

Association of psychological distress with smoking cessation, duration of abstinence from smoking, and use of non-combustible nicotine-containing products

A cross-sectional population survey in Great Britain

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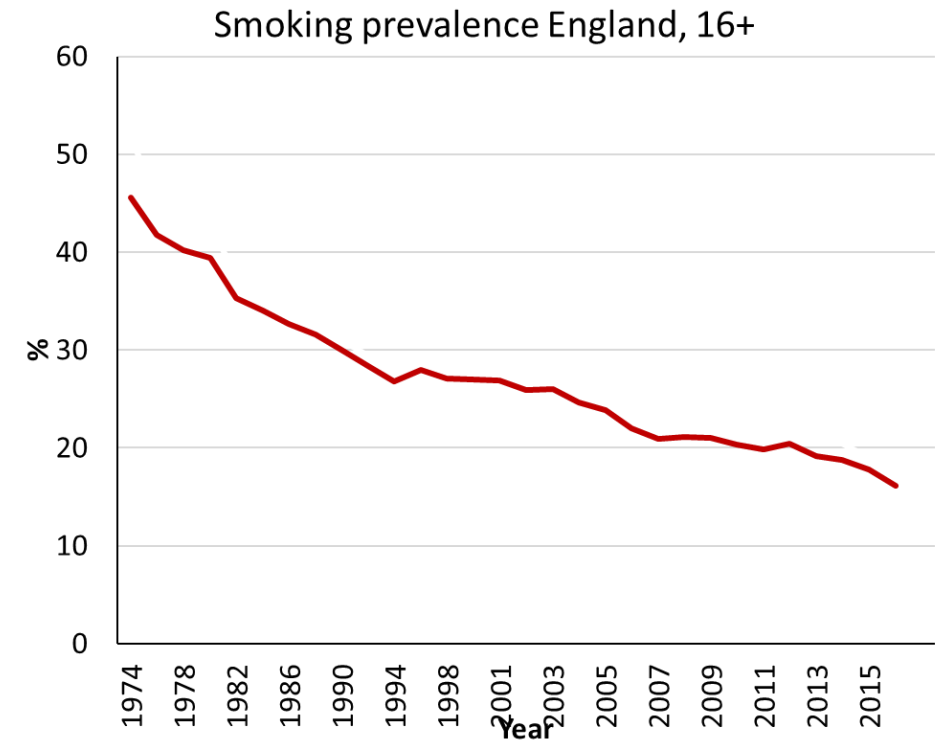
Revise and resubmit *Addictive Behaviors*

# Funding and conflicts of interest

- Funding for STS data collection in England is supported by Cancer Research UK
- This work is supported by the UK Prevention Research Partnership
  - funded by the British Heart Foundation, Cancer Research UK, Chief Scientist Office of the Scottish Government Health and Social Care Directorates, Engineering and Physical Sciences Research Council, Economic and Social Research Council, Health and Social Care Research and Development Division (Welsh Government), Medical Research Council, National Institute for Health Research, Natural Environment Research Council, Public Health Agency (Northern Ireland), The Health Foundation and Wellcome
- No conflicts of interest

