Vaping products in specific groups of smokers

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Work carried out in complete independence from the tobacco industry
No connection of interest with the tobacco, alcohol, gaming or e-cigarette industry
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Vaping products in specific population groups

Introduction

Which groups ?

Adolescents
Smokers with tobacco-related diseases: cardiovascular, pulmonary diseases and cancers
Smokers with co-addictions/ Smokers with psychiatric illnesses
Pregnant smokers

Common characteristics

High smoking prevalence
Difficulties quitting smoking
Low socio-economic level

Vaping products in specific population groups

Introduction

Knowledge available in literature concerning vaping products use in these groups

1) No blinded randomized controlled trial (RCT) comparing for these groups:

- a nicotine vaping product to a vaping product without nicotine to quit smoking
- a nicotine vaping product to a pharmacological treatment to quit smoking

2) Interest and frequency of use of vaping products in these groups

- Observational studies
- Open-label pilot randomized trials
- Observational studies nested in RCT

Vaping products in specific population groups

Adolescents who smoke who would use vaping products to stop

Interest of a RCT to study potential benefits of helping adolescents overcome a smoking addiction with vaping products

Smokers with diseases

Observational studies

- National Health Interview Survey (NHIS) 2014 and 2015
- N= 68,136 adult Americans
- Non-institutionalized civilian US population
- Response rate: 58.9% in 2014; 55.2% in 2015
- Diseases: high blood pressure, coronary disease (myocardial infarction or angina), stroke, chronic obstructive pulmonary disease, asthma, cancer and diabetes

Kruse GR, Kalkhoran S, Rigotti NA. Use of Electronic Cigarettes Among U.S. Adults With Medical Comorbidities. Am J Prev Med. 2017

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Smokers with diseases

Table 4. E-cigarette Use Among Current and Former Smokers

Self-reported co-morbidity	Ever e-cigarette use	Current e-cigarette use
	AOR[a] (95% CI)	
Current smoker (N=11,459)[b]		
No medical co-morbidity	Ref	Ref
Asthma	**1.48 (1.25, 1.75)**	**1.50 (1.10, 2.15)**
COPD	**1.42 (1.14, 1.77)**	1.04 (0.76, 1.42)
Cancer	1.15 (0.88, 1.51)	1.12 (0.63, 1.99)
Cardiovascular disease	**1.31 (1.02, 1.68)**	**1.54 (1.10, 2.15)**
Stroke	0.97 (0.72, 1.31)	0.94 (0.62, 1.43)
Hypertension	1.00 (0.88, 1.14)	0.92 (0.76, 1.13)
Diabetes	0.97 (0.81, 1.17)	1.14 (0.88, 1.46)
Former smoker (N=15,671)[b]		
No medical co-morbidity	Ref	Ref
Asthma	1.18 (0.95, 1.47)	1.39 (0.95, 2.03)
COPD	**2.46 (1.83, 3.31)**	**2.75 (1.79, 4.24)**
Cancer	0.79 (0.59, 1.07)	**0.59 (0.36, 0.99)**
Cardiovascular disease	0.88 (0.65, 1.19)	0.80 (0.47, 1.37)
Stroke	1.28 (0.82, 2.00)	1.77 (0.89, 3.49)
Hypertension	0.96 (0.81, 1.13)	0.96 (0.74, 1.23)
Diabetes	0.89 (0.67, 1.17)	0.74 (0.44, 1.24)

Note: Boldface indicates statistical significance ($p < 0.05$).
Data source: CDC/NCHS, National Health Interview Survey, 2014 and 2015.
[a]Adjusted for demographics (age, gender, race/ethnicity), SES (insurance, education), Census region, and year.
[b]2014 and 2015 data pooled for analysis. 3% missing data for demographic, socioeconomic or region variables.
COPD, chronic obstructive pulmonary disease.

Kruse GR, Kalkhoran S, Rigotti NA. Use of Electronic Cigarettes Among U.S. Adults With Medical Comorbidities. Am J Prev Med. 2017

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Smokers with diseases

RCT among cancer patients in a smoking cessation trial.

