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Vaping in the Workplace

Implications for Employer-Sponsored Tobacco Cessation Programs

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Objective: Assess workplace vaping as a trigger for tobacco use; examine interest in and prevalence of vaping cessation programs; determine needs of parents whose children vape. **Methods:** Employees of companies with more than 150 employees, drawn from an opt-in national online panel ($N = 1607$), ages 18 to 65, completed an online survey in November 2019. **Results:** Among tobacco users, 46% to 48% reported workplace vaping was a trigger for smoking and vaping, respectively; 7% of former users reported it as a trigger. Quit vaping support is important to 85% of employees; 1/3 of workplaces have such programs, with industry variation. Child vaping results in presenteeism and absenteeism among roughly 1/3 of parents. **Conclusions:** Workplace vaping is a trigger for smoking and vaping among current and former tobacco users. A gap exists between desired support for vaping cessation and current employer-sponsored cessation programs.

Keywords: tobacco cessation, vaping, workplace

Learning Objectives

- Discuss the new challenges posed by e-cigarettes/vaping for workplace tobacco cessation programs.
- Summarize the new findings on workplace vaping as a trigger for tobacco use, and on employee interest in vaping cessation programs.
- Discuss the novel findings on the impact of child vaping on workplace productivity by parents.

The workplace is an important setting for health promotion, including tobacco cessation.[1,2] Workplace tobacco policies can protect non-smoking employees from the deadly effects of secondhand smoke exposure, and have been shown to reduce cigarette consumption and smoking prevalence,[3] particularly when coupled with smoking cessation resources.[4] Established workplace communication channels can be leveraged to make employees aware of available smoking cessation resources, and incentives encourage program participation and abstinence.[5] Quit smoking interventions directed towards individual smokers increase the likelihood of quitting smoking and show similar effects when offered in the workplace as elsewhere.[6]

The emergence of a new type of tobacco product—electronic cigarettes, or e-cigarettes—has introduced new questions and challenges for employers regarding tobacco cessation.[7] The discussion regarding e-cigarettes in the workplace typically focuses on the risks of secondhand exposure to e-cigarette aerosol and how to protect non-users.[8] A related, but largely unaddressed issue, is the extent to which vaping in the workplace may be a trigger for tobacco use among employees trying to quit smoking or vaping. A substantial literature shows that exposure to combustible cigarette cues leads to increased desire to smoke (ie, urges or craving) and subsequent smoking behavior.[9–12] For e-cigarettes, the research is emerging but several studies have demonstrated that observing someone else vaping can serve as a conditioned cue that produces smoking and vaping urges, desire, and behavior.[13–15] It is possible that unrestricted vaping in the workplace could undermine the efforts of those trying to quit tobacco and increase the likelihood of relapse.[16–19]

A second question posed by employers is whether and how they should expand their workplace tobacco cessation program to help e-cigarette users quit vaping. Nationally, 62% of e-cigarette users plan to quit vaping,[20] though data on which cessation approaches vapers would use and benefit from are scant. Secondary analyses of the 2015 to 2016 data from the Population Assessment of Tobacco and Health (PATH) showed that among e-cigarette users who tried to quit vaping all at once in the past year, 25% sought support from friends and family and 11% sought counseling or used self-help materials.[20] Quitline calls from e-cigarette users increased exponentially in fall 2019 given concerns about e-cigarette-related lung injury, but remain a small portion of overall quitline call volume.[21] It is not clear to what extent workplace cessation programs are available specifically to assist to e-cigarette users, whether employees are aware of those resources, and whether they would take advantage of new resources if they were made available.

Lastly, employers wonder about the impact that youth vaping has on parents in their workforce and how best to support them.[22] In 2019, more than 5 million youth—27.5% of high school students and 10.5% of middle school students—reported having used e-cigarettes. Nicotine exposure during adolescence can harm brain development and puts young people at risk for developing nicotine addiction.[23] In 2018, the US Surgeon General declared youth vaping a public health epidemic,[23] alarming parents who reported they do not know how to recognize an e-cigarette device, how to know whether their child is vaping, or how to cope with the anxiety and fear once they realize their child is vaping.[24–26] To date, we are not aware of any research on the

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Clinical Significance: Workplace vaping is a trigger for smoking and vaping among current and former tobacco users. There is strong support and desire for vaping cessation support, including among parents of vaping children. Only one third of employees have a quit vaping program available to them, with variation by industry.

