conducted or funded by the tobacco industry have been shown to be ineffective at reducing youth's tobacco use or may subvert this goal. Indeed, research has shown that the actual purpose of these programs is to serve industry's interests at the cost of the public interest. Large pictorial health warning messages on tobacco products have now been implemented in many countries around the world and have been shown to inform smokers and help reduce tobacco use. Among other groups, pictorial health warnings have the ability to inform both youth and poorly literate adult populations. Their low cost makes them particularly attractive to governments with limited resources—for example, LMICs.

In 2012, Australia pioneered the use of plain (standardized) packaging, which requires tobacco products to be sold in a standardized “drab dark brown” package, with the brand name and any variant name shown in a (small) standard font, style, and size. This requirement limits the value of the tobacco package as a marketing vehicle and increases the prominence of the health warning message carried on the package. Early studies of Australia's experience already show that the measure is contributing to a decline in tobacco use by reducing the appeal of tobacco products, reducing the potential for tobacco packaging to mislead consumers, and enhancing the effectiveness of pictorial health warnings. These effects are expected to become stronger over time. Despite concerted tobacco industry opposition, a few countries have passed laws to implement plain packaging, and several other countries have announced their intention to implement or are considering doing so.

Research Needs

Research is needed to better understand public knowledge of the health hazards of tobacco use and SHS exposure, including knowledge of vulnerable subpopulations such as youth, the poor, and those with low or no literacy; these issues are especially important to study in LMICs, where the majority of the world's tobacco users now reside. Studies are needed to evaluate the impact of “information shocks” and of measures to increase public knowledge of the health effects of tobacco use, as these are rolled out in LMICs. It will also be important to assess the ability of school-based health education efforts in LMICs, especially when incorporated into broader tobacco control efforts, to both increase knowledge of tobacco's hazards and to reduce tobacco use. To date, most studies of the public's knowledge have focused on cigarettes; given the diversity of smoked and smokeless products used around the world, and the entry of products such as ENDS to the market, research should also examine public knowledge of the health effects of these products.

Research is also needed to assess the impact of policies designed to increase public knowledge, implemented in response to the WHO FCTC, and to determine what additional policies are needed to expand and maintain public knowledge. As more countries adopt plain packaging, it will be important to assess the impact of this measure and how it is influenced by different approaches and implementation conditions. Finally, continued study of tobacco industry strategies to undermine public knowledge is also needed, especially in LMICs and among vulnerable populations in HICs.

Chapter Conclusions

1. Imperfect understanding of the impact of cigarette smoking and other tobacco use on health, particularly in low- and middle-income countries, provides an economic rationale for interventions to disseminate information about the addictive and harmful nature of tobacco products.
2. Tobacco industry disinformation practices have directly contributed to the information failures associated with consumers' imperfect knowledge of the risks of disease and addiction.
3. Well-designed and -implemented anti-tobacco mass media campaigns are effective in improving understanding about the health consequences of tobacco use, building support for tobacco control policies, strengthening social norms against tobacco use, and reducing tobacco consumption among youth and adults.
4. School-based tobacco education programs, when implemented as part of comprehensive tobacco control programs, can improve knowledge, contribute to denormalizing tobacco use, and help prevent tobacco use. Emerging evidence suggests that school-based programs can be as or more effective in reducing tobacco use among young people in low- and middle-income countries, where knowledge of the hazards of tobacco use is lower compared with high-income countries.
5. Large pictorial health warning labels on tobacco packages are effective in increasing smokers' knowledge, stimulating their interest in quitting, and reducing smoking prevalence. These warnings may be an especially effective tool to inform children and youth and low literacy populations about the health consequences of smoking.
6. Plain (standardized) packaging (i.e., devoid of logos, stylized fonts, colors, designs or images, or any additional descriptive language) reduces the appeal of tobacco products, enhances the salience of health warnings, minimizes consumers' misunderstanding of the harms of tobacco, and has contributed to a decline in tobacco use in Australia, the first country to implement plain packaging.

7. The stock of information about the harms of tobacco use is subject to potential erosion over time (wear-out) and needs to be replenished and maintained.

Chapter 9. Smoking Cessation

Overview

Smoking cessation can have an immediate impact on the economic and public health consequences of tobacco use. This chapter examines current evidence for cessation support and best practices and their implementation in countries around the world. Specifically, the chapter discusses the following topics:

- Health and economic benefits of cessation
- Current interventions for smoking cessation, including pharmacological and behavioral interventions, tobacco quitlines, Web- and mobile-based cessation services, and the integration of cessation treatments into health care systems
- Factors that affect demand for cessation support, including cost and accessibility of cessation support services and products, the price of tobacco products, and consumer awareness
- Effects of tobacco control measures, such as taxation, smoke-free policies, and information and mass media interventions, on cessation.

Evidence from high-income countries clearly demonstrates the effectiveness and cost-effectiveness of interventions to promote and support cessation. Less evidence is available on the effectiveness and cost-effectiveness of cessation interventions in low- and middle-income countries. Demand for cessation services in low- and middle-income countries exists, but in many of these countries cessation services are of limited availability or accessibility, or are unaffordable for most of the population.

Chapter Summary

Tobacco dependence is a chronic, relapsing disorder that often requires repeated interventions and multiple attempts to quit. Most smokers will make many attempts to quit over a lifetime, and governments can support these efforts by making cessation resources readily available to all smokers who need them.

Research from HICs clearly demonstrates the effectiveness and cost-effectiveness of interventions to promote and support cessation, including the use of pharmacological and behavioral treatments, promotion of cessation by health care professionals, and integration of cessation treatments into health care systems. Less evidence exists surrounding the adoption and implementation of cessation interventions in lower income countries. Policy interventions, such as tax increases, health warning labels, and smoke-free laws, can also stimulate interest in quitting and demand for treatment. Coordinating promotion of cessation programs and services with implementation of population-level policy interventions can increase the penetration and impact of such programs and services. Emerging low-cost technologies (i.e., mobile phones) and systems-level interventions (e.g., using electronic health record technology to aid in the identification of tobacco users, prompt clinicians to intervene, and guide intervention via evidence-based treatment algorithms) can facilitate successful implementation of cessation treatment worldwide.

