

# SYNTHESIS

# Smoke-Free Series: Role of Mass Media in Tobacco and Vaping Protection

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# **Research Questions**

What is the role of mass media and/or social media campaigns on public support for tobacco control interventions that reduce social and physical exposure to tobacco products and vaping product use?

What is the role of mass media and/or social media campaigns to raise awareness of policy interventions and health effects of exposure to tobacco use and vaping product use?

# **Key Messages**

- One systematic review and six primary studies were included in this synthesis on the role of mass media in increasing knowledge and awareness, behaviour change (e.g. making their home smoke-free), and support as outcomes for policy for second-hand and third-hand smoke.
- There is limited evidence on the role of campaigns on third-hand smoke knowledge, behaviour change and policy support.
- The campaigns evaluated were diverse in jurisdiction, target audience(s), messaging, and call to action.
- Second-hand smoke campaigns play a role in increasing knowledge of health impacts, influencing behaviour change to reduce exposure, and increasing understanding and support for smoke-free policies.
- These findings contribute to the evidence base regarding the effectiveness of the use of mass media campaigns to improve knowledge and understanding around the health impacts of exposure to second-hand and third-hand smoke, personal behaviour change and support for smoke-free policy. The current evidence is consistent with the key findings summarized by the Smoke-Free Ontario Scientific Advisory Committee 2016 (SFO-SAC 2016) report.

# Note on Terminology

Any reference to tobacco in this document refers to commercial use of tobacco, which is not associated with the sacred and traditional uses of tobacco, which Indigenous peoples have been using for thousands of years. Traditional or sacred tobacco differs from commercial tobacco both in the way that it is harvested and in the way it is used in ceremony and prayer, often for healing and purifying.

# Background

Traditionally mass media campaigns have been used in an attempt to affect various health behaviours in populations. Typical campaigns have placed messages in media that reach large audiences, most frequently via television, radio, but also on billboards, posters, etc. With the evolution of technology there are additional channels (e.g. the internet, social media and text messaging) that are available and have been incorporated into campaigns.<sup>1</sup> Specifically with social media it allows campaigns to tailor messages and target them to specific populations.<sup>2</sup>

Mass media campaigns were commonly used to influence public awareness and support for smoke-free policies, to inform the public about the dangers of second-hand smoke (SHS) and to encourage measures to reduce SHS exposure.<sup>3</sup> Previous evidence from the Smoke-Free Ontario Scientific Advisory Committee 2016 (SFO-SAC 2016)<sup>4</sup> found that mass media campaigns were shown to be effective to increase awareness about the harms associated with tobacco smoke exposure, to increase support for smoke-free policies, and could also reduce SHS exposure. It was suggested that there were opportunities to use mass media campaigns to increase awareness about existing and opportunities to expand smoke-free regulations as part of a comprehensive approach.<sup>4</sup> At the time of writing SFO-SAC 2016 vaping devices were relatively new, they have since evolved significantly and are more commonly used, especially among young people.<sup>5,6</sup>

There is no safe level of exposure to SHS, with even brief exposure having the ability to cause serious health outcomes.<sup>7-9</sup> While there is evidence vaping product use contributes to some level of indoor air pollution, which was measured as lower than what has been observed from SHS (from combustible cigarettes), it is still above the smoke-free level recommended by the Office of the Surgeon General (OSG) and the World Health Organization Framework Convention on Tobacco Control (WHO FCTC).<sup>10,11</sup> However, there are relatively few studies addressing the health effects of second-hand exposure to vaping aerosol.

Many <u>Ontario municipalities</u> have implemented additional restrictions, beyond the <u>Smoke-Free Ontario</u> <u>Act, 2017</u>, to provide further protection from SHS and second-hand aerosol within their communities. However, individuals are still being exposed to SHS and vaping aerosol in their homes, at their workplaces and in public spaces.<sup>12,13</sup> While many adults believe exposure to SHS and third-hand smoke (THS) pose impacts to an individual's health, there are still opportunities for increasing knowledge and awareness of this evidence.<sup>12</sup>

This synthesis is focused on the evidence published since the SFO-SAC (2016) report, specifically on effectiveness of mass media and/or social media campaigns to stimulate public support for tobacco and vaping interventions and to raise awareness of the health effects of exposure to tobacco use and vaping aerosol.

# Methods

A peer-reviewed literature search was conducted October 28, 2024 by Public Health Ontario (PHO) Library Services for articles published 2015 – October 2024. The search did not extend earlier than 2015 because a comprehensive summary of evidence on these research questions was previously completed (see the Protection Chapter in the Smoke-Free Ontario Scientific Advisory Committee 2016).<sup>4</sup> The search involved four databases: MEDLINE, Embase, CINAHL and Scopus. The following search terms were included, but were not limited to: smoke-free policy, second-hand smoke, vape aerosol, and third-hand smoke. The full search strategy is available upon request from PHO. Articles were eligible for inclusion if they were published between 2015 and 2024, examined the effectiveness of mass and/or social media campaigns to stimulate public support for tobacco control interventions, and or raised awareness of the health effects of exposure to tobacco, and/or focused on reducing social and physical exposure to tobacco and vaping product use.