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impact of working parents' concerns about their child's e-cigarette on their productivity, presenteeism, or absenteeism or the potential implications for employers.

This study sought to address these notable gaps in the scientific literature and to answer three primary research questions: (1) Is workplace vaping a trigger for tobacco use among current users and a potential trigger for relapse among former users? (2) How common is workplace support for vaping cessation, and what kinds of support are desired by tobacco users? And (3) how are working parents affected by a child vaping, and are they interested in support to cope with these concerns? These data are intended to help inform workplace health promotion policy and practice among US employers.

METHODS

Participants

We conducted a cross-sectional survey in November 2019.[27,28] Participants were working adults between the ages of 18 and 65 years who were recruited from an online opt-in panel using Qualtrics Online Sample.[29] To be eligible for the survey, individuals had to be employed by a company with 150 or more employees, work full time (35 hours or more per week) in a workplace setting which was not primarily located in their home or a remote/telework location, and reside in the United States. This study focused on larger companies because smaller organizational units may be more variable in their individual cultures and regulations with respect to vaping. Quotas were set to obtain a sample evenly distributed across three company sizes (150 to 999 employees; 1000 to 4999; 5000+) and to ensure that half the sample included parents of children/young adults aged 26 or younger across three parental age bands (age 31 to 42; age 43 to 54; and age 55 to 65). Individuals who met eligibility criteria were asked to provide informed consent and were then routed to the online survey. The study was reviewed and ruled exempt by Advarra Institutional Review Board (Pro00039336).

Measures

Demographic Characteristics

Using standard survey items,[30] participants reported their age, sex, state of residence, race/ethnicity (Hispanic, non-Hispanic white, non-Hispanic black, non-Hispanic other race, multiple races), highest education attained (high school degree/GED or less, some college, Bachelor's degree, graduate study or degree) and annual household income (less than $34,999; $35,000 to $49,999; $50,000 to $74,999; $75,000 to $99,999; $100,000 or more).

Workplace Characteristics

Employer size was measured with the item "How large is your employer? By employer, we mean all locations your employer operates." Response options were: 1 to 149 employees, 150 to 999 employees, 1000 to 4999 employees, 5000 or more employees, and I don't know based on industry benchmarks.[31,32] Respondents who chose 1 to 149 or reported that they didn't know were ineligible and terminated from the survey. Participants were asked if they usually worked indoors, outdoors, or about equally indoors/outdoors, and to select their field of employment from a list of 14 industries: Construction, Wholesale Trade, Retail, Transportation/Warehousing, Information Technology (IT), Financial Activities, Professional and Business Services, Education, Leisure/Hospitality, State/Local Government, Manufacturing, Health Services and Other. Participants who selected "Other" were asked to provide a freeform text response. These responses were reviewed by the study team and classified if possible. For analysis, responses were collapsed into eight larger classifications (Health Services, Education, Retail, Manufacturing, IT, Professional and Business Services, Financial Activities, Government and Non-Profit), and any of the industries from the original list that had fewer than 200 respondents (less than 5% of sample) were aggregated into the Other category.

Tobacco Product Use

Throughout the manuscript we refer to four distinct, mutually exclusive categories of current tobacco use. "Vapers" reported current use (past 30-day) of e-cigarettes but not combustibles. Except where noted otherwise, "Smokers" reported current use (past 30-day) of any combustible product (cigarettes, cigars/little cigars/cigarillos, or hookah) but not e-cigarettes. "Dual Users" reported current use (past 30-day) of both e-cigarettes and a combustible product. "Non-Users" reported neither current use of e-cigarettes nor current use of a combustible product; as such, this category included never users and former users (ie, those who reported ever use of one or more tobacco products but no past 30-day use of either tobacco product).

Intention to Quit Tobacco Use

Current tobacco users were asked about their plans to quit the tobacco products they had endorsed using in the past 30 days. Response options were within the next 30 days, within the next 6 months, within the year, and not in the next year. For analysis, we created dichotomous "intention to quit" variables by collapsing 30 days and 6 months to Yes, and collapsing within the year and not in the next year to No.