Article 14 of the WHO FCTC obliges Parties to promote the cessation of tobacco use and adequate treatment for tobacco dependence. The implementation rate of Article 14 is strongly associated with country income status. Low-income countries have the lowest rates of service provision, but implementation of cessation services is often incomplete even in high-income countries.⁷¹ Cost is a substantial barrier to the use of pharmacological therapies and other cessation services, particularly in LMICs, but also in HICs. Overall, the demand for smoking cessation treatment services is likely to be lower in LMICs than in HICs because of a lower awareness of the health consequences of smoking in LMICs, as well as fewer former smokers as role models, fewer limits on and weaker social norms against smoking, and the higher price of cessation treatment relative to tobacco products.

Research Needs

Most research on the efficacy and cost-effectiveness of cessation interventions has been conducted in high-income countries and has focused on cigarettes—by far the most common tobacco product used in these countries. This discussion of research needs generally focuses on cigarettes, although other tobacco products (e.g., bidis, smokeless tobacco, waterpipe tobacco) account for a significant proportion of tobacco consumption in certain regions of the world, and deserve attention in their own right. Research is needed to evaluate adoption and implementation of interventions to reduce tobacco consumption and promote cessation in LMICs, where uptake of cessation interventions is lower. Economic analyses are needed to help LMICs determine the cost and effectiveness of offering various forms of cessation treatment and prioritize more cost-effective options. Implementation research is needed to determine how LMICs might use existing infrastructure to achieve the best possible reach as quickly as possible, at the lowest cost possible. Studies are needed, for example, on strategies for providing low-cost pharmacological therapies for smoking cessation in LMICs, perhaps through bulk purchases at the country or regional level or by making pharmacological therapies freely available. In addition, research is needed to help LMICs develop cessation strategies and treatment guidelines that are culturally sensitive and to increase demand for treatment among smokers. Research initiatives, such as the NIH's International Tobacco and Health Research and Capacity Building Program, can help build research capacity by supporting international research collaborations between investigators in the United States and scientists/institutions that are pursuing research on tobacco control and prevention in LMICs.¹³

Chapter Conclusions

1. Rates of tobacco cessation among current tobacco users will need to increase in order to significantly reduce the health consequences of tobacco use worldwide, in both the short and mid term.
2. Tobacco control policies, such as increased taxation, anti-smoking media campaigns, and comprehensive smoke-free policies, increase the demand for tobacco dependence treatment and the rates of subsequent cessation.
3. Research from high-income countries demonstrates that a number of effective and cost-effective tobacco dependence treatments can increase the likelihood of successful cessation. Relatively little evidence is available on the effectiveness and cost-effectiveness of tobacco dependence treatments in low- and middle-income countries and on the transferability of effective interventions from high-income countries to low- and middle-income countries.

4. Demand for cessation support exists in low- and middle-income countries, but in most of these countries, cessation services and products are often of limited availability or accessibility, or are unaffordable for most of the population.

Chapter 10. Tobacco Growing and Tobacco Product Manufacturing

Overview

Tobacco-growing practices and policies influence the supply of tobacco and can have important implications for tobacco use and tobacco control. In many countries, tobacco is a part of the farm and/or manufacturing sector. This chapter examines current issues related to tobacco growing and manufacturing, including the following topics:

- Economic and policy aspects of tobacco growing
- Crop substitution and diversification programs, particularly in low- and middle-income countries
- Tobacco product manufacturing
- The potential for tobacco product regulation to reduce tobacco use.

Policies encouraging crop diversification or substitution may be useful as part of a comprehensive strategy to reduce tobacco use. Research has demonstrated that alternative crops can be at least as profitable as tobacco, but many of these alternatives require investments in infrastructure, and tend to be highly specific to a country or region. The design and manufacturing of tobacco products have changed substantially over time, both as a result of efforts to allay consumers' concerns about health harms, and to reduce costs to manufacturers. However, these changes generally occurred in the absence of regulation and were sometimes harmful to public health. An important goal of tobacco product regulation is to ensure that future changes to tobacco products benefit public health. The evidence base for regulating tobacco products in the context of a rapidly evolving marketplace continues to grow, and tobacco product regulation is now recognized as an important component of a comprehensive approach to tobacco control.

Chapter Summary

Tobacco is grown in 124 countries, but by far the largest proportion of tobacco (92% in 2013) is grown in LMICs; more than 40% of the world's tobacco is produced in the People's Republic of China alone. Tobacco farming accounts for only a small share (<3%) of the global tobacco market. Tobacco growing, a very labor-intensive process, is believed to provide income to millions of families in the major tobacco-producing countries, although reliable estimates of the number of people involved are difficult to obtain.

Tobacco growing and manufacturing are increasingly concentrated in LMICs, but the higher value phases of the tobacco value chain increasingly take place in a small number of highly profitable multinational tobacco companies (MTCs), largely based in HICs. Additionally, the global tobacco leaf market is dominated by large multinational tobacco product manufacturers and leaf traders. Recent trends in the organization of the tobacco leaf production and marketing chain, including use of integrated production systems, has expanded these multinational corporations' control over price and other factors while making farmers increasingly dependent.

The manner and extent of government intervention in tobacco growing vary considerably from country to country. Historically, in HICs, particularly in the United States and the European Union (EU), efforts to support tobacco growing mainly relied on tobacco price supports. In LMICs, where tobacco can be an important source of foreign exchange and tax revenue, support programs are less focused on guaranteeing minimum prices to tobacco farmers and more concerned with restricting imports and improving infrastructure facilities that support expansion of tobacco-farming activities.

The global trend toward reducing or eliminating tobacco subsidies and price supports in HICs has significantly affected international production and trade patterns. Specifically, production has dropped in HICs that have phased out price supports, such as the United States, Canada, and traditional producing members of the EU like Greece and Italy. At the same time, tobacco production has increased in China, Brazil, Argentina, and in the three main producing countries of Africa—Malawi, Zimbabwe, and Zambia. In response to the declining production of good quality leaves in HICs, some of the main producers in LMICs have improved the quality of leaf they grow and have received increased farm gate prices.

There is a consensus that helping small farmers switch from tobacco to alternative crops can be a useful part of sustainable local economic development programs and can help overcome barriers to adopting and implementing strong tobacco control policies. Implementing successful crop substitution and diversification programs and supporting farmers' transition to alternative livelihoods require an understanding of the characteristics of tobacco-farming systems in producing countries and of the linkages between growers and tobacco companies. Tobacco is an expensive crop to grow, but so too are most high-value alternative crops. Research has shown that there are viable alternatives to tobacco farming, but these tend to be specific to individual countries and regions. Building new, and hopefully better, support systems for other crops is a clear challenge for diversification programs. It will take time for these systems to emerge, and any successful transition from tobacco will likely be a gradual process.

