

# Parental tobacco use

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According to the 2019 Global Burden of Disease study, the tobacco epidemic kills about 8.71 million people a year around the world. There is no safe level of tobacco smoke exposure. In the recent years, new products have emerged in the market like the electronic nicotine delivery systems (ENDS), commonly referred to as e-cigarettes. These products are promoted as cessation aids without any proven evidence of their effectiveness in cessation. Most smokers who start these products, end up using both e-cigarettes and cigarettes (becoming dual users). This thesis explores the existing evidence on dual use and smoking cessation in the long-term, dual use in parents, and delivery of smoking cessation interventions to parents in the context of their child's healthcare setting.

The second chapter of the thesis describes the use of a new product, e-cigarettes which is growing in popularity globally. Dual use of e-cigarettes and cigarettes is an increasingly common practice, but little is known about patterns of dual use in parents. We sought to describe smoking-related behaviors among dual-users. We found that parents who use both e-cigarettes and cigarettes may have greater rates of contemplating smoking cessation than parents who only smoke cigarettes. These parents may be using e-cigarettes for harm reduction or as a step toward cessation. Identification of these parents may provide an opportunity to deliver effective treatment, including nicotine-replacement therapies that do not expose infants and children to e-cigarette aerosol.

Chapter 3 is a systematic review of literature to study the association between dual use of e-cigarettes and cigarettes and long-term smoking cessation among adult cigarette smokers. Despite limited evidence regarding the long-term impact of e-cigarettes on cigarette smoking cessation, they are sometimes used and promoted as a potential smoking cessation aid. Our review of the literature found that dual-users of cigarettes and e-cigarettes are not significantly more likely to quit smoking after one-year compared to those who smoke only-cigarettes. Most dual-users continue to smoke or be dual-users after at least one-year follow-up.

The fourth chapter of the thesis assesses delivery of evidence-based tobacco cessation treatment among parents who use both e-cigarettes and cigarettes (dual users) vs. cigarette-only smokers. Dual users who visited CEASE intervention practices were more likely to receive treatment (a prescription for nicotine replacement therapy and referral to the quitline to help them) than cigarette-only smokers.

Chapter 5 outlines the results of a qualitative study with interviews with a variety of key informants i.e., clinicians and practice staff who participated in a randomized clinical trial about delivering smoking cessation treatment to parents in the Pediatric setting. Structured interviews were conducted, and two investigators employed analyzed the transcribed data. A codebook was developed (below) and codes were applied to the transcripts, which were analyzed using a thematic analysis. This paper study sought to identify factors that influenced the implementation of CEASE in five pediatric intervention practices in five states that participated in a cluster randomized clinical trial of the CEASE intervention. The main findings were that the implementation of CEASE in practices was influenced by the adaptability and complexity of the intervention, the needs of patients and their families, the resources available to practices to support the implementation of CEASE, other competing priorities at the practices, the cultures of practices, and clinicians' and office staffs' knowledge and beliefs about family-centered tobacco control.

Finally, chapter 6 outlines the results of a 2-year cluster randomized clinical trial to promote parental tobacco cessation conducted in 10 primary care practices in 5 US states. This trial tested a practice-change intervention designed to facilitate both routine screening in Pediatric settings of families for tobacco use and delivery of tobacco cessation treatment to individuals in screened households who use tobacco. This trial showed that integrating screening and treatment for parental tobacco use in Pediatric practices showed both immediate and long-term increases in cessation treatment delivery, a decline in practice-level parental smoking prevalence, and an increase in cotinine-confirmed cessation, compared with usual care control.

In the general discussion (chapter 7), we review and reflect on the results of the research questions and also, suggest some clinical implications, policy considerations and future directions based on the results. In summary, the results of this thesis conclude that the smokers who start using e-cigarettes to possibly quit smoking, end up continuing to use both cigarettes and e-cigarettes and becoming dual users. These dual users were more likely to receive a smoking cessation treatment than parents who smoke only cigarettes when treatment was offered in the child healthcare setting. Hence, evidence based treatments should be offered in the healthcare settings to smokers to help them quit and the feasibility and effectiveness of one such intervention in the child healthcare setting was demonstrated in this thesis.

To conclude, at the clinical/healthcare level, all healthcare professionals need to be educated about the various types of e-cigarettes and the existing evidence around their short-term and long-term use of e-cigarettes on health and smoking cessation. If smokers are ready to quit smoking, evidence-based treatments should be offered to them in the healthcare settings to help them quit smoking and healthcare providers need to be equipped with the right tools to screen and deliver the treatment to the smokers. Further long-term studies are needed to establish the long-term safety and harms of using e-cigarettes alone or in combination with cigarettes and the long-term smoking cessation rates of dual users of cigarettes and e-cigarettes. In the meantime, at the policy level, the marketing and sale of e-cigarettes needs to be better regulated and vape-free laws need to be implemented along with the smoke-free laws to reduce their use and exposure of non-users to the e-cigarette aerosol in public spaces and indoor settings.