
E-CIGARETTE USE AMONG IRISH TEENAGERS AND YOUNG ADULTS

Salome Sunday

TobaccoFree Research Institute Ireland, www.tri.ie, TU Dublin

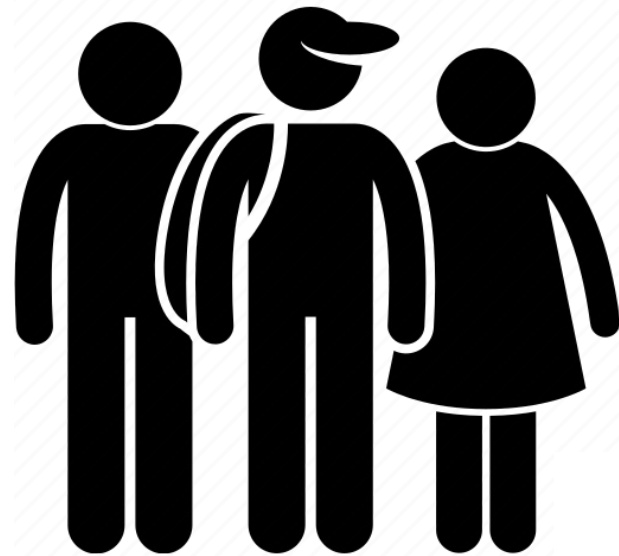
Asthma Society Nurses and Physiotherapist Learning Team Meeting
16th June 2023



INTRODUCTION



Students/teenagers and young adults

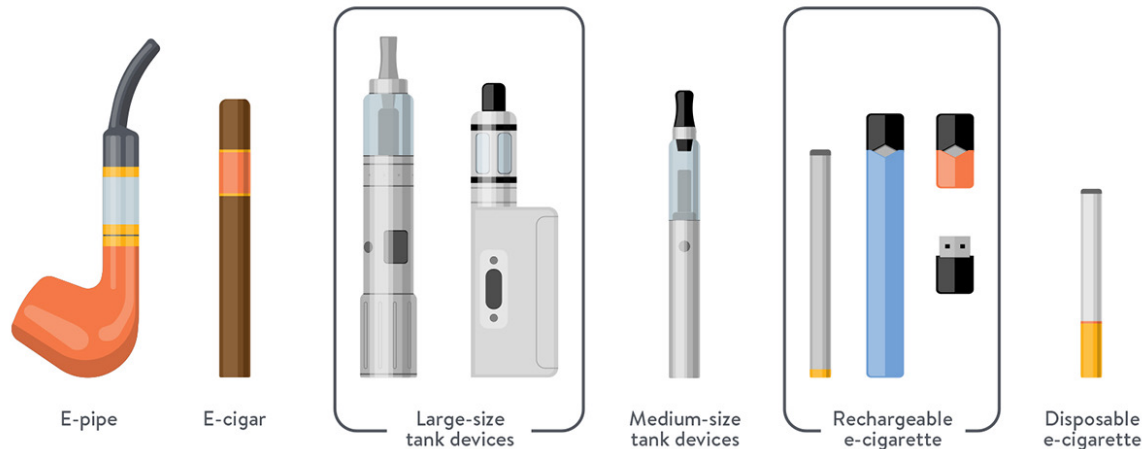
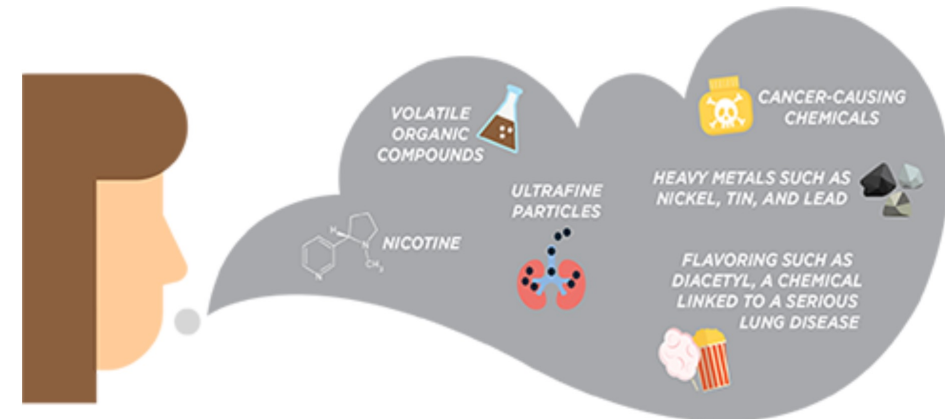