Impact of Workplace Vaping on Tobacco Use Behaviors

Those who reported ever using any kind of tobacco product were asked about the impact of workplace vaping on their tobacco use behavior. The prompt read "Think once more about your work environment. How much do you agree/disagree with the following statements: When I see someone vaping/using e-cigarettes in my workplace... (1) it makes me want to smoke cigarettes, cigars/little cigars/cigarillos, (2) it makes me want to vape/use an e-cigarette. Response options were strongly agree, agree, disagree, and strongly disagree.

Workplace Support for Tobacco Cessation

All participants were asked how important it is that their employer (a) support health and wellness and (b) provide support to quit vaping/using e-cigarettes. Response options were extremely important, very important, somewhat important, and not important. Participants were asked whether their workplace does anything to encourage employees to quit/reduce vaping (Yes, No, I don't know) and those that responded with Yes were asked how much their workplace encouraged employees to quit/reduce vaping (too much, just the right amount, too little, not sure), how their employer was currently encouraging employees to quit/reduce vaping, and if they would use an easy-to-access, confidential program to quit vaping or help a child quit vaping.

Interest in e-Cigarette Cessation Treatment

Participants who had ever used e-cigarettes were asked how likely they would be to use various types of e-cigarette cessation programs. These included a digital program (web, app, or text message based quitting support with a tobacco treatment expert); quitting medication such as nicotine patches, gum, or lozenges; phone-based coaching; face-to-face group counseling; and visiting a doctor for advice about quitting. Response options were extremely likely, likely, unlikely, extremely unlikely, and decline to answer.

Concern About Child Vaping

Parents of children aged 26 or younger were asked whether their child was currently vaping/using e-cigarettes (Yes, No, I'm not

sure) and their level of concern about this behavior (not at all concerned, somewhat concerned, very concerned, extremely concerned). Those who reported any level of concern were then asked a series of questions about the impact of this concern on four dimensions of presenteeism (decreased productivity, feeling anxious/worried during the workday, difficulty focusing on work), and absenteeism. Due to an error in survey skip logic, parents of multiple children were not asked the four impact items if they indicated that any children were not vaping. This resulted in missing data from $n = 21$ respondents (2.0% of parents).

Analytic Plan

Response frequencies and percentages were calculated for the full sample. One-way comparisons of proportions were conducted as Mann–Whitney *U* tests for two groups and Kruskal-Wallis for multiple groups. Multivariable logistic regression models were

TABLE 1. Tobacco Use, Demographic, and Workplace Characteristics of Survey Respondents by Workplace Vaping as a Trigger for Smoking and Vaping