Tobacco product manufacturing is another key component in the tobacco supply chain and a major determinant of the impact of tobacco on public health. Since the mid-19th century, cigarettes have undergone significant changes in design. Modern cigarettes have been extensively engineered to include the use of additives and design features to deliver nicotine as efficiently as possible. These product changes have contributed to increased tobacco use and have created market power for the innovating firms. Some product design changes have been made in response to the public's increasing awareness of the health consequences of tobacco use, while others have been made to appeal to more consumers or to reduce manufacturers' costs. Product innovations likely contributed to attracting new users and may also have led some smokers, who would otherwise have quit, to continue to smoke. During the first decade of the 2000s, new products have emerged in the United States and elsewhere, including ENDS.

In the past, the evolution of cigarettes and other tobacco products in the United States and elsewhere has occurred in the absence of regulatory authority; as a result, these changes have sometimes harmed public health. A key goal of tobacco product regulation is to ensure that future changes in tobacco products benefit public health. Effective interventions for tobacco product regulation face many challenges, given the variety of tobacco products, the diversity of the tobacco industry, and the difficulties in assessing the health impact of the constituents and emissions of tobacco products. These challenges are likely to be greater in LMICs, where technical capacity is more limited and resources scarce. Given these challenges, the sharing of research and other information across countries, as well as the scientific and technical cooperation called for in Articles 21 (Reporting and exchange of information) and

22 (Cooperation in the scientific, technical, and legal fields and provision of related expertise) of the WHO FCTC will be particularly important in advancing tobacco product regulation. The optimal policy response in a rapidly evolving market of tobacco products remains an area for further study.

Despite these challenges, it is clear from past experience with changes in tobacco product design that tobacco product regulation is a necessary component of a comprehensive tobacco control strategy. To date, however, few countries have adopted wide-ranging product regulations, although many have adopted policies that narrowly regulate some aspects of tobacco product design or availability. Product regulation can be expected to advance in the coming years as Parties to the WHO FCTC further develop and implement guidelines on Articles 9 (Regulation of the contents of tobacco products), 10 (Regulation of tobacco product disclosures), and further implement Article 11 (Packaging and labelling of tobacco products).

Research Needs

Tobacco growing, product manufacturing, and tobacco product regulation are the focus of a number of ongoing research needs. These three subjects have received limited research to date compared with other aspects of tobacco control, and increased research attention to these areas is important, especially in LMICs. Research on the economics of tobacco growing, including issues such as the profitability of tobacco farming and the structure of the leaf-buying industry and value chains, is needed in order to understand the impact of tobacco production on countries. Research is also needed on the potential adverse effects of tobacco growing on the health of farmworkers, the environment, and farmers' livelihoods, and on potential alternatives to tobacco growing in various contexts. The development of a general analytic framework aimed at providing guidelines for implementing crop diversification and substitution programs in LMICs is an important research priority.

The diversity of tobacco products in use around the world, as well as the introduction of new products such as ENDS, poses challenges for product regulation. A greater understanding of the characteristics of new and emerging products, including their addictive potential and their harmful constituents, would inform regulatory efforts. It is essential to document and learn from the experience of countries such as Brazil, Canada, the United States, the United Kingdom of Great Britain and Northern Ireland, and others as they put in place new regulations for tobacco products. Research evaluating comprehensive product regulation strategies, including their impact on patterns of tobacco use and health outcomes, would inform the evolution, adoption, and implementation of future regulatory actions.

Chapter Conclusions

1. In 2013, ten countries accounted for most of the world's tobacco leaf production (80%); China alone produced more than 40% of the world's tobacco leaf. Tobacco is increasingly grown in low- and middle-income countries, and many of these countries export a large proportion of the world's tobacco leaf.
2. In the past, governments have sought to control price and quantity in the tobacco leaf market through quotas and pricing restrictions and to provide technical assistance to tobacco growers, along with other agricultural producers. Although most high-income countries have reduced or eliminated subsidies for tobacco growing, many low- and middle-income countries still provide support for the tobacco-growing sector.

3. The vast majority of workers in the tobacco production chain are tobacco farmers doing highly labor-intensive work on small family farms, which are increasingly located in low- and middle-income countries. In contrast, cigarette manufacturing—the higher value phase of the chain—is highly mechanized and dominated by a few large multinational corporations largely based in high-income countries.
4. Tobacco growing is relatively profitable, but farming of other crops has the potential to be as or more profitable than tobacco growing. Alternatives to tobacco growing tend to be highly specific to a country or region. Policies that encourage crop diversification or substitution are useful as part of a comprehensive tobacco control strategy, but alone they will have little impact on tobacco use.
5. Changes in product design—often made in response to consumer concerns about the adverse health consequences of tobacco as well as to reduce costs to the manufacturer—have likely contributed to increased tobacco use.
6. Product regulation is a rapidly developing component of a comprehensive tobacco control strategy. Regulation of tobacco products is a highly technical area, which poses many challenges for regulators, including challenges relating to the diversity of products, the ability of the tobacco industry to respond quickly to changing market conditions, and the need for sufficient capacity for testing and enforcing regulatory measures; addressing these issues is likely to be particularly challenging for low- and middle-income countries.

Chapter 11. Policies Limiting Youth Access to Tobacco Products

Overview

This chapter examines policy interventions designed to limit youth access to tobacco products and reviews issues related to the global implementation, enforcement, and impact of these policies. Key areas of discussion include:

- Sources of tobacco products among youth and measures of levels of youth access to tobacco and their variation by world region and World Bank country income group
- Types of youth access policies and their intended impacts
- Research on the implementation and enforcement of youth access policies and the impact of these policies on youth access to tobacco and youth smoking
- Limitations of youth access policies—in particular, how the necessary infrastructure and resources for implementing and enforcing such policies may pose challenges, particularly for low- and middle-income countries, and how the tobacco industry's involvement with these interventions can undermine broader tobacco control efforts.

In high-income countries, youth access policies, when consistently enforced, can reduce commercial access to tobacco products among youth. Evidence from high-income countries suggests that strongly enforced youth access policies that successfully disrupt the commercial supply of tobacco products to minors can reduce youth tobacco use, although the magnitude of this effect is relatively small. The limited evidence on the impact of youth access policies implemented in low- and middle-income countries suggests that they can be effective in reducing youth tobacco use in these settings, although the amount of reduction is unclear.