Quality appraisal was conducted for each included article using quality appraisal tools that aligned with research design of each paper. Quality appraisal was conducted for the systematic review using the <u>healthevidence.org Quality Assessment Tool for Review Articles</u>; the methodological quality of a review scoring ≤4, 5 to 7, or ≥8 out of a total score of 10 was rated as weak, moderate, or strong, respectively.<sup>14</sup> The JBI Checklist for Analytical Cross Sectional Studies for articles with post-campaign survey study design,<sup>15</sup> Supplemental digital content 4: quality assessment tool for pre and post intervention designs<sup>16</sup>, and Critical Appraisal Skills Programme (CASP) qualitative checklist for qualitative interview study design.<sup>17</sup> For each included article, quality appraisal was completed independently by a single reviewer.

One reviewer screened titles and abstracts, and two reviewers screened full-text versions of all articles for inclusion. For all relevant papers, data extraction was done by one PHO staff member and validated by a content expert who reviewed relevant papers and summarized.

# Findings

The literature search identified 841 articles, one systematic review<sup>18</sup> and eight primary studies met inclusion criteria.<sup>19-26</sup> Two<sup>19,23</sup> of the primary studies were included in systematic review, resulting in a total of six primary studies included. The systematic<sup>18</sup> review was appraised as moderate. Of the included primary studies four were cross-sectional, one appraised as high<sup>26</sup>, one appraised as moderate<sup>25</sup> and two appraised as low.<sup>20,24</sup> Two were pre-post intervention design studies that were both appraised as low.<sup>21,22</sup> The systematic review explored SHS campaigns globally, while the majority of primary studies were from the US, with only one from the UK.

The included studies only focused on second-hand and third-hand tobacco cigarette smoke. Only one study<sup>21</sup> included campaigns with messaging on THS, while the remainder focused on SHS media campaigns.

# Knowledge of Third-hand Smoke and Behaviour Change

While knowledge and understanding of the impact of SHS on others is well established and understood THS is a relatively new topic area for many. Only one of the included studies included exploring THS campaigns.<sup>21</sup> Record et al. (2023) found that there was significant change from baseline to post intervention in knowledge, attitude, and efficacy defined as the ability to successfully avoid THS exposure. The messaging that featured THS impacts on the frequency of illness in children, negative health effects for pets and the presence of THS in dust were the most persuasive in promoting knowledge and attitude change than the other messages tested. Recall of campaign and messaging was associated with changes in knowledge. However, the observed change in knowledge, attitude and efficacy did not translate to behaviour change, with no significant change in behaviour from baseline to post intervention.<sup>21</sup>

The authors suggested that efficacy not being found to be significantly related to THS prevention behaviours is likely due to individual's perception that they have lower degree of personal agency when it comes to THS compared to SHS. Despite these results the authors encourage future campaigns to highlight the individual and public actions that could be taken to reduce THS exposure to aid in shifting perceptions and understanding of one's ability to impact exposure, increase support for THS control policies and changes in personal behaviours.

# Exposure and Recall of Second-hand Smoke Campaigns

One systematic<sup>18</sup> review and an individual study<sup>20</sup> explored population exposure and recall of SHS media campaigns.

Recall and recognition of campaign ads, materials and/or messaging ranged considerably. The systematic review included 25 campaign evaluations, all campaigns evaluated recall or recognition of the campaign without prompts, with reported recall ranging from 8%-76%.<sup>18</sup> The individual studies explored the effectiveness of the campaigns to specific target audiences of interest.<sup>19,20</sup> For the Rudov et al. (2017) study authors found that their target audience of interest did not report significantly higher exposure to the campaign. The authors hypothesized a lack of exposure could be explained by the broad scope of the campaign channels used (eg. television, radio, and internet).<sup>20</sup> After controlling for all demographics, only race, education and income were significantly associated with reported exposure to the campaign, thereby reaching only some of the demographics of interest for the target population.<sup>20</sup> On the other hand, Rowa-Dewar et al. (2016) found high recall for the campaign among the target population of interest in their study.<sup>19</sup> This study included a campaign delivered through a single channel (television) that was frequented by the target audience and the messaging also was tailored/spoke to this group of interest (i.e. parents).<sup>19</sup>

The type of messaging and how the messaging is framed have shown an impact on the effectiveness of the campaign recognition and recall among the audience of interest.<sup>18</sup> Use of factual versus personal stories resulted in better recall among campaign audiences.<sup>18</sup> In addition, campaign messages that were focused on the benefits of smoke-free environments saw higher recall than those that focused on the dangers of SHS.<sup>18</sup> Lim et al. (2024) proposed that the effectiveness of these campaigns and their messaging may depend on who the target audience is and how messages are tailored (e.g. geographical or cultural context).<sup>18</sup>

#### Knowledge, Attitudes and Intentions

The impact of SHS campaigns on the knowledge of SHS health effects were explored in the systematic review. The authors concluded that campaigns were effective in increasing awareness of the health impacts of SHS, while also increasing intentions to create smoke-free homes and intentions to quit among those that reported smoking cigarettes.<sup>18</sup> These changes in knowledge, attitudes and intentions were often seen regardless of cigarette smoking status.<sup>18</sup>