		When I See Someone Vaping in My Workplace...	
	Sample Characteristics	**...It Makes Me Want to Smoke**[*,†]	**... It Makes Me Want to Vape**[†]
Total	$N = 1{,}607$	$n_{yes} = 355$	$n_{yes} = 336$
Current tobacco product use, *n* (%)[‡,§]			
Dual user	334 (20.8)	216 (64.7)	225 (67.4)
Smoker	246 (15.3)	85 (34.6)	36 (14.6)
Vaper	70 (4.4)	13 (18.6)	40 (57.1)
Non-user	957 (59.6)	41 (6.9)	35 (5.9)
Age, *n* (%)[‡,§]			
18–30 years	353 (22.0)	124 (42.3)	122 (41.6)
31–45 years	555 (34.5)	136 (31.5)	142 (32.9)
46–65 years	699 (43.5)	95 (18.4)	72 (14.0)
Gender, *n* (%)[‡]			
Female	891 (55.5)	184 (26.2)	181 (25.7)
Male	713 (44.5)	170 (31.8)	154 (28.8)
Race/Ethnicity, *n* (%)			
Non-Hispanic White	1130 (70.3)	238 (26.9)	220 (24.9)
Non-Hispanic Black	169 (10.5)	44 (35.5)	44 (35.5)
Latino/Hispanic	165 (10.3)	42 (31.6)	45 (33.8)
Other	143 (8.9)	31 (31.6)	27 (27.6)
Education, *n* (%)			
High school or less	224 (13.9)	59 (32.8)	58 (32.2)
Some college	542 (33.7)	140 (30.6)	125 (27.4)
Completed college or higher	841 (52.3)	156 (25.9)	153 (25.4)
Household income, *n* (%)			
Less than $34,999	177 (11.3)	48 (37.8)	45 (35.4)
$35,000–$49,999	256 (16.3)	60 (28.2)	47 (22.1)
$50,000–$74,900	365 (23.3)	99 (32.7)	93 (30.7)
$75,000–$99,999	307 (19.6)	60 (26.0)	67 (29.0)
$100,000 and over	464 (29.6)	85 (24.9)	81 (23.8)
Employer size, n (%)[‡,§]			
150–999 employees	534 (33.2)	150 (34.2)	137 (31.2)
1000–4999 employees	526 (32.7)	131 (32.4)	120 (29.7)
5000+ employees	547 (34.0)	74 (18.6)	79 (19.9)
Work location, n (%)[‡,§]			
Indoor	1397 (87.0)	274 (25.6)	260 (24.3)
Outdoor	69 (4.3)	20 (40.0)	22 (44.0)
Equally indoor and outdoor	140 (8.7)	61 (51.3)	54 (45.4)
Industry, n (%)[‡,§]			
Health Services	264 (16.4)	59 (30.4)	51 (26.3)
Retail	187 (11.6)	42 (27.5)	39 (25.5)
Education	183 (11.4)	20 (15.6)	17 (13.3)
Manufacturing	159 (9.9)	28 (22.8)	32 (26.0)
Information Technology	157 (9.8)	63 (50.4)	54 (43.2)
Government and Non-profit	150 (9.3)	15 (13.3)	12 (10.6)
Professional and Business Services	139 (8.6)	22 (20.6)	26 (24.3)
Financial Activities	125 (7.8)	38 (38.4)	39 (39.4)
Transportation and Warehousing	80 (5.0)	24 (35.3)	23 (33.8)
Other	163 (10.1)	44 (33.8)	43 (33.1)

[*]Includes endorsement of wanting to smoke cigarettes, cigars/cigarillos.
[†]Only assessed among respondents who reported ever use of a tobacco product.
[‡]Indicates bivariate significant relationship with "...it makes me want to smoke" among all current and former tobacco users ($n = 1055$) at $P < 0.05$.
[§]Indicates bivariate significant relationship with "...it makes me want to vape" among all current and former tobacco users ($n = 1055$) at $P < 0.05$.

used to examine associations of personal characteristics with likelihood of reporting that seeing someone vape at work was a trigger for tobacco use. Separate models were run for current and former tobacco users (ie, those who reported ever use of one or more tobacco products but no past 30-day use of either tobacco product), and for vaping as a trigger for smoking as well as a trigger for vaping. This resulted in four models in total. Relative risk coefficients (RR) and 95% confidence intervals (CI) are presented. We used variable selection to limit the number of tests and control family-wise error. Final models included only variables with a significant bivariate relationship with the outcome. Candidate predictor variables for all models included demographics and workplace characteristics. Candidate predictors for models of current tobacco users also included use category (Dual, Smoker, Vaper) and intention to quit; candidate predictors for models of former users also included recency of quitting. All analyses were conducted in R v3.6.1.[33]

RESULTS

Characteristics of Respondents

Table 1 shows the tobacco use, demographic, and workplace characteristics of respondents ($N = 1607$). Mean age was 43.0 years (SD = 13.0), 55.5% were women, 70.3% were non-Hispanic white, and 52.3% had at least a college degree. The majority of respondents (64.9%, $n = 1043$) reported being a parent or guardian of a child or young adult aged 26 or younger.

Current tobacco use was reported among 40.5% ($n = 650$) of respondents. Dual users were most common (20.8%, $n = 334$) followed by Smokers (15.3%, $n = 246$) and Vapers (4.4%, $n = 70$). An examination of individual tobacco products showed the following use rates: cigarettes (28.6%, $n = 459$), e-cigarettes (25.1%, $n = 404$), cigars or cigarillos (11.3%, $n = 181$), hookah (7.1%, $n = 114$), and pipe (4.5%, $n = 73$). Among cigarette smokers, 53.4% ($n = 245$) indicated that they intended to quit in the next 6 months. Among e-cigarette users, 41.1% ($n = 166$) intended to quit in the next 6 months. Dual users were more likely than exclusive cigarette smokers to intend to quit combustible cigarettes in the next 6 months (58.6% vs 43.8%; df = 1, $P < 0.01$). However, rates of intention to quit e-cigarettes in the next 6 months were similar across Dual Users and Vapers (41.3% vs 40.0%).