Chapter Summary

Youth access policies are intended to limit the commercial supply of tobacco products to youth, with the goals of preventing or delaying initiation of tobacco use by youth and reducing underage consumption, changing social norms about smoking, and decreasing overall smoking prevalence. A variety of policy measures are available to regulate the sale and distribution of tobacco products to youth. These measures are economically justified on the grounds that failures in the market for tobacco products are particularly pronounced during the ages at which most tobacco use begins. Youth access policies are most common in high-income and upper middle-income countries. When consistently enforced, these policies can effectively reduce commercial access to tobacco products among underage youth. However, sufficient resources are needed to implement and enforce these policies well enough to effectively limit the commercial supply of tobacco to youth.

Evidence from HICs about the effectiveness of youth access policies in reducing youth smoking is mixed. Strongly enforced youth access policies that successfully disrupt the commercial distribution of tobacco products to underage youth appear to reduce youth tobacco use, although the magnitude of this effect is relatively small. More research is needed to evaluate the impact of youth access policies in LMICs; emerging evidence suggests these policies can be effective in reducing youth smoking in LMICs although the amount of reduction is unclear. The evidence indicates that youth access policies are likely to have a greater marginal impact in countries with relatively weak overall tobacco control policies and programs. Moreover, the absence of youth access laws sends mixed messages about the harm posed by the use of tobacco and the importance of other youth tobacco prevention efforts. Efforts to limit youth access to tobacco products, although of limited influence as stand-alone measures, are an important component of a comprehensive strategy to reduce tobacco use.

Research Needs

Most of the evidence on the efficacy and cost-effectiveness of youth access policies reflects the experiences of HICs. More evidence is needed to evaluate the adoption, implementation, and impact of various youth access interventions in LMICs. Specific research needs in LMICs include continued monitoring of tobacco sales to minors and ongoing evaluation of enforcement and compliance measures in countries with existing youth access policies. In both HICs and LMICs, research could further inform other policy approaches for limiting youth access to tobacco, including bans on self-service displays, and regulation of the number, density and location of tobacco retail outlets within communities. As noted previously, a growing number of U.S. states and localities are raising the minimum age of legal access to tobacco products to 21 years; research to understand their experiences will help inform the evidence base for youth access policies going forward in the United States and elsewhere.

Chapter Conclusions

1. Information failures in the market for tobacco products are particularly pronounced during the ages at which most tobacco use begins, providing an economic rationale for interventions to limit youth access to tobacco products.
2. Youth access policies, when consistently enforced, can reduce commercial access to tobacco products among underage youth. Sufficient resources are needed to implement and enforce these policies well enough to effectively limit youth access to commercial sources of tobacco.

3. Evidence from high-income countries indicates that strongly enforced youth access policies that successfully disrupt the commercial supply of tobacco products to underage youth can reduce youth tobacco use, although the magnitude of this effect is relatively small.
4. Emerging research suggests that youth access policies can also be effective in reducing youth tobacco use in low- and middle-income countries, although the amount of reduction is unclear.

Chapter 12. Tobacco Manufacturing Privatization and Foreign Direct Investment and Their Impact on Public Health

Overview

The inflow of foreign direct investment (FDI) and the privatization of state-owned tobacco enterprises have increased for two reasons: (1) the rising globalization of industry in general and (2) the trend toward fewer government-owned business monopolies. This chapter examines the forces that drive FDI and privatization and their impact on global tobacco control efforts and public health. Specifically, this chapter discusses:

- The broad rationale for foreign stakeholders to invest in the tobacco industry, including globalization trends, FDI policies, and economic factors—particularly in low- and middle-income countries, where tobacco may attract the largest amount of such investment
- The economic and political issues surrounding the privatization of state-owned cigarette manufacturing industries
- The current global ownership status of tobacco industries, by WHO Region
- Public health concerns that arise from FDI and privatization trends, including the multinational tobacco companies' motivation to expand markets, the economic and political leverage that influences tobacco control policies, and the impact of increased production differentiation and pricing.

Country-specific cigarette consumption trends show that FDI and privatization of tobacco enterprises are not inherently bad for tobacco control. When the privatization of state-owned cigarette manufacturing industries occurs transparently and without obligations to manufacturers, privatization removes the conflicts of interest from governments that own their tobacco industries. Unfortunately, these conditions have not been the norm.

Countries that implement strong and comprehensive tobacco control policies following privatization have been effective in reducing tobacco use. In contrast, tobacco use has increased in countries without these policies. These results, in conjunction with the economic and social trends that surround FDI and privatization, underscore the importance of both public health policy and appropriate regulatory frameworks in the ongoing evolution of global ownership and investment trends in the tobacco industry.

Chapter Summary

Globalization is an inexorable trend for industries in general, including tobacco. Two key aspects of globalization are investment and trade.

The clear trend is toward further concentration of the tobacco industry in the hands of a few large MTCs. This concentration is driven in part by global initiatives to reduce investment barriers through bilateral and multilateral trade agreements. These initiatives enable MTCs to seek production

efficiencies, lower costs, and extend their markets at a time when governments have been increasingly privatizing to raise capital and reduce debt. Thus, forces for privatization and FDI as well as mergers and acquisitions affect the process of industry consolidation, a process that is at work in the tobacco industry as well as in many other industries.

Concentration in the tobacco industry has resulted in substantial consolidation, such that five firms (four MTCs and one state-run company) controlled 85% of the global tobacco market as of 2014.

These trends have had differing specific results in different countries, though it is clear that privatization and consolidation in this sector pose major challenges for public health efforts. Going forward, this environment presents both a major challenge and an opportunity for public health. On the one hand, many countries have been and are at risk from the marketing of tobacco products, and many privatization agreements have had a negative impact on tobacco control efforts. On the other hand, with tobacco manufacturing now in the hands of the private sector in most countries, governments may be able to move forward with tobacco control and public health efforts without the conflicts of interest inherent in operating state-owned tobacco enterprises.

Privatization was largely completed by the end of 20th century, when state-owned facilities changed ownership either fully or partially to MTCs in most countries worldwide, with a few exceptions. China's state-owned tobacco company, with over 40% of the world's cigarette market share distribution, is the major exception. Many governments had great expectations from these transfers to foreign investors, including higher export earnings, greater employment opportunities in tobacco production, increased tax revenues, and a higher standard of living for tobacco farmers due to better yields, quality, and prices for tobacco production supported by the MTCs. As a result, governments are often reluctant to enact strong tobacco control policies in hopes that multinational tobacco companies will stay in their countries and fulfill these expectations. Currently, however, little or no research shows the extent to which MTCs have met these expectations. At the same time, as part of ongoing consolidation and cost-cutting practices, MTCs have been closing their production facilities in a number of countries, costing governments unemployment benefits and loss of tax revenues from income and profit taxes. MTCs may use the threat of such consolidation to influence decision-makers toward weaker tobacco control policies.