Smoking and e-cigarette use



WHAT ARE E-CIGARETTES

- Sometimes called “e-cigs,” “e-hookahs,” “mods,” “vape pens,” “vapes,” “tank systems,” and “electronic nicotine delivery systems (ENDS)”
- E-cigarettes are battery-operated devices that produce aerosol when a liquid solution which may contain flavoring, nicotine, and other chemicals is heated.
- Some e-cigarettes are made to look like regular cigarettes, cigars, or pipes. Some resemble pens, USB sticks, and other everyday items.



WHO IS USING E-CIGARETTES

- Many surveys report high rates of e-cigarette use



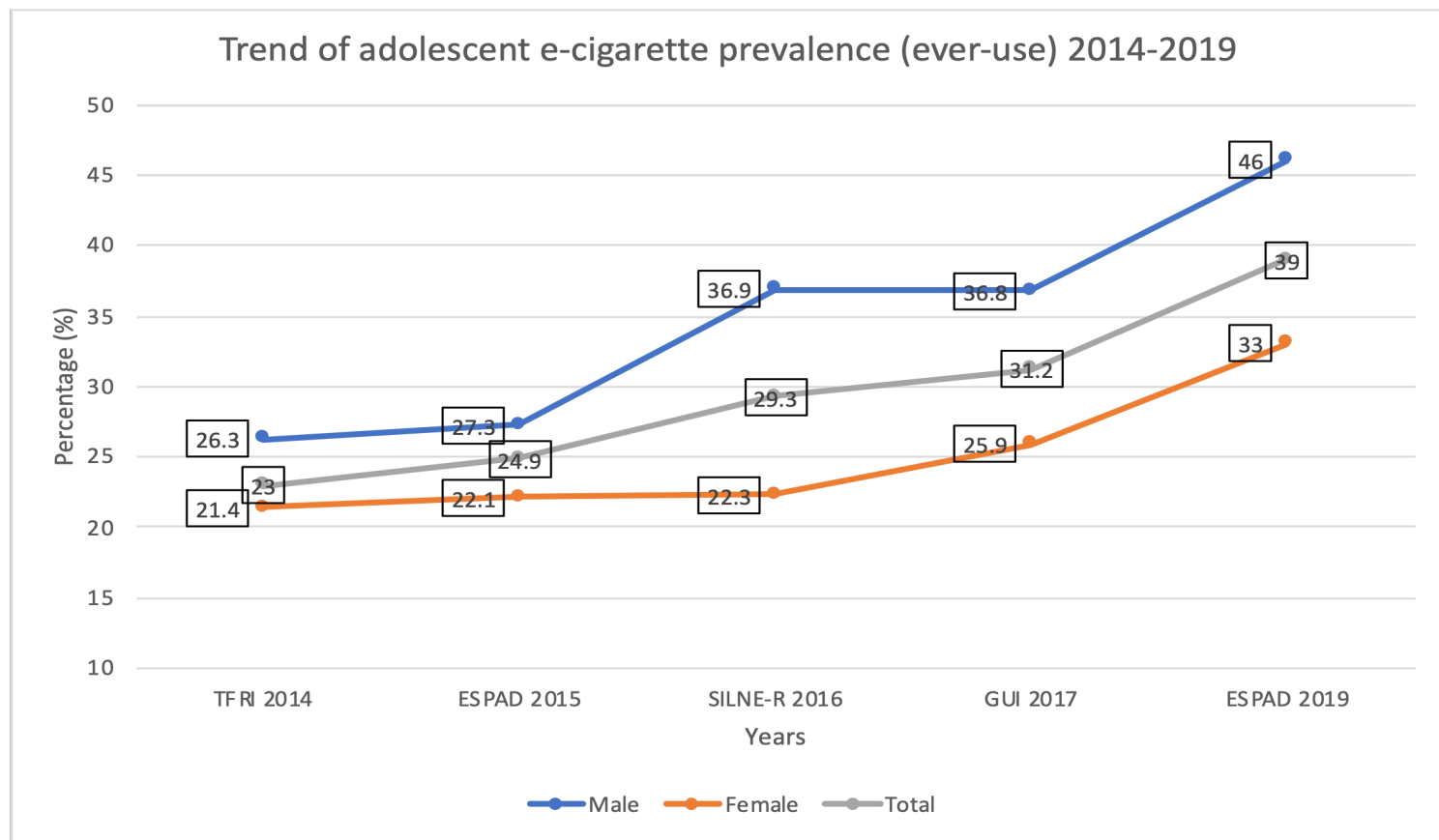
Wave 1 (2008)- 9 years
Wave 2 (2012)- 13 years
Wave 3 (2016/17)-17/18 years
Wave 4 (2019)- 20 years
Covid wave (Dec 2020)- 22 years