Overall, 77.2% ($n = 1240$) of respondents reported ever using tobacco. Former cigarette smoking was reported by 38.1% ($n = 613$) of respondents: 8.0% of respondents ($n = 128$) quit smoking within the past year and 30.2% of respondents ($n = 485$) quit smoking more than a year ago. Former e-cigarette use was reported by 12.9% ($n = 207$) of respondents: 3.7% of respondents ($n = 60$) quit vaping

TABLE 2. Model Adjusted Associations of Personal Characteristics With Endorsement of the Statement ''When I See Someone Vaping in my Workplace It Makes Me Want to Smoke/Vape''

	Current Tobacco Users ($n = 650$)	
	Makes Me Want to Smoke RR (95% CI)	**Makes Me Want to Vape RR (95% CI)**
Current tobacco product use		
Smoker	**1.9 (1.2, 3.0)**	ref
Vaper	ref	**4.3 (3.1, 6.2)**
Dual user	**3.3 (2.2, 5.1)**	**4.7 (3.6, 6.2)**
Intend to quit cigarettes in next 6 months		
No	ref	ref
Yes	1.0 (0.9, 1.2)	1.2 (1.0, 1.4)
Intend to quit e-cigarettes in next 6 months		
No	ref	ref
Yes	0.9 (0.7, 1.1)	**0.7 (0.6, 0.9)**
Age		
18–30 years	x	1.19 (0.9, 1.5)
31–45 years	x	1.1 (0.9, 1.4)
46–65 years	x	ref
Employer size		
5000+ employees	ref	x
1000–4999 employees	1.1 (0.9, 1.4)	x
150–999 employees	1.2 (1.0, 1.5)	x
Work location		
Indoor	ref	ref
Outdoor	1.3 (0.9, 1.8)	1.2 (0.8, 1.6)
Equally indoor and outdoor	**1.3 (1.1, 1.6)**	1.1 (0.9, 1.4)
Industry		
Health Services	ref	ref
Retail	0.9 (0.6 1.2)	0.9 (0.7, 1.3)
Education	0.7 (0.5, 1.0)	0.7 (0.5 1.1)
Manufacturing	**0.6 (0.4, 0.9)**	0.9 (0.6, 1.2)
Information Technology	0. 9 (0.7, 1.2)	1.0 (0.7, 1.3)
Government and Non-profit	**0.6 (0.3, 0.9)**	0.8 (0.4, 1.3)
Professional and Business Services	**0.6 (0.4, 0.9)**	0.9 (0.6, 1.3)
Financial Activities	1.0 (0.7, 1.4)	1.1 (0.8, 1.6)
Transportation and Warehousing	0.8 (0.6, 1.2)	1.0 (0.6, 1.4)
Other	0.8 (0.6, 1.1)	1.0 (0.8 1.4)

Bold values indicate a significant relationship at $P < 0.05$.
Variables with values of ''x'' were not selected for inclusion in the corresponding model.

within the past year and 9.1% of respondents ($n = 147$) quit e-cigarettes more than a year ago. A total of 405 respondents were former tobacco users who reported no past 30-day use of any tobacco products (25.2%).

Workplace Vaping as a Trigger for Tobacco Use

Table 1 also shows the bivariate relationships of personal characteristics with the perception of vaping as a trigger for smoking and vaping, among all current and former tobacco users ($n = 1055$). Note that variable selection for the models assessed relationships separately for the analytic subsamples of current or former users included in each model.