Additionally, following trends in global trade, tobacco companies have sought to use trade agreements and international investment agreements to challenge tobacco control laws in some countries. This practice follows the tobacco industry's history of using litigation as a systematic strategy against tobacco control policies, at both the local and national levels, in many countries. The advent of trade and investment treaties has created new opportunities for tobacco product manufacturers and their representatives to delay or obstruct tobacco control policies around the world. Because of its vast financial resources, the tobacco industry is a formidable opponent in litigation; the industry's resources often dwarf those of countries and subnational jurisdictions that must defend their policies. Sometimes the mere threat of litigation may be sufficient to intimidate countries into delaying or abandoning tobacco control measures. Recently, countries negotiating the Trans-Pacific Partnership Agreement have recognized this problem by adding, for the first time in any trade agreement, a general exception that allows any party the right to deny the benefits of investor-state dispute settlement with respect to any claims challenging a tobacco control measure.¹⁴

Research Needs

Recent studies have provided crucial evidence of the correlation between privatization, market liberalization, and investment in the growth and efficiency of the tobacco industry. However, ongoing research is needed to continue to study the long-term impact of privatization and FDI in different environments as well as trends in tobacco use in countries that retain government ownership of tobacco enterprises. This research is essential, and it should be expanded to focus on China's state monopoly, its impact on tobacco control, and its relationships with other global tobacco companies. As with other aspects of tobacco control, ongoing surveillance is needed to monitor the use of international trade and investment treaties to influence tobacco control policies.

Research is also needed to better understand tobacco industry strategies to both shape and use trade and investment treaties to promote tobacco use and to interfere with countries' efforts to implement tobacco control policies that accord with the WHO FCTC and its guidelines. Research is needed regarding the tobacco industry's strategies and tactics to counter tobacco control measures—to block, diminish, or delay implementation of the most innovative and robust components of tobacco control—as well as the options available to countries to address these industry actions.

Chapter Conclusions

1. Over the past few decades, the privatization of domestic tobacco companies and direct investment by multinational tobacco companies, particularly in low- and middle-income countries, have contributed to the globalization of the tobacco industry.
2. The impact of privatization on public health is varied and is influenced by the strength of domestic regulation. Some countries have implemented strong tobacco control measures after privatization, leading to reductions in tobacco use. However, in the majority of countries, privatization leads to significantly greater efficiency and production, massive marketing campaigns, and increased cigarette consumption—particularly among women and young people.
3. China's state tobacco monopoly is a market leader, with over 40% of global cigarette market share, almost all of which is consumed domestically. The China National Tobacco Corporation appears poised to expand beyond domestic sales by using foreign direct investments, partnerships with multinational tobacco companies, development of an international supply chain to support its premium brands, and by other means.
4. Increasingly, the tobacco industry is using trade and investment treaties to challenge innovative tobacco control policies. The tobacco industry also uses the threat of litigation, with its attendant costs, and lobbying campaigns to deter governments from advancing tobacco control policies, especially in low- and middle-income countries.

Chapter 13. Licit Trade in Tobacco Products

Overview

The liberalization of trade in recent decades has affected the global market for tobacco products and has been shown to affect cigarette consumption, particularly in low- and middle-income countries. This chapter examines the current state of licit trade in cigarettes and tobacco leaf and its impact on tobacco control efforts. Specific topics include:

- Import, export, and price trends for both cigarettes and tobacco leaf across different countries and world regions

- The potential impact of trade liberalization on cigarette consumption, as revealed by a review of the literature and by economic analyses
- Global, regional, and bilateral trade agreements and their impact on tobacco use.

The current trade environment for tobacco leaf and tobacco products underscores the importance of implementing and enforcing effective tobacco control policies, particularly in ways that do not discriminate between imported and domestic products. Broad policies, such as tobacco excise tax increases, bans on smoking in public places and workplaces, packaging and labeling measures, and comprehensive bans on marketing, are important tools for controlling tobacco use and mitigating the impact of trends in international trade.

Chapter Summary

Trade in tobacco leaf accounts for a very small proportion (<1%) of global agricultural imports and exports. A few countries, however, rely heavily on export earnings from tobacco leaf; in 2012, these included Zimbabwe, Malawi, Macedonia, Bangladesh, Zambia, and Tanzania. A small number of countries dominate the global export of tobacco leaf—five countries exported more than half of the world's tobacco leaf in 2012. The import of tobacco leaf is also dominated by a small number of countries; five countries together accounted for nearly 40% of global tobacco leaf imports in 2012.

The value and quantity of global tobacco leaf exports and imports have trended upward over the last 30 years. Since the late 1990s, upper middle-income countries have been the largest exporters of tobacco leaf, with countries in the Americas Region, Brazil in particular, being dominant. HICs, especially those in the European Region, have been the largest tobacco leaf importers for many decades.

Although many countries participate in either the export or import of manufactured cigarettes, this product accounts for a very small share of overall global trade. For example, in 2012, trade in cigarettes (both exports and imports) accounted for only 0.11% of the world's total trade value in goods and services. As with tobacco leaf, trade in cigarettes is dominated by a relatively small number of countries. In 2012, five countries accounted for nearly half of the world's cigarette exports, primarily HICs, in the European Region. Similarly, five countries accounted for about one-third of the world's cigarette imports, and again, European Region countries accounted for the largest share.

Both the quantity and value of world cigarette exports have increased in the last several decades, with steep rises seen particularly in the late 1980s and early 1990s. These rises coincided with expansion of the General Agreement on Tariffs and Trade, an increased number of bilateral and multilateral trade agreements, and other factors reflecting increased economic globalization.

The price-instability index is considerably lower for tobacco leaf than for other agricultural products; this relative stability may well be one of the reasons that farmers find the crop attractive to grow. The export price of cigarettes from HICs has exceeded the price of cigarettes exported from LMICs for many decades, probably reflecting the higher production costs and higher quality of cigarettes produced in HICs. With regard to cigarettes, higher quality does not refer to the health impact of the product, rather it reflects features such as packaging, flavoring, or other product design features which may increase the appeal to consumers.