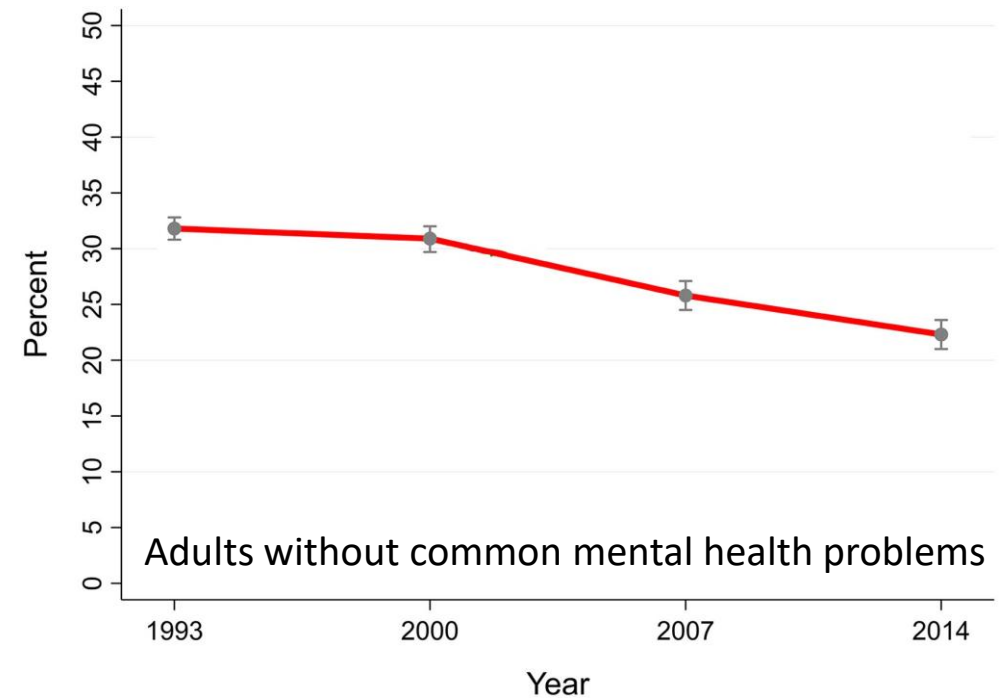
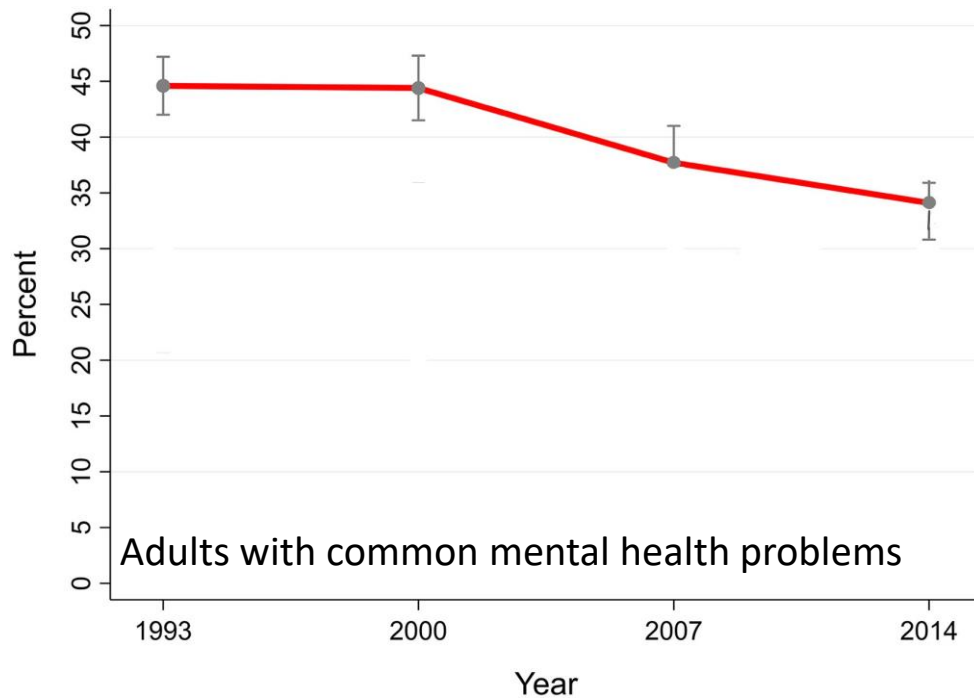
# Smoking and health

- Smoking is the largest cause of cancer and preventable death in the UK (and other countries)
- It kills about 2 in 3 long-term smokers
- Success in reducing prevalence in England



