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Viktor Mravčík

Tobacco Harm Reduction

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Content

Foreword

Harm reduction in the field of tobacco and nicotine (from here on THR) is fiercely debated today. Many have an opinion that is not always formed after studying the subject carefully. We have articles published by the hundred in numerous journals and it is difficult to keep up with all the papers from various subspecialisations. Here, however, we have a book with a fitting title, just Tobacco Harm Reduction. It discusses everything from the definition of THR to the pros and cons of the regulation of THR policy, the health effects of traditional tobacco products and the new cleaner nicotine products (electronic cigarettes, heated tobacco products, snus, and nicotine pouches), the effect of the cleaner products on public health in general, and the effect of flavours and packaging. Finally, the author presents some conclusions and recommendations.

The book is easy to read, and it is evident throughout that the author writes with a natural authority coming from a deep knowledge of the topic. That knowledge also shows in the way the author provides rich references for everything that is stated or discussed. The reader can benefit from the bibliography of over 600 references. Most of the knowledge in the area of THR is presented conveniently to the reader. The book also contains several elegant illustrations that help the reader to understand sometimes difficult relationships.

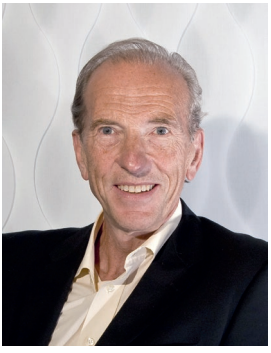
THR is a controversial topic and opinions are strong. The author, although positive about THR in general, doesn't avoid discussing the potential problems with THR, e.g. the uptake of

alternative products by adolescents who have never smoked and the many flavours and types of packaging of the products.

The author ends with some conclusions. 1. Harm should be reduced by stricter regulation of combusted products. 2. The WHO's MPOWER instrument is effective but should first and foremost target combusted products. 3. The professional community should accept HR in the area of tobacco and nicotine. 4. People have the right to be informed about the relative harm caused by different products. 5. Nicotine use among non-smokers should not be encouraged.

This book is nothing less than a masterpiece and a delicious serving for everyone interested in THR.

Karl Fagerström Ph.D.



Karl Fagerstrom got his Ph.D. on nicotine dependence and smoking cessation in 1981. He is the inventor of the Fagerstrom Test for Cigarette Dependence and started the European Society for Research on Nicotine and Tobacco in 1999; he was its president up to 2003. In 1999 he was awarded the WHO medal for outstanding work in the field of tobacco control. His current main interests are in understanding the effects of nicotine and reducing harm among all those who cannot give up smoking. He is the author of 170 peer-reviewed publications in the area of nicotine and tobacco and the first author of 120.

Preface

Dear reader,

This book presents the rationale, principles, and evidence for the effectiveness of harm reduction strategies in minimising tobacco use and its consequences, as well as summarising implications for public health policy and clinical practice.

Combustible tobacco smoking is a major determinant of population health, as it contributes significantly to all-cause morbidity and mortality. The most common causes of death from smoking are malignant neoplasms and cardiovascular and respiratory diseases, which together account for more than 90% of all smoking-related deaths. In high-income countries, smoking is responsible for up to 10% of healthcare costs. Smokers are likely to die up to ten years earlier than non-smokers, and for every person who dies, as many as thirty live with a serious disease attributable to tobacco smoke. However, traditional strategies and tools have not yielded satisfactory reductions in the prevalence of smoking at both the individual and population levels. Rather than nicotine, the main drivers of smoking-related morbidity and mortality are the irritant, toxic, and carcinogenic compounds of tobacco smoke.

Smoking-specific harm reduction strategies involve using nicotine in less harmful forms. For example, nicotine replacement

therapy, which has long been available, follows this principle. However, new opportunities have arisen from alternative consumer products, such as electronic cigarettes, heated tobacco products, or nicotine pouches. These alternatives are much less harmful than smoking, with the health risks posed by some of them being comparable to those of nicotine replacement therapy. The best available evidence indicates that alternative products do not serve as a gateway to smoking; rather, they divert smokers from conventional cigarettes and replace smoking among individuals with a higher predisposition to experimentation with nicotine who would otherwise have taken up smoking. Alternative products have also been shown to be effective in smoking cessation and can play a role in counselling in clinical settings as a substitute for smoking in individuals who cannot or do not wish to quit nicotine use. In this way, alternative products complement traditional cessation methods and represent an opportunity that may be decisive in addressing the smoking epidemic and its consequences, including in high-income countries.

