EDITORIAL COMMENT

Tobacco use: More needs to be done to control active and passive smoking

Consumo de tabaco - para controlar o tabagismo ativo e passivo é necesário fazer mais

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Available online 1 April 2020

There was a time when tobacco was thought to have medicinal qualities and another time when tobacco consumption was common, fashionable, and ubiquitous, and considered socially acceptable. However, statistical evidence suggesting a relationship between smoking and lung cancer began to emerge in the late 1920s, although scientific evidence of a causal relationship was not available until the mid-twentieth century. Since then, epidemiologists have collected evidence in large prospective and case-control studies to support a causal relationship between smoking and various diseases, chiefly cancer and cardiovascular and chronic respiratory diseases. As evidence on the negative effects of tobacco use accumulated, numerous organizations produced technical reports with programs and strategies for tobacco control that changed the course of public health. However, despite some success in implementing evidence-based policies and programs that have decreased smoking rates in recent decades, more effective strategies are needed to end the tobacco epidemic.

The history of the science linking tobacco to diseases goes back nearly a century, but some articles and reports are true milestones that should be highlighted. Landmark articles were published by Doll and Hill and by Wynder and Graham in 1950 on case-control studies linking smoking and lung cancer in a causal relationship.[1,2] The scientific and medical communities both cast doubt on the findings, but by a few years later the evidence was incontestable. Richard

Doll conducted the British Doctors Study, a prospective study with fifty years of follow-up, with Austin Bradford Hill starting in 1951.[3,4] In 1962, the UK's Royal College of Physicians issued a report which clearly indicated cigarette smoking as a cause of lung cancer and bronchitis and argued that it probably contributed to cardiovascular disease as well.[5] The relationship between smoking and the risk of coronary heart disease (CHD) was discussed in the US Surgeon General's report in 1964,[6] and the 1979 report concluded that smoking is causally related to CHD for both men and women. Subsequent Surgeon General's reports (1983, 1986, 1989, 2004 and 2006) extended this association to other atherosclerotic diseases, including peripheral vascular disease, abdominal aortic aneurysm and stroke. The existence of this causal relationship is consistent with the results of other prospective[7] and case-control studies.[8,9] The 2001 report covers exposure to secondhand smoke and cardiovascular disease and found that the evidence did indicate a causal relationship. The 2006 report found that the evidence is sufficient to infer a causal relationship between exposure to secondhand smoke and CHD, particularly a reduction in coronary events among people younger than 65 years of age following the implementation of a smokefree law or policy, while the evidence is suggestive but not sufficient for other heart disease outcomes or cerebrovascular events.[10,11]

The response of the World Health Organization (WHO) has been to lead a remarkable campaign for tobacco control over the past 50 years. After the reports presented to the 23rd and 24th World Health Assemblies (1970 and 1971), the WHO expert committee made recommendations on ''Smoking and its effects on health'', in 1974 (techni-

cal report series no. 568), and ''Controlling the smoking epidemic'', in 1978 (technical report series no. 636). In the latter report, the Committee argues that the United Nations system and the World Bank have as a whole not yet accepted the importance of their involvement in a world smoking control program and recommends that appropriate action should be taken as soon as possible. As a public health problem, governments should accept responsibility for carrying out smoking control actions by their agencies and stimulate non-governmental organizations to also take action. Since then, measures have been presented to control the tobacco epidemic and the WHO has produced reports on the global tobacco epidemic outlining developments in the field. In force since 2005, the WHO Framework Convention on Tobacco Control (FCTC), the first treaty negotiated under the auspices of the WHO, is one of the most widely embraced treaties in United Nations history.[12] It currently has 181 Parties, covering more than 90% of the world's population, and represents a paradigm shift in developing a regulatory strategy to address addictive substances, asserting the importance of demand reduction strategies as well as supply issues. It is a milestone in the promotion of public health, an evidence-based treaty that provides legal dimensions for international health cooperation and sets high standards for compliance.[13]

In 2007, the WHO introduced a practical way to promote government action on six evidence-based components, the essential elements of tobacco control strategy in line with the FCTC: MPOWER.[14] The WHO has been monitoring the impact of MPOWER's policies since 2007 and every two years since 2008 has published a WHO report on the global tobacco epidemic. The focus of the latest report (2019, the seventh) is on the progress that countries have made to offer help to quit smoking. In the report, Dr. Tedros Adhanom, Director-General of the WHO, says: ''Tobacco control is a perfect example of what can be achieved in global health through global commitments.... Providing access to, and encouraging the use of, effective cessation interventions greatly increases the likelihood of successfully quitting tobacco.... [C]ost-effective tobacco cessation interventions must be a priority for countries. At the same time, innovation is to be encouraged and mobile technologies should be fully harnessed to improve access to large and hard-to-reach populations.... The MPOWER measures can assist governments by providing key tools to combat the global tobacco epidemic.''[15]