15/16 years

SILNER

MARKED RISE IN ADOLESCENT E-CIGARETTE USE



Since their introduction to the the global market around 2007 and in Ireland in 2013, e-cigarettes have rapidly become popular among adolescents and young adults

The increase in e-cigarette use among young people represents a growing concern for tobacco control efforts in Ireland.



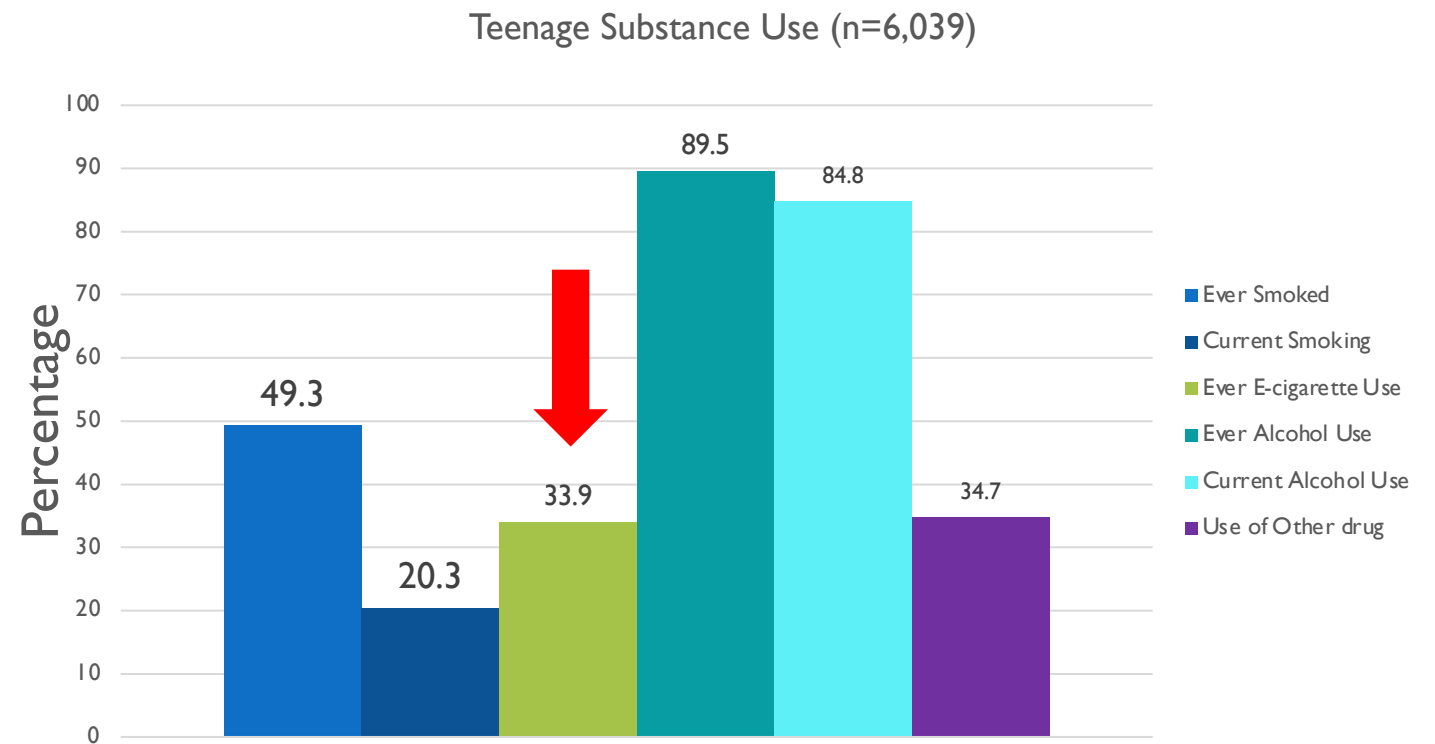
Tobacco Endgame in Ireland

< 5% smoking prevalence

PREVALENCE OF E-CIGARETTES USE AMONG 17/18-YEAR-OLDS

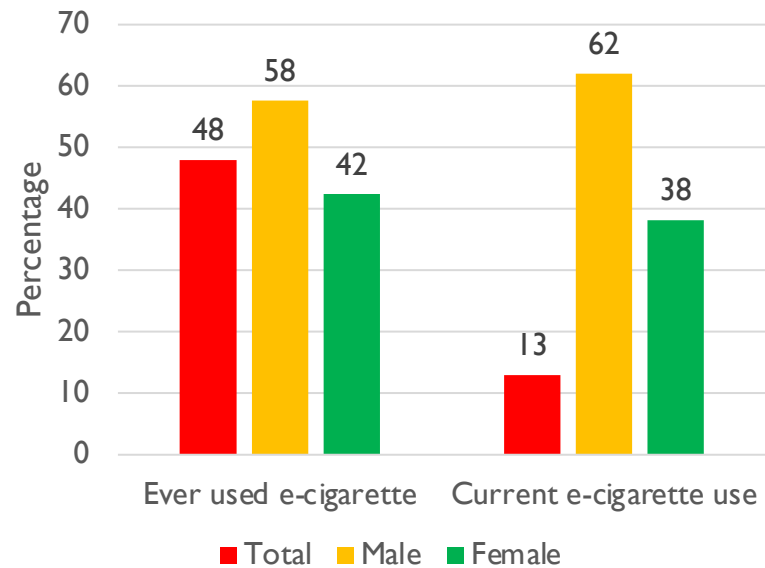
➤ E-cigarettes →

33.9% (n=2,024) ever use

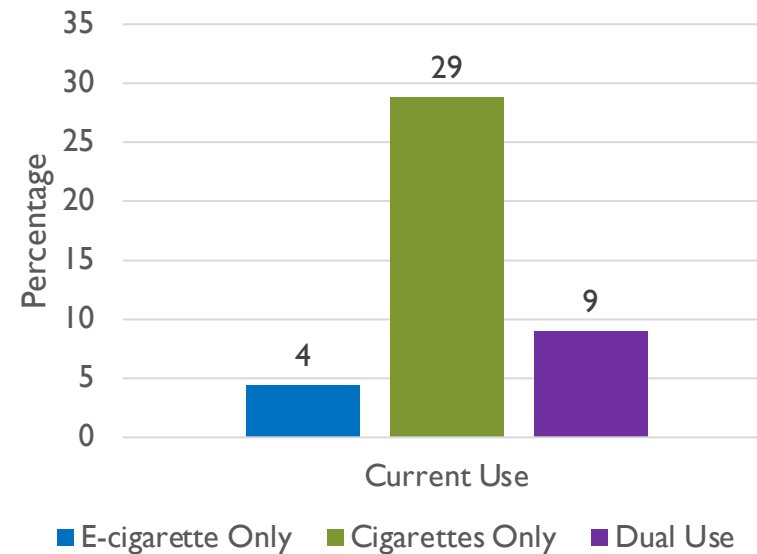


PREVALENCE OF E-CIGARETTES USE AMONG YOUNG ADULTS (20 YEARS)

Young Adult E-cigarette Use (n=5190)



Single and Dual Use (n=5190)



MOTIVATIONS FOR USE

Most common reasons teenagers use e-cigarettes include:

66%

“Out of curiosity”

29%

“Because friends were using it”

3%

“To quit smoking”

Changes in	16 year olds n (%)
Reasons for trying e-cigarettes	
ESPAD-TFRI 2019	
To quit smoking	16 (3.4)
Because friends were using it	137 (28.8)
Out of curiosity	315 (66.3)
ESPAD-TFRI 2015	
To quit smoking	48 (19.2)
As an alternative to tobacco smoking	27 (10.8)
Because friends were using it	57 (22.8)
Out of curiosity	151 (60.4)
Relationship with Tobacco when first tried e-cigarettes	
ESPAD-TFRI 2019	
I have never smoked tobacco	461 (66.7)
I smoked tobacco occasionally	168 (24.3)
I smoke tobacco regularly	57 (8.9)
ESPAD-TFRI 2015	
I have never smoked tobacco	76 (32.2)
I smoked tobacco occasionally	123 (52.1)
I smoke tobacco regularly	37 (15.7)