Current Users

Among the $n = 650$ current tobacco users in the sample, 48.3% [44.5, 52.2] ($n = 314$) reported that seeing someone vape at work was a trigger for smoking. Significant bivariate relationships with vaping as a trigger for smoking were observed among the following variables which were entered into the logistic regression: current tobacco product use (Smoker, Vaper, Dual User), intention to quit smoking, intention to quit vaping, employer size, work location, and industry. Following adjustment, only current tobacco product use and industry remained significant. As shown in Table 2, Smokers were roughly twice as likely as Vapers to report that seeing someone vape at work was a trigger for smoking (RR = 1.9; [1.2, 3.0]), and Dual Users were over three times more likely than Vapers to report that seeing someone vape at work was a trigger for smoking (RR = 3.3; [2.2, 5.1]). Tobacco users who work about equally indoors and outdoors were more likely to report workplace vaping as a trigger for smoking than tobacco users who work primarily indoors (RR = 1.3, [1.1, 1.6]). Tobacco users in manufacturing, government and non-profit, and professional and business services were less likely than tobacco users working in health services to report that seeing someone vape at work was a trigger for smoke.

Seeing someone vape at work was reported as a trigger for vaping by 46.3% [42.5, 50.2] ($n = 301$) of current tobacco users. Significant bivariate relationships were observed with current tobacco product use, intention to quit smoking, intention to quit vaping, age, work location, and industry. Vapers (RR = 4.3; [3.1, 6.2]) and Dual Users (RR = 4.7; [3.6, 6.2]) were both over four times more likely than Smokers to report that seeing someone vape was a trigger for vaping. Those intending to quit vaping in the next 6 months were less likely than other tobacco users to report that seeing someone vaping in the workplace is a trigger for e-cigarette use (RR = 0.7; [0.6, 0.9]).

Former Users

Among former tobacco users ($n = 405$), 7.4% [4.8, 10.0] reported that seeing someone vape at work was a trigger for smoking. Bivariate associations with each covariate were assessed; only recency of quitting was significant. In the resulting unadjusted model, former tobacco users who had quit within the past year were more likely to report vaping as a trigger for smoking than former users who had been quit for more than 1 year (RR = 4.6; [2.1, 9.3]).

A similar percentage of former tobacco users, 6.7% [4.2, 9.1], reported that seeing someone vape at work was a trigger for vaping. Again, only recency of quitting had a significant bivariate relationship with likelihood of reporting it as a trigger. Former users who had quit within the past year were more likely to be triggered than former users who quit further in the past (RR = 3.8; [1.6, 8.3]).

Workplace Support for Vaping Cessation: Current Status and Employee Interest

Importance of Workplace Support for Quitting e-Cigarettes

Nearly all employees (97.4%) said that a workplace that supports health and wellness was important to them. More than eight in 10 respondents (84.8%) said a workplace that supports quitting e-cigarettes is important. Support was most common among Non-Users (88.6%) and only slightly less common among Smokers (82.0%), Dual-Users (79.5%), and Vapers (68.6%) ($df = 3$, $P < 0.001$).

Presence of Workplace Support

Roughly a third of employees (31.0%) said their company offers support to quit vaping and a quarter (25.9%) said they were unsure. As shown in Table 3, the presence of support varied by industry ($df = 9$, $P < 0.01$), with support for quitting vaping most common in the Health Services industry (43.2%) and least common in the Government and Nonprofit sector (20.7%).

Amount of Support to Quit Vaping

Among employees who indicated that their employer offers support to quit vaping, the majority (72.5%) felt the amount of support from their workplace to encourage employees to quit vaping was adequate: 65.5% said it was "just right" and 7.0% said it was "too much" compared with 18.9% who said it was too little and 8.6% who were unsure. "Just right" was the most common response across all tobacco use groups (Dual Users, 69.7%; Smokers 57.6%; Vapers, 66.7%; Non-Users, 65.4%).

Types of Workplace Support to Quit Vaping

Among employees who indicated that their employer offers support to quit vaping, 60.0% said their company provides referrals for vaping cessation assistance (eg, telephone number to quit-line, information for counseling), 57.8% said their company provides a

TABLE 3. Presence of Workplace Support for Quitting Vaping by Industry, *n* (%)