I hope this book will contribute to a clearer understanding of the benefits and risks of different tobacco and nicotine products and, in doing so, help you, your loved ones, your patients, and society as a whole to reduce smoking and its negative impacts.

Viktor Mravčík

1 Smoking-related Health Consequences

Tobacco smoke contains around 7,000 chemical substances, 70 of which are proven carcinogens, including tobacco-specific nitrosamines (TSNAs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and heavy metals (U.S. Department of Health and Human Services, 2010). Tobacco smoking, i.e. inhaling tobacco smoke, is one of the leading causes of the global health burden (morbidity and mortality) and the main cause in high-income countries. In 2020, the global prevalence of smoking among adults was estimated at 32.6% (95% CI: 32.2–33.1%) among men and 6.5% (95% CI: 6.3–6.7%) among women; some 1.18 billion (95% CI: 0.94–1.47) people smoke regularly (Dai et al., 2022a).

According to the Global Burden of Disease (GBD) study, smoking accounts for nearly eight million deaths and 200 million disability-adjusted life years (DALYs) annually, representing 13.6% of all deaths and 7.9% of all DALYs. In high-income countries, smoking is responsible for 15–20% of all-cause mortality (Reitsma et al., 2021; Sovinová et al., 2008). Tobacco smoking, including second-hand exposure, is responsible for the majority of the tobacco-related burden of disease;

smokeless tobacco accounts for less than 1% of the global burden attributable to tobacco, and other forms of nicotine use have not yet been included in the GBD statistics (GBD 2017 Risk Factor Collaborators, 2018; Mravčík et al., 2019).

While more recent estimates for chewing tobacco yielded by a different methodology are somewhat higher, most of this burden is attributable to chewing tobacco with a high content of carcinogens, used particularly in India (Siddiqi et al., 2020).

The most common causes of smoking-related deaths are malignant neoplasms and cardiovascular and respiratory diseases, which together account for more than 90% of overall tobacco-attributable mortality (McNeill et al., 2022; Mravčík et al., 2019). Smoking is an established cause of 28 diseases. Strong-to-very-strong associations, i.e. increasing the risk of the health outcomes by more than 50%, have been demonstrated for laryngeal cancer, aortic aneurysm, peripheral arterial disease, lung cancer, other pharyngeal cancers, chronic obstructive pulmonary disease (COPD), lower respiratory tract infections, and pancreatic cancer (Dai et al., 2022b).

It is estimated that in high-income countries up to 10% of healthcare expenditure is attributable to smoking, and for every smoking-related death, there are up to 30 cases of individuals living with serious smoking-induced illness (Goodchild et al., 2018; Prochaska & Benowitz, 2019). Economic losses are primarily due to treatment costs and lost productivity attributable to premature deaths (Rezaei et al., 2016). One in two

smokers dies from smoking (Sasco et al., 2004); in high-income countries, smokers die on average ten years earlier than non-smokers (Banks et al., 2015), and smoking reduces life expectancy among adult populations by an average of 2.4 years for men and 1.0 year for women (Rentería et al., 2016). There is a significant dose-response relationship between the number of cigarettes smoked daily and all-cause mortality, i.e. a strong biological gradient between exposure and effect (Bjartveit & Tverdal, 2005).

The long-term outcome of efforts by individual countries, the global public health community, and the World Health Organization (WHO) to reduce the health impacts of smoking is the Framework Convention on Tobacco Control (FCTC), effective since February 2005. The FCTC constitutes an international legal framework for protection against the harms caused by tobacco use and exposure to tobacco smoke and sets minimum requirements for the production, sale, distribution, advertising, and taxation of tobacco that countries should comply with (Lee et al., 2023; Roemer et al., 2005). In 2008, the WHO introduced the MPOWER policy package, a strategic implementation tool featuring six priority interventions ("best buys") to support countries in adopting measures envisaged in the FCTC (WHO, 2008; WHO, 2021a): 1) monitoring tobacco use and prevention policies; 2) protecting people from tobacco smoke; 3) offering help to quit tobacco use; 4) warning about the dangers of tobacco; 5) enforcing bans on tobacco