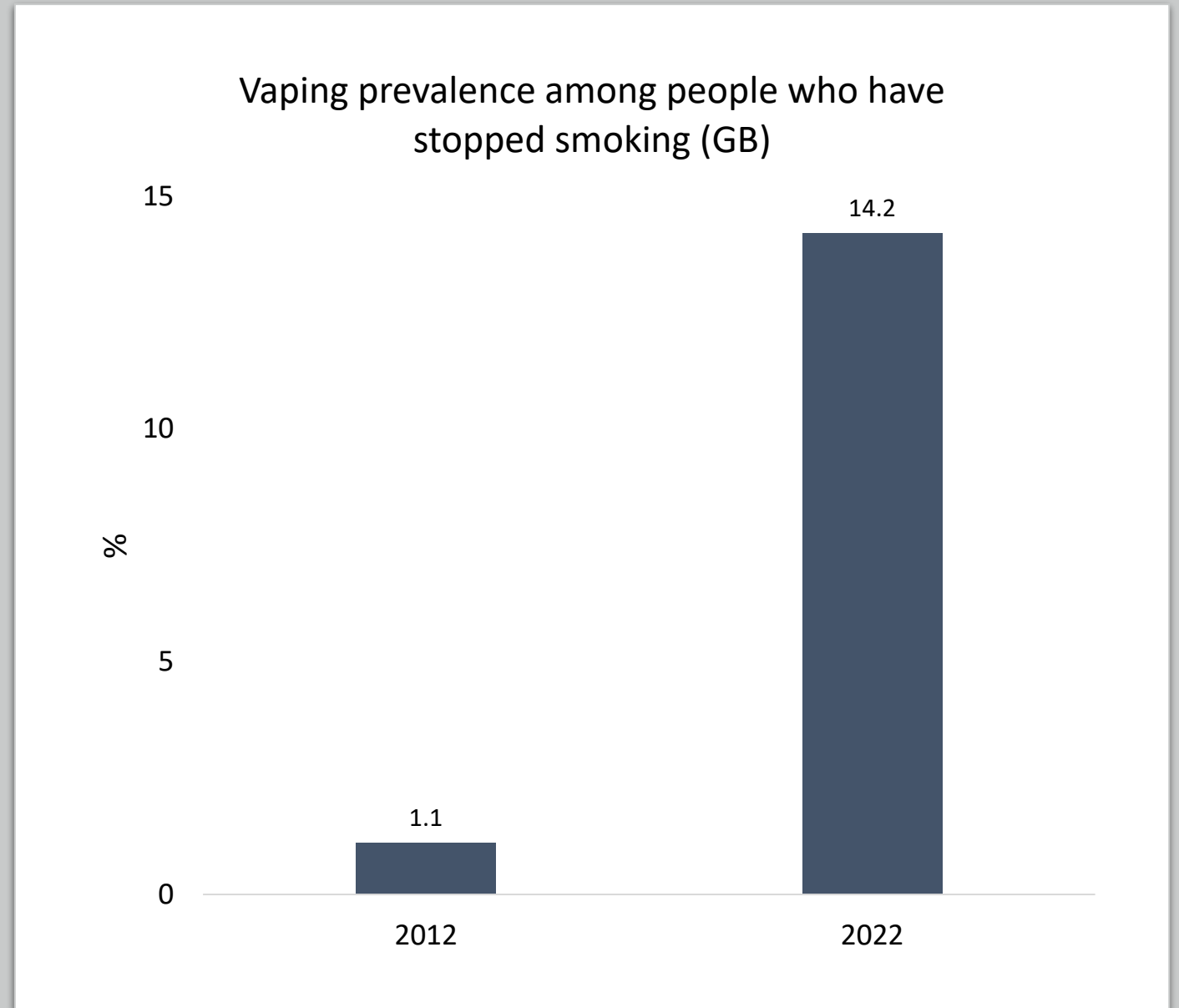
# Smoking and mental health

- Gap in smoking prevalence
- Evidence for causal link smoking - mental ill-health
- Cessation leads to improved mental health
  - When?