FACTORS ASSOCIATED WITH E-CIGARETTE USE



FACTORS ASSOCIATED WITH E-CIGARETTE USE- 20 YEAR OLDS

	N (%) N=5 190	Ever used e-cigarettes N=2460 (47.8%)	Current e-cigarettes use N= 690 (13.4%)
		AOR (95% CI)	AOR (95% CI)
Gender			
Female	2548 (49.10)	Reference	Reference
Male	2642 (50.90)	1.63 (1.37, 1.94)	1.71 (1.30, 2.25)
Leaving Cert points			
Low Achieving	1110 (23.32)	Reference	Reference
Medium Achieving	1438 (30.21)	0.58 (0.45, 0.76)	-
Medium High Achieving	1439 (30.23)	0.45 (0.35, 0.58)	0.67 (0.49, 0.92)
High Achieving	773 (16.24)	0.30 (0.23, 0.40)	0.49 (0.32, 0.75)
Ever smoked			
No	1344 (26.10)	Reference	Reference
Yes	3807 (73.90)	2.99 (2.36, 3.78)	5.25 (2.66, 10.34)
Current smoking			
No	3204 (62.20)	Reference	Reference
Yes	1947 (37.80)	1.68 (1.38, 2.04)	3.22 (2.40, 4.31)
Ever alcohol use			
No	185 (3.58)	Reference	-
Yes	4967 (96.42)	3.65 (1.54, 8.62)	-
Ever tried cannabis			
No	1992 (39.46)	Reference	Reference
Yes	3055 (60.54)	2.28 (1.88, 2.76)	1.97 (1.41, 2.74)
Ever used non-prescribed drugs			
No	3673 (71.55)	Reference	-
Yes	1460 (28.45)	1.44 (1.14, 1.82)	-
Household type			
Single	1139 (23.31)	-	Reference
Couple	3748 (76.69)	-	0.61 (0.43, 0.85)

- ✓ E-cigarette ever and current users were significantly more likely to be **male**, **ever-smokers**, **current smokers** and **ever cannabis users**.
- ✓ E-cigarette ever-users were more likely to **ever-use alcohol** and **non-prescribed drugs**.
- ✓ E-cigarette ever and current use was inversely associated with **higher leaving certificate points** and **being in two-parent families**

Data from 5,190 20-year-olds in the Growing up in Ireland (GUI) survey (Wave 4, 2019),

FACTORS ASSOCIATED WITH E-CIGARETTE USE- 16-YEAR-OLDS

	E-cigarettes ever-use (16-year-olds)		
	Total (AOR, 95% CI)	Male (AOR, 95% CI)	Female (AOR, 95% CI)
ESPAD Year			
2015			
2019	2.29 (1.89, 2.78)	2.04 (1.55, 2.68)	2.67 (2.02, 3.54)
Ever smoked			
Never			
Ever	1.39 (1.10, 1.75)	1.23 (0.89, 1.71)	1.56 (1.12, 2.18)
Current smoking			
No			
Yes	1.76 (1.31, 2.38)	2.60 (1.71, 3.93)	1.14 (0.73, 1.79)
Household composition			
Single parent			
Two parents	0.84 (0.66, 1.08)	0.91 (0.63, 1.30)	0.80 (0.55, 1.15)
Blended families	1.43 (0.93, 2.16)	1.85 (1.02, 3.35)	1.14 (0.61, 2.13)
Parental Monitoring			
Know always			
Know quite often	1.99 (1.61, 2.46)	1.94 (1.43, 2.62)	2.04 (1.51, 2.75)
Know sometimes	3.12 (2.52, 4.63)	3.15 (2.06, 4.83)	3.68 (2.35, 5.75)
Usually don't know	3.96 (2.54, 6.18)	5.42 (2.72, 10.79)	3.33 (1.84, 6.03)
Peer smoking			
None			
A few/some	2.74 (2.17, 3.45)	3.12 (2.22, 4.38)	2.47 (1.79, 3.41)
Most/all	6.52 (4.66, 9.15)	7.07 (4.33, 11.55)	6.23 (3.87, 10.02)

Table 1: Multivariable logistic regression results of factors associated with e-cigarette ever-use in the 2015 & 2019 ESPAD Survey

Other variables included in the final model but not significant include household composition, truancy, perceived wealth and relationship with mother