Aim

- describe longitudinal e-cigarette use over 6 months after a cancer diagnosis
- assess the association between e-cigarette use and smoking cessation

Methods

- Standard (brief counseling) versus Intensive treatment (sustained counseling plus smoking cessation medication) in individuals who smoke, recently diagnosed with cancer
- Participants (n = 303) reported: e-cigarette use at baseline, 3 months, and 6 months
- Biochemically-verified past 7-day cigarette abstinence collected at 6 months
- Qualitative interviews

Kalkhoran S et al. Longitudinal Electronic Cigarette Use Among Patients Recently Diagnosed With Cancer Enrolled in a Smoking Cessation Trial. Nicotine Tob Res 2022

Vaping products in specific population groups

Smokers with diseases

RCT among cancer patients in a smoking cessation trial.

Results
E-cigarette use prevalence declined over time.

No significant association between follow-up e-cigarette use and 6-month cigarette abstinence.

E-cigarette use at follow-up was higher in the Standard versus Intensive treatment group ($p = 0.003$ and 0.001 at 3 and 6 months)

Kalkhoran S et al. Longitudinal Electronic Cigarette Use Among Patients Recently Diagnosed With Cancer Enrolled in a Smoking Cessation Trial. Nicotine Tob Res 2022

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Smokers with psychiatric diseases

Studies nested in RCT

Table 1. Descriptive Characteristics and Multiple Logistic Regression Model Testing Study-level, Demographic, Psychiatric, and Tobacco-Related Variables Associated with E-Cigarette Use.

	n	% Reporting Recent E-cigarette Use	OR	95% CI for OR	
				Lower	Upper
Year enrolled in study					
2009–2010 (ref)	383	1%	-	-	-
2011	225	9%	7.78*	2.84	21. 92
2012	202	19%	19.43*	7.33	51.49
2013	146	25%	29.15*	10.53	80.72
Age group					
18–25	225	17%	2.61*	1.19	5.72
26–35	189	11%	1.07	.47	2.44
36–45	207	4%	.41	.16	1.05
46–55	214	8%	.93	.40	2.15
56+ (ref)	121	9%	-	-	-
Stage of change					
Precontemplation (ref)	282	8%	-	-	-
Contemplation	448	10%	1.56	.86	2.83
Preparation	226	13%	2.68*	1.38	5.20

Prochaska J, Grana . E cigarette use among smokers with serious mental illness. PLos ONE 2014 Nov 24;9(11):e113013

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Smokers with psychiatric diseases

Smoking reduction or cessation in people with mental illness: secondary analysis of data from the ASCEND trial

Table 3 Comparison of outcomes for mental illness participants who used 16 mg nicotine e-cigarettes, 0 mg e-cigarettes and 21 mg nicotine patches

Outcome	21 mg nicotine patch (n = 35, 40%)	16 mg nicotine e-cigarette (n = 39, 45%)	0 mg nicotine e-cigarette (n =12, 14%)	Difference (p-value)
Biochemically verified continuous abstinence at six months % (n)	14% (5)	5% (2)	0	0.245 (patch vs. 16 mg e-cig)[a]
				- (16 mg vs. 0 mg e-cig)
				0.115 (patch vs. combined e-cig)[a]
Relapse rate at six months % (n)	71% (25)	85% (33)	83% (10)	0.169 (patch vs. 16 mg e-cig)
				1.000 (16 mg vs. 0 mg e-cig)
				0.149 (patch vs. combined e-cig)
Mean reduction in CPD from baseline to six months in those that did not quit Mean (SD)	5.7 (6.3)	9.9 (7)	4.7 (3.5)	0.035 (patch vs. 16 mg e-cig)
				0.068 (16 mg vs. 0 mg e-cig)
				0.083 (patch vs. combined e-cig
Percentage reduction in CPD from baseline to six months in those that did not quit Mean (SD)	29% (30%)	49% (30%)	31% (30%)	0.025 (patch vs. 16 mg e-cig)
				0.153 (16 mg vs. 0 mg e-cig)
				0.049 (patch vs. combined e-cig)
Treatment compliance at three months % (n)	20% (6)	53% (19)	46% (5)	0.006 (patch vs. 16 mg e-cig)
				0.670 (16 mg vs. 0 mg e-cig)
				0.006 (patch vs. combined e-cig)
Adverse events	17 (in 16 people)	22 (in 15 people)	5 (in 4 people)	-
Acceptability of intervention at six months				
Would recommend to a friend **% (n)**	37% (11)	83% (30)	80% (8)	<0.001 (patch vs. 16 mg e-cig)
				1.000a (16 mg vs. 0 mg e-cig)
				<0.001 (patch vs. combined e-cig)
'Stopped as didn't like it' **% (n)**	41% (12/29)	29% (7/24)	22% (2/9)	0.356 (patch vs. 16 mg e-cig)
				1.000a (16 mg vs. 0 mg e-cig)
				0.242 (patch vs. combined e-cig)

CPD = cigarettes per day smoked, SD = standard deviation, [a]Fishers Exact test.