Rudov et al. (2017) explored the behaviours of those that followed the call to action at the end of their campaign to assess and better understand the intentions and actions taken following campaign exposure. The authors concluded it's important to tailor the amount and type of information in the campaign and in the online platforms that viewers interact with to ensure that their experience aligns with the level of interest and level of support.<sup>20</sup>

#### **Behaviour Change**

The systematic review<sup>18</sup> and three single studies<sup>22,25,26</sup> examined the effect of mass media campaigns to influence behaviour change among those that smoke cigarettes. Behaviour change was associated with exposure and recall of media campaigns.<sup>18,22,25,26</sup>

Based on the available published evidence it was determined that SHS campaigns were found to increase smoke-free households, reduced children's exposure to SHS, and increased advocacy for reducing SHS exposure.<sup>18,25,26</sup> While SHS campaigns did show an increase in quit attempts this did not necessarily translate into active behaviour change and the sustainability of quit attempts was limited.<sup>18</sup>

Record et al. (2016)'s study focused on post-secondary school campus and its population, exploring both individual-level and population-level behaviour. At the individual-level, greater campaign exposure was associated with greater compliance behaviour of the campus policy, as well as, improved perception of compliance as the norm on campus.<sup>22</sup> An individual was more likely to comply with the tobacco-free policy when they believed tobacco-free policy compliance to be the norm and perceived compliance having a positive impact (e.g. improves the university campus or protects the health of others).<sup>22</sup> The authors concluded while campaigns can positively influence perceptions of compliance, they don't appear to meaningfully influence behavioural intentions for compliance at an individual level.<sup>22</sup> On the other hand, at the population-level, by conducting an observation study, there was a significant decrease in the number of individuals observed smoking on campus compared to pre-campaign.<sup>22</sup>

#### Engagement with Online Campaign Materials

The use and integration of social media channels to communicate health information and deliver campaigns has become more popular over the years. Social media campaign content can be delivered alongside traditional media channels, such as television and radio, while being more cost effective, the ability of great audience targeting and real-time feedback and engagement with the audience.<sup>18</sup> Online engagement metrics are supporting notable reach, with the majority of campaigns included in the systematic review including at least one measure of social media metadata (e.g. views, likes, shares, comments) as a measure of campaign engagement, with three campaigns reporting views in the millions.<sup>18</sup>

Dong et al. (2024) took a unique look at the role of social media posts along with their metrics and how this influences perceptions of others online. The authors of this study explored the health message influence on an individual's engagement with online content, perception of the post(s) messages and support for policy.<sup>25</sup> The findings suggested that social media metrics such as views, likes, comments, and shares can result in presumptions about others' attitudes toward a topic posted on social media.<sup>25</sup> When individuals see friends, family, partners, etc. interacting with social media content, seeing that interaction then influenced their perception of the posted topic.<sup>25</sup>

# Impact of Second-hand Smoke Campaigns on Public Support for Smoke-Free Policies

The systematic review<sup>18</sup> and three independent studies explored the effect of smoke-free campaigns on support for smoke-free policies and/or the organizations that implement them them.<sup>24-26</sup>

SHS campaigns have shown to increase support and action for smoke-free policies to reduce exposure to SHS within communities.<sup>18,25</sup> In addition to support for policy, studies also found a change in commitment to smoke-free homes, more individuals made a commitment to make their own homes smoke-free following campaign exposure.<sup>18,26</sup>

On the other hand, Lee et al. (2017) explored how the framing of policy campaign messaging impacts perceived support for the organization implementing the policy. They found messages communicating policies framed to be about wellness and part of creating a health-promotion environment did not negatively impact perceived organizational support.<sup>24</sup> However, when messaging was framed to focus on emphasizing consequences for violating the policy there were reported reductions in perceived organizational support, especially among those that smoke cigarettes.<sup>24</sup>

# Limitations

Overall, there is limited research on the impact of media campaigns on tobacco and/or vaping campaigns focused on protection from second-hand and third-hand smoke exposure, the impacts of this exposure on health and the knowledge of policies (both implemented and opportunities). The majority of the included studies focused only on SHS exposure with a single study focusing on THS. None of the included studies involved campaigns focused on second-hand or third-hand exposure to vaping aerosol.

The results of the included studies focused on specific subsets of the population (post-secondary campuses, parents, rural communities, etc.). The results of these studies may not be generalizable to the broader population or apply across other sub-populations or jurisdictions. Moreover, the jurisdictions where these studies were conducted also play an important role, because the current policy environment for smoking, vaping etc. would impact individual's knowledge, understanding and support for policy change, action and overall behaviour change.

A challenge with assessing the effectiveness of campaigns is the diversity, targeting of different communities, different communication strategies and approaches and the variety of outcome objectives. There is a need to get a better understanding of the barriers to action and behaviour change, as well as, the unique experiences for different population groups, specifically those at highest risk or most impacted by exposure.

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