The increase in tobacco trade has been facilitated by adoption of a variety of international, regional, and bilateral trade agreements which have reduced tariff and non-tariff barriers to trade for a variety of goods and services. Trade in tobacco has also increased as a result of foreign investment, as described in chapter 12. In addition to the World Trade Organization agreements, the number of regional and bilateral trade and investment agreements has increased sharply since the early 1990s, providing opportunities for multinational companies, including tobacco companies, to enter or increase their presence in new markets.

Trade agreements have implications for the availability and accessibility of tobacco-related goods and services within and across countries and, as a result, for tobacco consumption. A number of studies have analyzed the impact of trade liberalization on tobacco consumption, and all have concluded that expanded trade in tobacco products has led to an increase in consumption. The new estimates presented in this chapter also show that increased trade openness increases cigarette consumption globally, with a greater impact on low-income countries, where tobacco control measures are generally weaker than in middle- and high-income countries.

Further liberalization of trade in tobacco leaf and tobacco products can be expected to increase tobacco product consumption, particularly in low-income countries. However, governments have many tools available to avert a rise in consumption, including tobacco excise tax increases, bans on smoking in public places and workplaces, packaging and labeling measures, and comprehensive bans on marketing. Such policies may be introduced or strengthened but should be nondiscriminatory and necessary to protect public health.

Research Needs

In an increasingly globalized world, global, regional, and bilateral trade agreements will continue to exert an important influence on tobacco use and tobacco control efforts. There is a continued need to understand how specific trade agreements, and trade liberalization in general, impact trade in tobacco and tobacco products, tobacco consumption, and tax evasion, and how the entry of products from multinational tobacco companies can affect the pricing and marketing strategies of local companies. Research is also needed on how trade agreements influence adoption and implementation of tobacco control policies. How tobacco companies and their allies may seek to shape the contours of trade agreements to advance their business models and spur growth (or hamper decline) in tobacco consumption is also an important focus for further research.

Chapter Conclusions

1. Trade in tobacco leaf accounts for a very small proportion (<1%) of tobacco agricultural imports and exports, and very few countries rely heavily on earnings from trade in tobacco leaf.
2. Although many countries participate in either the export or import of manufactured cigarettes, these products account for only a very small share of overall global trade in goods and services.
3. International, regional, and bilateral trade agreements have reduced tariff and non-tariff barriers to trade, increased trade in tobacco leaf and tobacco products, and contributed to the globalization of the tobacco industry.
4. Increased liberalization of trade has contributed to increased tobacco use in low- and middle-income countries. During the period when trade in tobacco products was liberalized, most low- and middle-income countries had weak or no tobacco control measures in place.

5. Recent World Trade Organization decisions involving challenges to domestic tobacco control policies suggest that governments can address public health concerns associated with increased liberalization of trade in tobacco leaf and tobacco products by adopting and implementing effective tobacco control policies and programs that apply evenly to domestic and foreign tobacco growers and manufacturers.

Chapter 14. Tobacco Tax Avoidance and Tax Evasion

Overview

Tax avoidance (licit) and tax evasion (illicit) undermine the effectiveness of tobacco control policies, particularly higher tobacco taxes. These activities range from legal actions such as purchasing tobacco products in lower tax jurisdictions, to illegal ones such as smuggling, illicit manufacturing, and counterfeiting. This chapter examines:

- Types of tax avoidance and tax evasion
- Measurement of tax avoidance and evasion
- Determinants of tax avoidance and evasion
- Measures to counteract tax evasion, including the WHO FCTC Protocol to Eliminate the Illicit Trade in Tobacco Products (ITP).

The tobacco industry and others often argue that high tobacco product taxes lead to tax evasion. However, the evidence shows that non-tax factors including weak governance, high levels of corruption, poor government commitment to tackling illicit tobacco, ineffective customs and tax administration, and informal distribution channels for tobacco products are often of equal or greater importance. Addressing illicit trade requires concerted attention to these root causes.

Chapter Summary

Circumventing taxes on tobacco products through licit means (tax avoidance) and through illicit means (tax evasion) undermines the ability of tobacco control policies to reduce tobacco use. The most serious challenge is posed by large-scale smuggling, because it involves large quantities of tobacco products, has a greater impact on public health and regional economies, and frequently provides revenue for organized criminal networks and terrorist organizations. Previously internal tobacco industry documents, investigative reporting, and litigation show that tobacco companies at the global level have promoted and facilitated cigarette smuggling.

A variety of methods have been used to estimate the extent of tax avoidance and evasion, including consulting expert opinion, comparing tobacco product exports and imports, comparing tax-paid sales with consumption, surveying consumers' purchasing behaviors, comparing taxed sales with estimated consumption using demand analysis, and observational methods. Estimating the extent of tax avoidance and tax evasion is difficult, given that those involved may have a stake in keeping their involvement in these activities secret.

Large tax differences between jurisdictions create incentives for tax avoidance (e.g., cross-border shopping) and tax evasion (e.g., bootlegging). These incentives diminish as the distance between jurisdictions increases. In contrast, the evidence linking price to the level of large-scale illicit trade is mixed, indicating that factors other than price are equally or more important determinants. Large-scale

illicit trade, generally conducted by criminal networks, flourishes in countries and regions with weak governance, high levels of corruption, and lax law enforcement, and where smuggling of other commodities is also common. Illicit trade routes are constantly evolving in response to governments' efforts to curb illicit trade.

Experience from many countries demonstrates that illicit trade can be successfully addressed, even when tobacco taxes and prices are raised, and curbing illicit trade results in increased tax revenues and reduced tobacco use rates. Government commitment to combating illicit trade is essential. Successful strategies include implementing tracking and tracing systems; controlling the supply chain by licensing all parties involved in tobacco product manufacturing and distribution; implementing appropriate policies, stronger enforcement, and enhanced penalties; and international cooperation in investigation and prosecution of participants in illicit trade.

The ITP, the first protocol of the WHO FCTC, was adopted in November 2012. The ITP recognizes that illicit trade increases the accessibility and affordability of tobacco products, fuels the tobacco epidemic, undermines tobacco control policies, reduces government revenues, and helps to fund transnational criminal activities. Once in force, the ITP will oblige Parties to implement a variety of measures, with special emphasis on those that strengthen control over the supply chain of tobacco products, and to cooperate in global efforts to eliminate illicit trade in tobacco products.