Table 2: Multivariable logistic regression results of factors associated with e-cigarette current use in the 2015 & 2019 ESPAD Surveys


Other variables included in the final model but not significant include ever smoked, household composition, truancy and perceived wealth

	E-cigarettes current use (16-year-olds)		
	Total (AOR, 95% CI)	Male (AOR, 95% CI)	Female (AOR, 95% CI)
ESPAD Year			
2015			
2019	2.41 (1.85, 3.12)	1.96 (1.37, 2.82)	3.11 (2.10, 4.61)
Current smoking			
No			
Yes	1.78 (1.23, 2.55)	2.13 (1.30, 3.51)	1.50 (0.87, 2.59)
Parental Monitoring			
Know always			
Know quite often	2.22 (1.69, 2.92)	2.62 (1.76, 3.90)	1.90 (1.29, 2.81)
Know sometimes	3.53 (2.49, 5.01)	4.06 (2.49, 6.63)	3.09 (1.85, 5.15)
Usually don't know	4.48 (2.83, 7.11)	5.50 (2.85, 10.61)	3.50 (1.79, 6.84)
Peer smoking			
None			
A few/some	2.13 (1.54, 2.96)	2.23 (1.39, 3.59)	2.11 (1.34, 3.33)
Most/all	5.45 (3.65, 8.14)	5.90 (3.31, 10.52)	5.31 (3.01, 9.37)
Relationship with mother			
Satisfied			
Neither nor	1.23 (0.77, 1.97)	1.37 (0.68, 2.79)	1.25 (0.66, 2.37)
Not satisfied	1.55 (1.06, 2.26)	1.40 (0.79, 2.49)	1.64 (0.98, 2.74)

OTHER FACTORS

Research | [Open Access](#) | [Published: 03 November 2021](#)

Friends and family matter Most: a trend analysis of increasing e-cigarette use among Irish teenagers and socio-demographic, personal, peer and familial associations

[Joan Hanafin](#), [Salome Sunday](#) & [Luke Clancy](#) 

[BMC Public Health](#) **21**, Article number: 1988 (2021) | [Cite this article](#)
1935 Accesses | 4 Citations | 8 Altmetric | [Metrics](#)

Increased smoking and e-cigarette use among Irish teenagers: A new threat to Tobacco Free Ireland 2025

Salome Sunday, Joan Hanafin, Luke Clancy

Research Paper

Tobacco Induced Diseases

Sociodemographic, personal, peer, and familial predictors of e-cigarette ever use in ESPAD Ireland: A forward stepwise logistic regression model

[Joan Hanafin](#)^{1,2}, [Salome Sunday](#)^{1,2}, [Luke Clancy](#)¹ 

ABSTRACT

Journal of Public Health: From Theory to Practice
<https://doi.org/10.1007/s10389-021-01610-1>

ORIGINAL ARTICLE

E-cigarettes and smoking in Irish teens: a logistic regression analysis of current (past 30-day) use of e-cigarettes