Nous ne pouvons pas afficher l'image.

Vaping products in specific population groups

Smokers with co-addictions

QuitNic: Open-label, randomized, two-arm, single-center, pragmatic trial

Methods

Recruitment during hospitalization

One-hour training session on the two randomized options and orientation to the Quitline during and after hospitalization

Packages

- TSN (patches + nicotine gums, lozenges, mouth spray and inhalers)
- Ecig at hospital discharge with nicotine concentration of the liquid according to the HSI
- Measures
  - Acceptability (effectiveness in calming the urge to smoke, ease of use, pleasant to use)
  - Feasibility of a trial in an addiction service (consent, maintenance in the trial)
  - Adherence to treatment: current use of the product, frequency of use, and use of a combination of the two products

Bonevski B. et al QuitNic: A Pilot Randomized Controlled Trial Comparing Nicotine Vaping Products With Nicotine Replacement Therapy for Smoking Cessation Following Residential Detoxification. Nicotine & Tobacco Research, 2021

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Smokers with co-addictions

QuitNic: Open-label, randomized, two-arm, single-center, pragmatic trial

Measures

- Smoking cessation: continuous abstinence and abstinence in the past week 6 W and 12 W

Results N= 100, N1=63 at 6W and N2=50 at 12W

- W 12 68% of people in the NRT group used the products vs 96% of people in the ecig group
- 18% of people in the NRT group said they had not smoked in the past 7 days vs 14% in the ecig group
- Significant reduction in the number of cigarettes smoked per day in both groups:
  - NRT 20.88 to 5.52 ($p<0.001$);
  - Ecig 19.91 to 4.72 ($p<0.001$)

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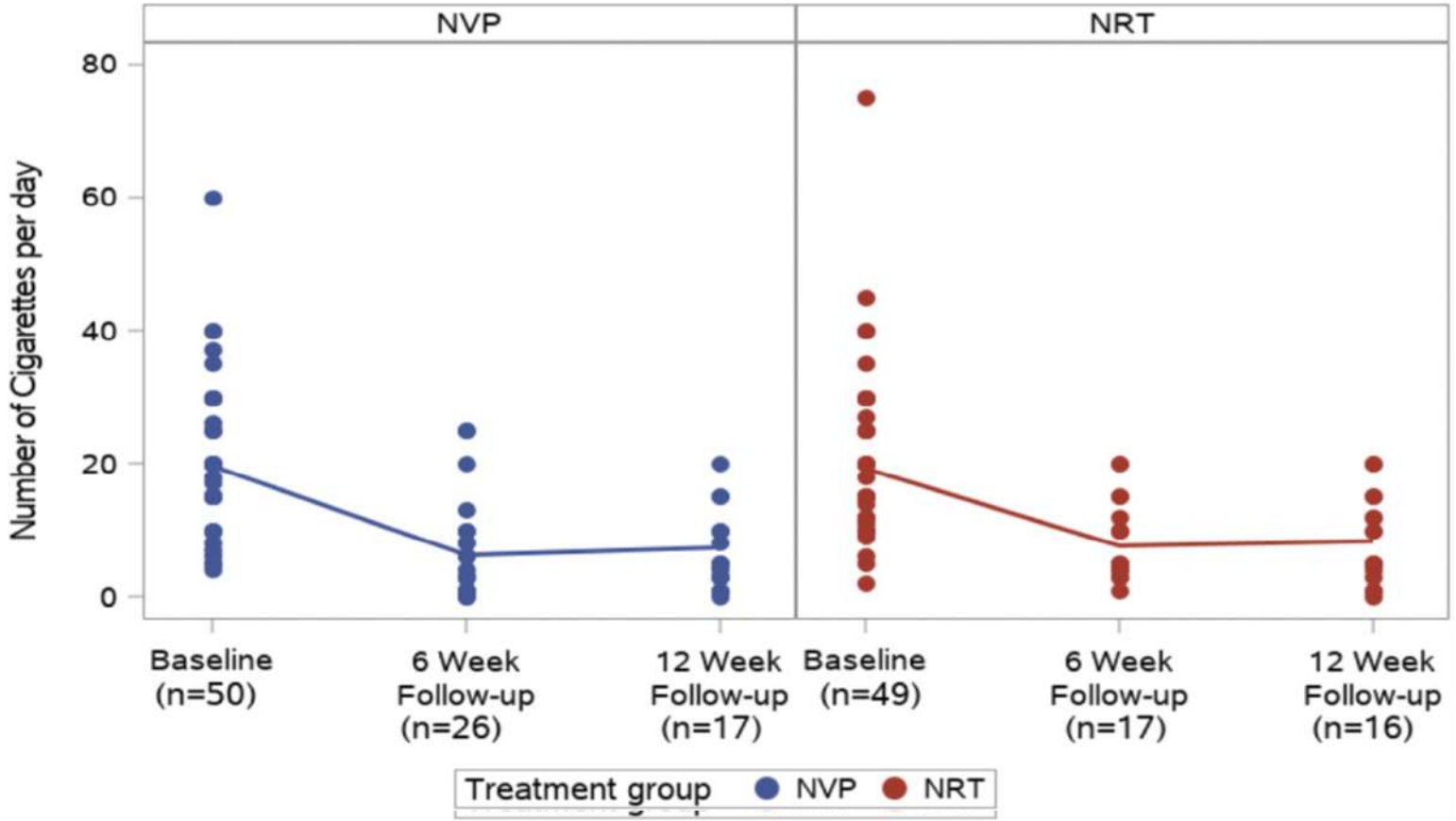