Research Needs

Research is needed to better understand the extent of tax avoidance and evasion, and the effectiveness of interventions to curb them. Generating adequate data on the extent of tax avoidance and evasion is challenging when illicit activities are involved. Developing reliable measures to determine the magnitude of the problem is essential, particularly in low- and middle-income countries, given that much of the existing data on tax avoidance and evasion come from North America and Europe. There is also a need to understand transfer pricing activities of multinational tobacco companies. A better understanding of the determinants of illicit trade—including the supply of illicit tobacco products—is needed in order to maximize the effectiveness of interventions to limit illicit trade. Systematic evaluations that examine the effectiveness of interventions to reduce illicit trade would contribute to the evidence base. Lastly, while much of the research to date has focused on cigarettes, illicit trade in other tobacco products is an area that would benefit from further research.

Chapter Conclusions

1. Tax avoidance and tax evasion, especially large-scale smuggling of tobacco products, undermine the effectiveness of tobacco control policies and reduce the health and economic benefits that result from these policies.
2. In many countries, factors such as high levels of corruption, lack of commitment to addressing illicit trade, and ineffective customs and tax administration, have an equal or greater role in explaining tax evasion than do product tax and price differentials.
3. Illicit trade has sometimes included the involvement of tobacco companies themselves.
4. Experience from many countries demonstrates that illicit trade can be successfully addressed, even when tobacco taxes and prices are raised, resulting in increased tax revenues and reduced tobacco use.

5. Implementing and enforcing strong measures to control illicit tobacco trade would enhance the effectiveness of significantly increased tobacco taxes and prices and strong tobacco control policies in reducing tobacco use and its health and economic consequences.

Chapter 15. Employment Impact of Tobacco Control

Overview

Adoption and implementation of effective tobacco control policy interventions are often influenced by concerns over the potential employment impact of such policies. This chapter examines employment issues and discusses the following:

- An overview of current tobacco-related employment, including employment in tobacco growing, manufacturing, wholesale and retail sales, and tobacco-expenditure-induced employment
- Trends in tobacco-related employment including the shift toward low- and middle-income countries
- Impact of globalization, increased workforce productivity, and new technologies on tobacco-related employment
- Impact of tobacco control policies on overall employment and how this impact varies based on the type of tobacco economy in specific countries.

Econometric studies show that in most countries tobacco control policies would have an overall neutral or positive effect on overall employment. In the few countries that depend heavily on tobacco exporting, global implementation of effective tobacco control policies would produce a gradual decline in employment. Around the world, employment in tobacco manufacturing has decreased primarily because of improvements in manufacturing technology, allowing more tobacco products to be manufactured by fewer workers, and by the shift from state-owned to private ownership, which requires companies to operate in a more competitive environment.

Chapter Summary

The tobacco industry generates jobs directly and indirectly in many economic sectors. Employment in tobacco farming is concentrated in the few countries that are major producers of tobacco leaf, and research has shown that the share of agricultural employment in tobacco farming has declined over the years. Global employment in tobacco manufacturing, also concentrated in a few countries, has been relatively stable over time despite a considerable increase in global production. Tobacco manufacturing's share of total manufacturing employment tends to be small and is declining in most countries. Technology has played a major role in increasing productivity in both tobacco growing and manufacturing, allowing fewer workers to grow more tobacco leaf and produce more manufactured tobacco products. Privatization, the shift from state to private ownership, has also tended to reduce employment by requiring companies to operate in a more competitive environment.

Research on the impact of tobacco control policies on employment focuses on the impact on the tobacco sector (gross employment impact), or considers employment impact in the tobacco sector along with other economic sectors to which expenditures might be redirected (net employment impact). Studies of net impact provide a more complete picture of the effect of tobacco control policies on employment. The effect of tobacco control policies on employment depends in part on the country's type of tobacco trade economy, as categorized by its share of imports and exports: net exporters, balanced economies, net

importers, or mixed economies. Employment effects also differ depending on whether the particular tobacco control policy of interest impacts the domestic or global tobacco market.

For the vast majority of countries, studies have found that tobacco control policies have had no effect or a small net positive effect on national employment. For the few countries that rely heavily on tobacco exports, the economy would incur a transition cost as a result of global tobacco control efforts. Tobacco farmers in particular could be affected negatively because of the labor-intensive nature of tobacco farming, their investments in equipment for tobacco production, and because of a lack of resources to help them adapt to the changing environment. However, domestic tobacco control measures in these countries would have little effect on national employment.

The challenge of transitioning from tobacco-related employment to other viable economic activities would be moderate in the long term. The addictive aspect of smoking means that reductions in tobacco consumption would occur gradually. In fact, the transition to a smaller tobacco economy has been ongoing in HICs since the 1950s as a result of a steady decline in cigarette consumption and because of technological improvements. Improvements in technology and the tobacco industry's pursuit of increased productivity have led to significant decreases in employment in the tobacco core sector. As Schelling¹⁵ noted decades ago, in general, the gradual transition away from tobacco farming and manufacturing to other economic activities would mean that today's tobacco farmers would not lose their jobs, but that fewer children of tobacco-farming families would become tobacco farmers themselves. This remains true today.

Research Needs

Policymakers are sometimes reluctant to implement tobacco control measures for fear that they will have a negative impact on employment. For this reason, high priority should be given to developing accurate and comprehensive data on the number of people employed in both tobacco growing and tobacco manufacturing. Studies should specify the methods used to estimate employment; for example, to accurately measure full-time equivalent (FTE) employment in tobacco growing, it is important to account for both seasonal and part-time work. Additional studies of the factors influencing employment in tobacco growing and manufacturing, including the impact of technological advances and economic globalization, as well as the potential influence of tobacco control policies, would be informative. Studies of the effect of tobacco control policies on employment should consider the net impact of these policies, which takes into account that losses in the tobacco sector may be offset by increases in other sectors of goods and services.

Chapter Conclusions

1. The number of jobs that depend on tobacco—tobacco growing, manufacturing and distribution—is low and has been falling in most countries.
2. Adoption of new production technologies and improved production techniques, together with the shift from state to private ownership in many countries, has reduced employment in both the tobacco-farming and -manufacturing sectors.
3. In nearly all countries, national tobacco control policies will have either no effect or a net positive effect on overall employment because any tobacco-related job losses will be offset by job gains in other sectors.

4. In the few countries that depend heavily on tobacco leaf exports, global tobacco control policies could lead to job losses, but these losses are expected to be small, gradual, and unlikely to affect the current generation of tobacco farmers in these countries.