However, tobacco use is still the second leading cause of death in the world and the leading cause of premature death, due to the many diseases that are attributed completely or partially to smoking.[16,17] Since the adoption of the WHO FCTC 15 years ago, there have been innovations in tobacco control programs and policies worldwide, but current levels of implementation of evidence-based policies and programs are not as effective as they need to be. For example, the proportion of daily smokers has decreased in most of the 36 countries of the Organisation for Economic Co-operation and Development over the last decade, from an average of 23% in 2007 to 18% in 2017. Between the top performer (7.6%) and bottom performer (27.3%) are Portugal (16.8%) and Spain (22.1%). People with a lower educational level are more likely to smoke in all countries. However, the education gap (the difference in daily smoking between highest and lowest education level) is relatively small in some countries (Portugal, Bulgaria, Lithuania, Turkey, Spain, and France).[18]

The study by Carrión-Valero et al. in this issue of the Journal assessed the impact of laws restricting tobacco advertising, promotion and sponsorship and protecting people from involuntary exposure to tobacco smoke in the Community of Valencia (Spain), with significant effects on hospitalization rates for acute myocardial infarction (AMI).[19] The study design involves time series analyses with techniques for modeling the trends of the series. The main procedure in the construction of the prediction model was based on the observed behavior of the time series and was not based on theories and did not include many variables. The authors report that the adjusted hospital admission rate decreased from 141.1/100 000 in 2005 to 102.9 in 2013, a reduction of 27%. There is biological plausibility for inferring that this significant reduction in hospitalization for AMI is causally associated with the implementation of a comprehensive smoking ban, justifying the implementation of similar laws. Nevertheless, given some limitations of the methodology, the effect size should be interpreted with some caution. Firstly, the lack of assessment of either passive smoking (by measuring cotinine levels) or the prevalence of smoking over the time period under analysis limits the ability to assess the impact of the comprehensive smoking ban. The inherent inability to discriminate inpatient cases of AMI and to analyze other variables related to the incidence of AMI (including time-varying confounders) are limitations to be aware of. Indeed, there are multiple factors influencing the occurrence of AMI, in terms of both risk and medical care (including prevention), that are not analyzed. Secondly, the impact specifically attributable to the smoke-free laws (Law 28/2005 and Law 42/2010), which were popular with the public and thus easy to pass, cannot be assessed without taking into account compliance with the six MPOWER components. Spain has in fact achieved a high level of compliance, with a complete policy for four measures (monitoring, health warnings, advertising bans, and taxation) and a moderate policy for one measure, cessation programs.[20] However, there are other investigations with less positive results. In time series analysis, one well-known methodological challenge is how to adjust the analysis for secular trends, in this case of declining morbidity and mortality from cardiovascular disease. The heterogeneity of this type of study is a recognized difficulty in the literature, mainly related to the degree to which the models need to be adjusted.[11]

For the future and from a global perspective, new developments have to take place. The following facts are known: tobacco kills 8 million people a year around the world from direct use and exposure to secondhand smoke; surveillance is key; tobacco users need help to quit; health warnings work; bans on tobacco advertising lower consumption; taxes are effective in reducing tobacco use; and illicit trade in tobacco products must be stopped.[21] The WHO FCTC has been ratified by 181 Member States and tools (MPOWER) to help countries implement its measures have been introduced. However, only 23 countries offer smoking cessation services provided at best-practice levels,[15] meaning that they include national toll-free quit lines, ''mCessation'' services to reach larger numbers of people via mobile

phones, counseling by primary health care providers, and cost-effective nicotine replacement therapy.[15,21] Smoking cessation support is a *sine qua non* to achieve the WHO Sustainable Development Goal (SDG) target (SDG3.4) on non-communicable diseases (NCDs): by 2030, ''to reduce by one third premature mortality from NCDs through prevention and treatment''.[22]

There have unquestionably been successes in the fight against the smoking epidemic, but prevention of tobacco use is still far from being achieved, and if we want the next generation to be tobacco-free, there is still much work to be done.

Conflicts of interest

The author has no conflicts of interest to declare.

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