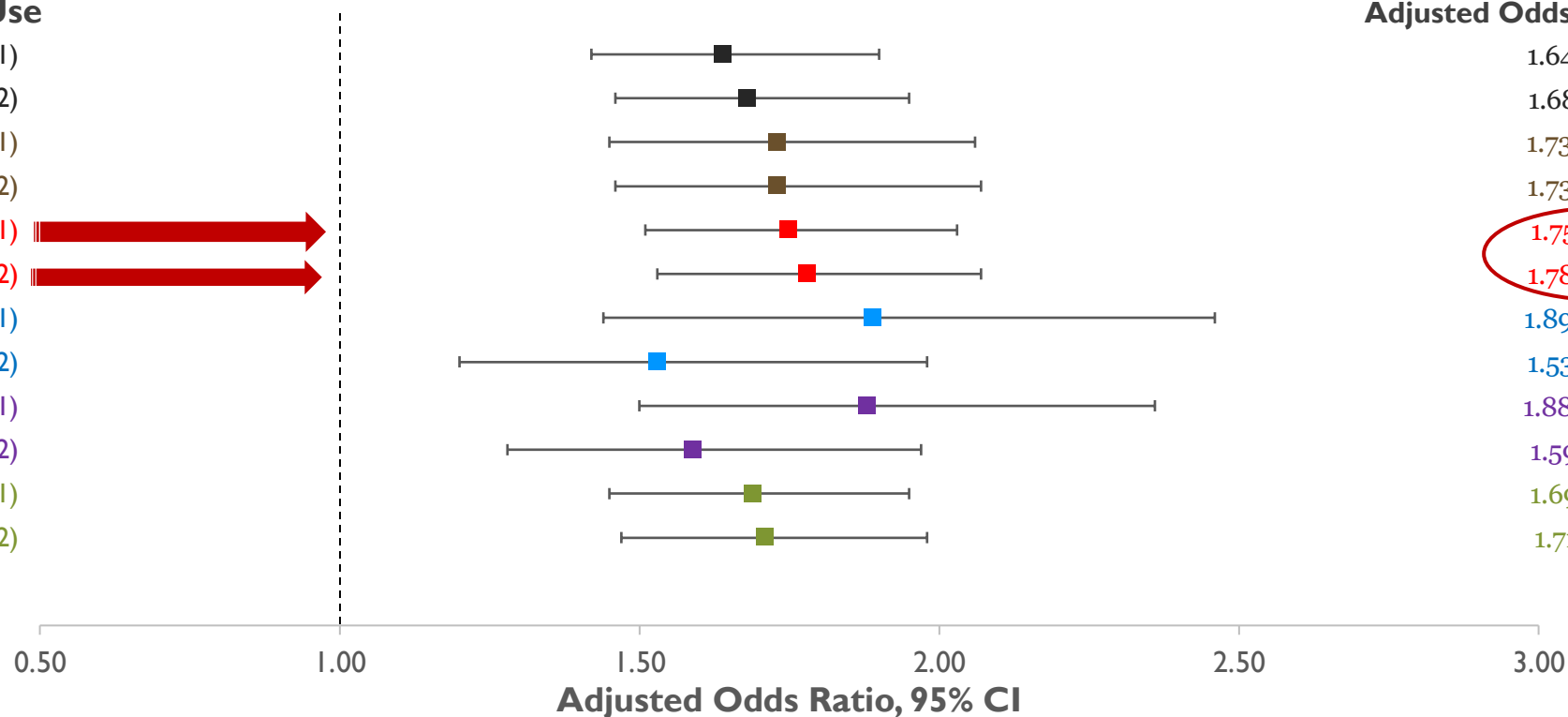
[Joan Hanafin](#)¹ · [Salome Sunday](#)¹ · [Luke Clancy](#)¹ 



MATERNAL SMOKING AND TEENAGE SUBSTANCE USE

Teenage Substance Use

- Ever Smoking (Wave 1)
- Ever Smoking (Wave 2)
- Current Smoking (Wave 1)
- Current Smoking (Wave 2)
- Ever E-cigarette Use (Wave 1)
- Ever E-cigarette Use (Wave 2)
- Ever Alcohol Use (Wave 1)
- Ever Alcohol Use (Wave 2)
- Current Alcohol Use (Wave 1)
- Current Alcohol Use (Wave 2)
- Ever Use of other Drugs (Wave 1)
- Ever Use of other Drugs (Wave 2)



Adjusted Odds Ratio...

- 1.64 [1.42, 1.90]
- 1.68 [1.46, 1.95]
- 1.73 [1.45, 2.06]
- 1.73 [1.46, 2.07]
- 1.75 [1.51, 2.03]
- 1.78 [1.53, 2.07]
- 1.89 [1.44, 2.46]
- 1.53 [1.20, 1.98]
- 1.88 [1.50, 2.36]
- 1.59 [1.28, 1.97]
- 1.69 [1.45, 1.95]
- 1.71 [1.47, 1.98]

E-CIGARETTE USE AND ASTHMA

Association Between E-Cigarettes and Asthma in Adolescents: A Systematic Review and Meta-Analysis

Xuechao Li MPH¹, Yi Zhang MM², Rongqiang Zhang MD³, Fei Chen MM⁴, Lihua Shao MM⁵, Li Zhang MM⁶

E-cigarette use was associated with significantly higher odds of having asthma (pooled OR=1.31, 95% CI=1.22, 1.42) than nonuse, and both current use (OR=1.36, 95% CI=1.26, 1.48) and ever use (OR=1.20, 95% CI=1.12, 1.28) showed similar associations.