	Total	Yes	No	I Don't Know
Total	1607	498 (31.0)	692 (43.1)	417 (25.9)
Health services	264	114 (43.2)	93 (35.2)	57 (21.6)
Manufacturing	159	56 (35.2)	63 (39.6)	40 (25.2)
Information Technology	157	54 (34.4)	73 (46.5)	30 (19.1)
Financial activities	125	43 (34.4)	54 (43.2)	28 (22.4)
Transportation and Warehousing	80	26 (32.5)	34 (42.5)	20 (25.0)
Education	183	51 (27.9)	62 (33.9)	70 (38.3)
Professional and Business Services	139	37 (26.6)	63 (45.3)	39 (28.1)
Retail	187	40 (21.4)	101 (54.0)	46 (24.6)
Government and Non-profit	150	31 (20.7)	65 (43.3)	54 (36.0)
Other	163	46 (28.2)	84 (51.5)	33 (20.2)

cessation program to employees, 36.3% said their company offers financial benefits to support employees who are trying to quit vaping, and 5.2% said their employer encourages quitting in other ways including health fairs, limiting smoke/vape breaks, and designating specific areas in which employees are allowed to smoke/vape.

Interest in Quit Vaping Support

Roughly half (48.6%) of all employees said they would use a confidential, easy-access program to help themselves, a family member, or a child quit vaping; 33.6% said they would not use a quit vaping program; and 17.8% said they were uncertain. Openness to using a quit vaping program varied by tobacco use status ($df = 3$, $P < 0.001$): Dual Users were most likely to say ''yes'' (62.6%) followed by Smokers (45.1%), Non-Users (44.9%), and Vapers (44.3%). Parents were more likely to say they would use such a program (53.1%) than non-parents (40.2%), ($df = 1$, $P < 0.001$).

Among all e-cigarette users with any intentions to quit ($n = 202$), 74.3% said they would be ''likely'' or ''extremely likely'' to use medication to quit; 72.1% would use a digital program; 67.7% would talk to their doctor for advice to quit vaping; 50.2% would use face-to-face or group counseling; and 49.3% would use telephonic coaching. Dual Users were more likely than Vapers to use a digital program (75.8% vs 52.6%, $df = 1$, $P < 0.01$); to talk to a doctor (72.7% vs 42.1%, $df = 1$, $P < 0.001$); to use in-person counseling (53.9% vs 31.6%, $df = 1$, $P < 0.05$); and to use telephonic coaching (53.3% vs 28.9%, $df = 1$, $P < 0.01$). Likeliness of using medication (75.8% vs 65.8%) did not significantly differ.

Impact of Child Vaping on Working Parents

The majority of respondents (64.9%, $n = 1043$) were parents of a child aged 26 years or younger. Of those, 14.7% ($n = 153$) reported that their child was using e-cigarettes ($n = 104$) or that they were not sure ($n = 49$). The proportion of parents who reported child vaping increased with the child's age. Child vaping was reported by 1.9% ($n = 10$ of 515) of parents with a child aged 10 years or younger, 9.4% ($n = 47$ of 500) of parents with a child aged 11 to 17, and 18.2% ($n = 57$ of 313) of parents with a child aged 18 to 25. Among parents of vaping children, most reported being ''very'' or ''extremely'' concerned about it (child aged less than 10 = 70.0%; aged 11 to 17 = 68.1%; aged 18 to 25 = 64.9%). Among parents who reported either that their child used e-cigarettes or that they weren't sure, 43.4% reported feeling anxious or worried about it during the workday, 35.4% reported having difficulty focusing on work as a consequence, 29.3% reported being less productive as a consequence, and 27.3% reported missing work as a consequence.

DISCUSSION

This study examined a series of questions of practical relevance for employers related to the impact of vaping in the workplace. In a large sample of working US adults, we found that seeing someone vape in the workplace triggered a desire to smoke or vape among current tobacco users and those who had quit tobacco within the past year. A majority of survey respondents—both tobacco users and non-users—indicated that support for vaping cessation at the workplace was very important to them, yet only a third of employees said their company offered such support. Half of employees said they would take advantage of a quit vaping program, either for themselves or for a dependent. The most popular types of cessation support were pharmacotherapy and a digital program. Our findings suggest that parents of children using e-cigarettes may be an overlooked segment of the workforce when it comes to tobacco cessation support.

