A Review of Tobacco Control Program Economic Evaluations

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Abstract

In the United States, an estimated 443,000 individuals die each year from smoking-related diseases. Annually, cigarette smoking costs over $193 billion in medical expenditures and productivity losses. To help alleviate this burden, tobacco control initiatives and regulations are funded by several states, the federal government, and a number of national organisations. We analysed the current literature on economic analyses of tobacco control programmes for this paper. The most commonly studied smoking cessation strategies include Nicotine Replacement Therapy (NRT) and self-help. Other key interventions, such as price and tax increases, media campaigns, smoke-free air regulations and workplace smoking interventions, quitlines, youth access enforcement, school-based programmes, and community-based programmes, have significantly fewer research.

Keywords: Economic evaluation • Cost-effectiveness • Smoking • Tobacco use

Introduction

Cigarette smoking has a huge health and economic impact on the country. In the United States, an estimated 443,000 Americans die each year from a smoking-related disease [1]. At least 80% of deaths from Chronic Obstructive Pulmonary Disease (COPD) and early cardiovascular disease and mortality, as well as 30% of all cancer deaths, are caused by smoking [2]. Annually, cigarette smoking costs over $193 billion in medical expenditures and productivity losses [1]. States spent $12 billion in Medicaid money treating tobacco-related disorders in 2001 [3]. In 1997, the entire expenditures of smoking to the Medicare programme totaled $20.5 billion [4]. To help alleviate this burden, numerous states, the federal government, and a number of national organisations provide funding for tobacco prevention. States should spend an average of $5.98 per person on tobacco prevention programmes, according to the Centers for Disease Control and Prevention (CDC) [5]. States spent $538 million ($1.85 per person) on tobacco prevention programmes in fiscal year 2006, down from a high of $750 million ($2.51 per person) in fiscal year 2003 [6]. Tobacco control policies and programmes have been shown to reduce smoking initiation, increase smoking cessation, and reduce second hand smoke exposure [7-8]. Although the effectiveness of tobacco control strategies is well documented, less is known about their cost-efficiency. Economic evaluation is important for finding, evaluating, valuing, and comparing the costs and outcomes of different initiatives. We analysed the current literature on economic analyses of tobacco control programmes for this paper.

Despite significant gaps in the data, studies reveal that tobacco control programmes and policies are either cost-saving or extremely cost-effective when compared to other public health interventions in almost every scenario. We hope that this report will aid researchers, tobacco control advocates, and policymakers in developing an economic research agenda that will support the continuation of state tobacco control initiatives.

Economic evaluation elements

Cost analysis (CA), Cost-effectiveness Analysis (CEA), Cost-Utility Analysis (CUA), and Cost-Benefit Analysis (CBA) are the four primary approaches used in economic analyses.

Cost analysis: Cost assessments can be performed independently, but they are frequently included as part of a CEA, CBA, or CUA and cover the expenses of creating and executing an intervention. The cost of a programme is usually represented in total costs or dollars per person served [9]. Direct costs, indirect costs, and intangible costs are the three types of expenses. Direct costs can be medical or nonmedical in nature. Indirect costs (opportunity costs) are associated with the amount of time and productivity lost by people targeted by the intervention. Intangible costs, which assess the pain or suffering caused by a treatment, are difficult to quantify and are consequently rarely considered in economic analyses.

Analysis of Cost-Effectiveness: CEA correlates the cost of an intervention with the health benefits it provides [8]. Cases avoided, hospital days avoided, fatalities averted, and life years saved are all indicators of improved health. CEA is used to compare one intervention to no intervention or two or more interventions with varying levels of efficacy or cost. Each intervention's health benefits do not have to be identical, but they must be able to be converted to a common unit, such as life years saved. A cost-effectiveness ratio, which assesses the net cost of an intervention per unit of improved health, is often used to express the findings of a CEA.