Use of electronic cigarettes and secondhand exposure to their aerosols are associated with asthma symptoms among adolescents: a cross-sectional study

Abdullah Alnajem, Abdullah Redha, Dalal Alroumi, Ahmed Alshammasi, Mohamad Ali, Maram Alhussaini, Waad Almutairi, Ali Esmail & Ali H. Zivab

school-based cross-sectional study (16-19 years), current e-cigarette users with no history of cigarette smoking had increased prevalence of current wheeze (aPR = 1.54, 95% CI 1.01–2.45) and current asthma (aPR = 1.85, 95% CI 1.03–3.41).

ORIGINAL RESEARCH: ASTHMA | VOLUME 155, ISSUE 1, P88-93, JANUARY 2019

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Secondhand Exposure to Aerosols From Electronic Nicotine Delivery Systems and Asthma Exacerbations Among Youth With Asthma

Jennifer E. Bayly, BS • Debra Bernat, PhD • Lauren Porter, PhD • Kelvin Choi, PhD

Secondhand ENDS aerosol exposure was associated with higher odds of reporting an asthma attack in the past 12 months, adjusting for covariates (adjusted OR, 1.27; 95% CI, 1.11-1.47)



How E-cigarettes and vaping can affect asthma in children and adolescents

Di Cicco, Maria^{a,b}; Sepich, Margherita^{a,b}; Beni, Alessandra^{a,b}; Comberiati, Pasquale^{a,b,c}; Peroni, Diego G.^{a,b}

Author Information

.....association between vape exposure and self-reported asthma diagnosis and/or respiratory symptoms in this age group.
..... exposure should be limited in children and adolescents, especially when affected by asthma.

E-Cigarette Use Associated With Asthma Independent of Cigarette Smoking and Marijuana in a 2017 National Sample of Adolescents

Thomas A. Wills Ph.D.^a, Kelvin Choi Ph.D., M.P.H.^b, Ian Pagano Ph.D.^a

Significant association with asthma was found for ever use of e-cigarettes, adjusted odds ratio (AOR) = 1.15 (confidence interval [CI], 1.02–1.30; p = .02) and for currently using e-cigarettes, AOR = 1.30 (CI, 1.10–1.53; p = .002). E-cigarettes had an additive effect for asthma beyond smoking (p = .03).

HOW DOES E-CIGARETTE USE TRIGGER ASTHMA?

The chemicals and the flavors in e-cigarettes are irritants and people who have irritation are more likely to wheeze and have asthma.

These chemicals have also been linked to increased cough, mucus secretions, chest tightness and reduced lung function, all of which can make asthma worse.

Research has linked some flavoured additives in e-cigarettes to causing cell damage in the airways which worsens asthma.

One comprehensive study of more than 19,000 e-cigarette users found common side effects included coughing and a dry throat, which could make asthma worse.

Vaping might impair the lung's ability to fight infection, increasing the risk of more severe asthma attacks.

Article | [Open Access](#) | [Published: 20 September 2019](#)

The Effect of Flavored E-cigarettes on Murine Allergic Airways Disease

[David G. Chapman](#) , [Dylan T. Casey](#), [Jennifer L. Ather](#), [Minara Aliyeva](#), [Nirav Daphtary](#), [Karolyn G. Lahue](#), [Jos L. van der Velden](#), [Yvonne M. W. Janssen-Heininger](#) & [Charles G. Irvin](#)

[Open Access](#) [Article](#)

Characteristics, Perceived Side Effects and Benefits of Electronic Cigarette Use: A Worldwide Survey of More than 19,000 Consumers

by  [Konstantinos E. Farsalinos](#) ^{1,*}  ,  [Giorgio Romagna](#) ²,  [Dimitris Tsiapras](#) ¹,
 [Stamatis Kyrzopoulos](#) ¹ and  [Vassilis Voudris](#) ¹

HEALTH EFFECTS AND RISKS OF E-CIGARETTE USE

01

Nicotine exposure is addictive and can also harm adolescent and young adult brain development, which continues into the early to mid-20s.

E-cigarette use is associated with the use of other tobacco products, including cigarettes.

02

03

E-cigarette aerosol can contain chemicals that are harmful to the lungs.

A main concern: potential for e-cigarette use to renormalize cigarette smoking, especially in young people, threat to TFI endgame.

04

CONCLUSION

Ever and current e-cigarette use is high among teenagers and young adults

Smoking, parental smoking, substance use, gender, parental monitoring are all risk factors for e-cigarette use

Increase in e-cigarette use in teenagers is worrying and needs urgent action especially as it appears linked to increased smoking among teenagers and young adults.

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