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QuitNic: Open-label, randomized, two-arm, single-center, pragmatic trial

High acceptability in both groups (variation depending on the NRT used)
Abstinence: no significant difference between the two groups
Craving
NRT 68% initially, 58% at 6W and 40% at 12W
Ecig 74% initially, 52% at 6W and 48% at 12W
Withdrawal symptoms: Scores down in both groups with no significant difference
Psychological distress score: Down in both groups with no significant difference

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Smokers with co-addictions

QuitNic: Open-label, randomized, two-arm, single-center, pragmatic trial

Adverse effects (AE)
NRT n=10 declaring 14 AE
Ecig n=15 declaring 19 AE and one serious AE
No AE or serious AE classified as probable or definitively caused by the study products

Conclusion
NRT and Ecig considered very acceptable and well used with quite similar results

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Pregnant smokers

Electronic cigarette/nicotine patch randomized trial

Methods

24 recruitment sites, almost exclusively in England
Mailing to pregnant women (12 to 24 weeks) who smoke daily
Telephone follow-up
Measurement of cessation rates and adverse effects at the end of pregnancy
Abstinence validation: declaration/postal saliva samples/expired CO

Results

N= 1140 - 560 e-cig – 569 nicotine patch
55.1% validation of weaning at the end of pregnancy
Intention-to-treat cessation rate 6.8% ecig arm versus 4.4% NRT arm with no significant difference
Calculation excluding abstinent women who regularly used the treatment assigned to the other group significant difference in favor of ecig

Hajek P et al. Electronic cigarettes versus nicotine patches for smoking cessation in pregnancy: a randomized trial. 2022 Nature Medicine

Vaping products in specific population groups

Pregnant smokers

Electronic cigarette/nicotine patch randomized trial

Results

Secondary endpoints:

- Significant difference in favor of ecig
- Abstinence declared after 4 weeks
- Point-prevalence abstinence declared at the end of pregnancy

Adherence to telephone follow-up low in both groups (higher in the ecig group)

Comparable AE in the two groups

Low birth weight <2500 grams less common in ecig group

Conclusion

Greater acceptability of the ecig (more frequent use and compliance)

Abstinence rate low despite free supply and telephone follow-up

HCSP: not in favor of the ecig use during pregnancy

Hajek P et al. Electronic cigarettes versus nicotine patches for smoking cessation in pregnancy: a randomized trial. 2022 Nature Medicine

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Conclusion

E cigarette use for smokers (HCSP 2022)

- with previous failures to quit with validated treatments
- lack of adherence to validated treatments
- in case of preference for the electronic cigarette use

Public health objective

Improving knowledge about the potential aid of ECig to help smokers in specific groups to quit

Beyond the non-pharmacological and pharmacological treatments or the ecig use, major difficulties in recruitment and retention of smokers belonging to these groups in the studies