Our findings about workplace vaping as a trigger for both vaping and smoking build on existing experimental studies that have shown that observing e-cigarette use can produce urges, desire, and e-cigarette use behavior.[13–15] Given that roughly half of cigarette smokers and 41% of e-cigarette users planned to quit in the next 6 months, it is possible that unrestricted vaping at the workplace could undermine the efforts of those trying to quit. Similarly, observing someone else vaping was noted as a trigger for tobacco use among those who had quit within the past year, potentially putting them at risk for relapse. Vaping as a trigger was not limited to young people: although 18- to 30-year-old employees were the most likely to report it, roughly a third of 31- to 45-year-old respondents also noted it as a trigger. These findings reinforce the importance of a comprehensive workplace tobacco policy that restricts vaping in the workplace—consistently for both indoor and outdoor workers—in the same way that it restricts smoking.[28] We were surprised by the finding that e-cigarette users who intended to quit within the next 6 months were less likely than others to say that seeing someone vape at the workplace made them want to vape. It may be that once someone has decided to quit, a psychological distancing occurs such that seeing other people perform the behavior is unappealing and less likely to trigger desire or cravings. Additionally, some of those users may have been using e-cigarettes as a cessation aid from combustible cigarettes; it would not be surprising if the appeal of e-cigarettes were lower among that group than others. These are empirical questions that should be addressed in future research.

Our data show clear opportunities for employers to better meet the needs of their workers with workplace cessation programs. There was strong endorsement for workplace vaping cessation support across all categories of tobacco users and among non-users. Half of all employees said they would use a program to quit vaping or to help a family member or child quit vaping if they needed it. Among e-cigarettes users who intended to quit in the next 6 months, more than 70% reported they were likely to use medication or a digital tobacco cessation program. However, only a third of total employees said their workplace offered such support and a quarter were unsure whether such programs were in place. These findings are consistent with national data that show 27.2% of all working adults reported having an employer-sponsored cessation program.[34] There was notable variability in the presence of vaping cessation support by industry. Those in health services and manufacturing were the most likely to indicate a quit vaping program was in place, while those in retail and government/non-profit were the least likely. Here, too, our data mirror national trends.[34]

We found that parents of children who are using e-cigarettes are another important group of workers for employers to consider in wellness programming. Overall, 15% of parents reported that their child was using e-cigarettes or that they were unsure, and substantial percentages of parents were concerned enough about their child's use that it was decreasing their focus on work, making them less productive and even resulting in missing work. More than half of parents indicated they would be interested in a quit vaping program for themselves or a dependent. Tobacco cessation programs are typically offered to employees who attest to their own current tobacco use. Our data suggest that structuring wellness benefits in this manner may miss parents as an important segment of the workforce who experience significant impacts of e-cigarette use by a dependent and would benefit from support.

Strengths and Limitations

A strength of this study includes robust regression models to examine workplace vaping as a potential trigger for tobacco use among both current tobacco users and recent quitters. To our knowledge, this is the first study that has addressed the impact of workplace vaping on tobacco users and on its potential to derail efforts to quit or remain abstinent. A second novel contribution of this study is the focus on parents and the implications for benefits planning. Tobacco cessation treatment should support all tobacco users in their efforts to quit and should include support for family members as well as employees.

Several limitations should be noted when interpreting these results. First, because we used a convenience sampling approach, the distribution across certain variables in our sample may not mirror national data. Tobacco use was over-represented in our sample compared with national data,[35] as were indoor workers[34] and those intending to quit vaping in the next 6 months.[20] The study was not designed to sample industries in a representative way, and so differences between industries should be interpreted with caution. Second, there were a relatively small number of participants who reported use of only e-cigarettes (and not dual use with combustibles) and so further research should extend and confirm our findings. Third, though not explicitly a limitation, COVID-19 has forced many changes at the workplace since our data were collected, including policies to more comprehensively protect the health of employees. The evolving public health landscape may serve to amplify the importance of and desire for vaping cessation resources.

CONCLUSIONS

Overall, these data describe a considerable gap between the workplaces policies that workers want, and the policies that currently exist in most industries. Narrowing that gap represents an opportunity for public health advocates and employers to work together to improve both public health and employee satisfaction. Given the rapidly changing tobacco product landscape and evolving tobacco use trends, employer-sponsored tobacco cessation programs should not be ''set-it-and-forget-it.'' It is important to keep pace with the needs and preferences of tobacco users themselves, as well as other segments of an employee population who may also desire and need support around cessation, like parents of children who vape.

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