Chapter 16. The Impact of Tobacco Use and Tobacco Control Measures on Poverty and Development

Overview

The economic and health consequences of tobacco use are particularly pronounced among the world's poorest populations, who can afford these costs the least. The interrelationships of tobacco use, individuals' economic status, and tobacco control policies are complex and, as an integral part of a comprehensive tobacco control strategy, require careful appraisal. With this aim in view, this chapter examines the following topics:

- The relationship between poverty and tobacco use, including implications for low- and middle-income countries
- The opportunity cost of tobacco use relative to other household expenditures, especially in poor households
- The impact of tobacco use on economic development, including population health and health care costs
- The implications of tobacco control strategies for the poor.

High-income countries have succeeded in curbing tobacco consumption by significantly raising tobacco taxes and prices and by employing the tobacco control strategies described in the monograph. However, today around 80% of smokers worldwide live in low- and middle-income countries, and in most countries, regardless of country income group, tobacco use is more concentrated in low-income populations. Understanding the effects of tobacco on low-income populations is particularly important in reducing tobacco use and its adverse health consequences.

Chapter Summary

Tobacco use exacerbates poverty by diverting the limited resources of poor households away from basic needs such as food and shelter, health care, and education. The opportunity costs of tobacco use are greatest for the poor because they have the most difficulty meeting basic household needs. Increases in health care expenditures for treatment of tobacco-related diseases and economic losses due to premature death add additional burdens to other competing issues of the poor and of society as a whole.

An estimated 860 million adult smokers live in LMICs, and approximately 226 million globally are living in poverty. Moreover, the economic and health burdens of tobacco use appear to be greater for LMICs where, by definition, financial resources are more limited than in HICs. The higher concentration of smokers who are poor in low- and lower middle-income countries indicates that the tobacco use epidemic has not spared the poorest of the world's poor.

Typically, a lag of a couple of decades or more occurs between the initiation of smoking at an early age and the resulting illnesses or premature death, often in middle age. Countries at the lower end of the world's economic spectrum, and hence at risk of experiencing the fastest growth in tobacco consumption in tandem with economic development, can anticipate reaching the peak effects of the tobacco use epidemic about halfway into the 21st century. As development gradually transforms

low-income countries into lower middle-income countries, their poorest populations will be the most susceptible to the epidemic of tobacco use occurring in the developing world. In HICs, socioeconomic inequality in smoking status has contributed significantly to socioeconomic inequality in health status, an effect likely to be repeated in LMICs unless vigorous preventive actions are taken.

Curtailing tobacco use is increasingly recognized as important for global economic development. The WHO FCTC describes “the devastating worldwide health, social, economic, and environmental consequences” of tobacco use, and the global Sustainable Development Goals adopted in 2015 explicitly include strengthening the implementation of the WHO FCTC as part of Sustainable Development Goal 3 (Ensure healthy lives and promote well-being for all at all ages). Already, several national development agencies incorporate tobacco control as a development strategy. To give an example of a specific policy goal, research showing that tobacco use crowds out expenditures on food has led to suggestions that strategies to decrease child malnutrition should include tobacco control measures because of their potential to increase family resources to purchase food.

Studies have assessed the implications of tobacco control measures—both tax and non-tax measures—for reducing tobacco-related health inequities between the rich and poor. Tobacco taxes can contribute to reducing health inequities because the poor are generally more responsive to price increases than people who are not poor and because a portion of tax revenues can be earmarked for programs that directly benefit the poor. Other tobacco control strategies discussed in the monograph, including public education efforts, pictorial health warnings, advertising bans, and the provision of free or low-cost cessation services, can also contribute to reducing tobacco use in all socioeconomic groups.

Research Needs

The complex relationships between tobacco use, poverty, and development are now well recognized. However, evidence on how these relationships operate, especially in LMICs, is limited in several areas. Further LMIC-based studies are needed that collect and analyze additional evidence on a wide range of development indicators both within and between countries. Additionally, only limited evidence exists regarding the relationships between poverty, development, and use of tobacco products other than cigarettes. Interaction between economic development and the wider array of tobacco products used in many LMICs should be considered, along with the impact of differences in taxation across this wider variety of tobacco products. The literature on the equity implications of both tax and non-tax tobacco control measures in LMICs is scant. Research to understand how both tax and non-tax measures can contribute to reducing poverty and income inequality will help LMICs avoid repeating the experience of HICs.

Chapter Conclusions

1. Tobacco use and its consequences have become increasingly concentrated in low- and middle-income countries and, within most countries, among lower socioeconomic status populations.
2. Tobacco use in poor households exacerbates poverty by increasing health care costs, reducing incomes, and decreasing productivity, as well as diverting limited family resources from basic needs.
3. By reducing tobacco use among the poor, tobacco control policies can help break the cyclical relationship between tobacco use and poverty.

4. Tobacco control efforts that are integrated with other public health and development policies can improve the overall health of the poor and can help achieve the Sustainable Development Goals.
5. Lower income populations often respond more to tobacco tax and price increases than higher income populations. As a result, significant tobacco tax and price increases can help reduce the health disparities resulting from tobacco use.

Chapter 17. Ending the Epidemic

Overview

This summary chapter reviews the major conclusions that can be drawn from the study of the economics of tobacco control and identifies priorities for future research in this field.

The monograph presents strong evidence that tobacco control measures are effective and do not harm national economies. Policies and programs that reduce the demand for and supply of tobacco products are highly cost-effective and lessen the disproportionate burden that tobacco use imposes on the poor. Given the enormous health and economic consequences of tobacco use and the rapidly evolving global market for tobacco, these interventions are now more urgently needed than ever, particularly in LMICs.

Research priorities (particularly in LMICs) include studies to better understand: the effects of tobacco taxation and pricing, the economic impact of tobacco use and tobacco control measures, interrelationships between tobacco use and poverty, illicit trade, economically viable alternatives to tobacco growing and manufacturing, and implementation and evaluation of the World Health Organization Framework Convention on Tobacco Control.

Implementing effective tobacco control measures makes it possible that tobacco could become a minor public health problem rather than the public health catastrophe it currently is or could soon become in most countries. Implementation of strong, comprehensive tobacco control strategies has reduced tobacco use in many countries at all income levels, and government fears that tobacco control will have an adverse economic impact are not supported by the evidence. The monograph provides the evidence that implementing effective tobacco control measures makes sense from both an economic and public health standpoint for countries at all income levels.

High-income countries have succeeded in curbing tobacco consumption by significantly raising tobacco taxes and prices and by employing the tobacco control strategies described in the monograph. However, the majority of tobacco users worldwide today live in LMICs, and in most countries tobacco use is more concentrated in low-income populations. Understanding the effects of tobacco on low-income populations is particularly important for reducing tobacco use and its adverse health consequences.

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