Analysis of Cost-Utility: The cost of an intervention is compared to one specific measure of health improvement, the Quality Adjusted Life Year (QALY). To determine overall quality of life, QALY considers both mortality and morbidity. CUA results are often stated in terms of cost per QALY saved [9]. This method has the advantage of allowing different types of health gains to be compared [9]. The Disability-Adjusted Life Year (DALY) and the healthy life year are two other time-based health indicators frequently related with CUA.

Analysis of Cost-Benefit: The expenditures of the programme and the health benefits achieved are expressed in dollars, which are discounted to their current or present value. Discounting is a method of comparing the worth of expenditures and benefits regardless of their timing. When the interventions being compared have different or numerous outcomes, CBA is utilised. Net benefits (present value of benefits less harms, minus cost of prevention) and benefit–cost ratio (present value of benefits divided by present value of costs) is the two most widely used summary statistics for CBA [9]. Differences in expected interest rates will have a significant influence on the present value of future benefits streams. In general, if the benefits outweigh the costs, the programme is a good investment. Because of the difficulty and controversy that might surround putting monetary values on health outcomes, CBA is not as common in public health research as CEA and CUA.

The Importance of Perspective in Economic Analysis: Each of the aforementioned economic evaluation studies (CA, CEA, CUA, and CBA) can be conducted from the perspective of various intervention stakeholders, such as intervention participants, the funding agency, or society as a whole.

The end user of the study frequently dictates the perspective of an economic evaluation, and perspective decides which costs and benefits should be included in the study. As a result, defining the study's perspective before beginning data collecting or analysis is crucial. Private payers, government agencies, public payers, and society as a whole are all common perspectives.

When faced with a fixed budget, a set of options for how to spend it, and a number of other limitations (resource, ethical, or political), decision makers frequently seek evaluations that are extremely particular to their situation.

Insurance coverage: Only one study on the cost-effectiveness of workplace smoking treatments was discovered evaluated the cost-effectiveness of four employers' health-care plans and found that as many as 2.8% of employees would quit if both behavioural and nicotine-replacement approaches were completely covered. Employers would pay $2.10 to $6.48 per enrollee per year if they offered full coverage. The overall cost of quitting smoking ranged from $1,223 to $1,571.

Campaigns in the media: Two studies that looked at the cost-effectiveness of mass media campaigns were found. The costs and outcomes of Scotland's general public antismoking. The campaign included three primary components: (1) television, outdoor posters, and press advertising; (2) Smokeline, a telephone quitline for cessation support; and (3) You Can Stop Smoking, a handbook with practical information on quitting smoking. The average cost per quitter was $341 to $748. At a 6%discount rate, the cost per life year saved ranged from $617 to $1,330. The cost-effectiveness of a four-year mass media campaign that was found to prevent the onset of smoking in adolescents.

Discussion

The effects of tax and pricing policies, government laws, education, media campaigns, and cessation therapy on smoking prevalence and health outcomes were the focus of the articles evaluated in this research. The most thoroughly studied tobacco control methods appear to be smoking cessation therapies and group or individual counselling. Interventions for pregnant women that combine therapies with some sort of counselling are more cost-effective than standalone interventions. The cost of a cessation intervention for pregnant women is as low as $37 per participant, with a 15% cessation rate. As a result, small investments in pregnancy cessation programmes have a positive impact on pregnancy outcomes. Pregnant women's interventions reduce smoking prevalence while also lowering LBW and high infant mortality. The newborns born to experimental group participants were 57 grams larger on average, and the incidence of LBW was practically half in the experimental group compared to the control group. The experimental group's average cost per delivery was $1,767, whereas the control group's was $1,846. In terms of the number of quitters and life years gained indicated that interventions aimed at men were more cost-effective than those aimed at women. To reduce the burden of smoking, governments and non-governmental organisations fund a variety of tobacco control initiatives, which have proven to be effective in reducing smoking start, quitting, and second hand smoke exposure investigated the link between tobacco control spending and youth smoking. They discovered that spending on tobacco control lowered the prevalence of young smoking and the average number of cigarettes smoked.

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