# Nicotine use

- E-cigarettes, nicotine replacement, other nicotine products
- Continued use of nicotine after smoking cessation has become more common
- What is the role of nicotine versus smoke toxicants?



# Aims

1. Compare mental health in adults in Great Britain who currently smoke, stopped in past 6 months, stopped 6-12 months ago, stopped over 1 year ago, or never smoked.

Are there any differences according to whether people ever had mental health condition?

2. Among those who have stopped smoking, compare mental health of those who continue using nicotine-containing products with those who do not

Pre-registration

<https://doi.org/10.17605/OSF.IO/YVJ6W>



## Survey & Sample

- Approximately n=2450 adults in Great Britain each month
- Representative sample of the population (for England), expected to be representative for Great Britain
- October 2020 to February 2022: 38202 adults surveyed
- No mental health information: n= 5475
- Included: N=32727

Kock et al (2021) <https://doi.org/10.12688/wellcomeopenres.16700.1>

Fidler et al (2011) <https://doi.org/10.1186/1471-2458-11-479>

# Outcome measure: past-month psychological distress, K6 screener

During the past 30 days, about how often, if at all, did you feel

- Nervous
- Hopeless
- Restless or fidgety
- So depressed that nothing could cheer you up
- That everything was an effort
- Worthless

Each scored from none of the time (0) to all of the time (4)

Any distress defined as scores  $\geq 5$

- Moderate distress (5-12), serious distress (13-24)

Identifies clinically relevant levels of distress, concordance with diagnoses



# Measures

## Main variables of interest

- Smoking status
- Time since quit
- Current use of nicotine-containing products
  - E-cigarettes
  - Heated tobacco / nicotine pouches
  - Nicotine replacement therapy (NRT)

## Covariates






- Ever diagnosis with a mental health problem
- Age
- Sex
- Social grade
- GB region

# Caveats

Data are cross-sectional,  
so cannot infer causality

Data collection coincided  
with several waves of  
COVID-19 pandemic and  
its associated impact on  
mental health

# Smoking status

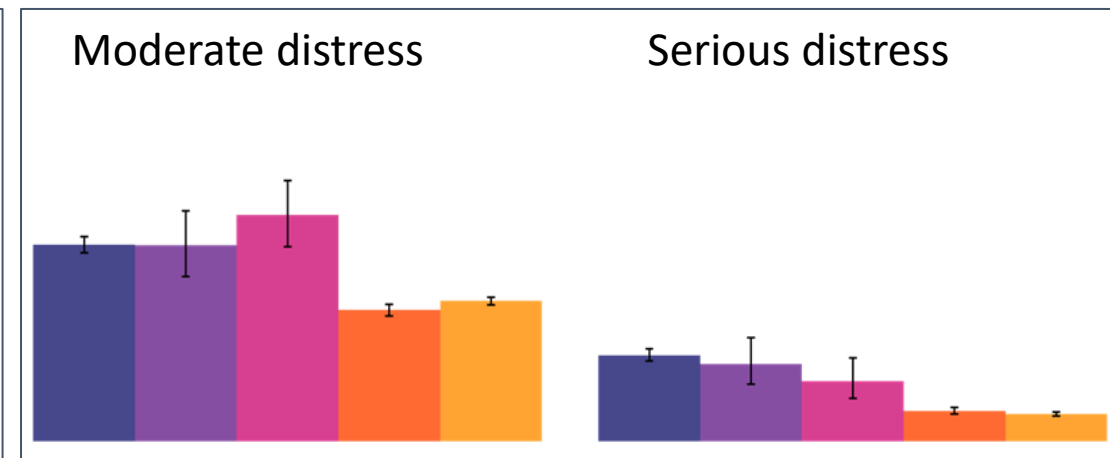
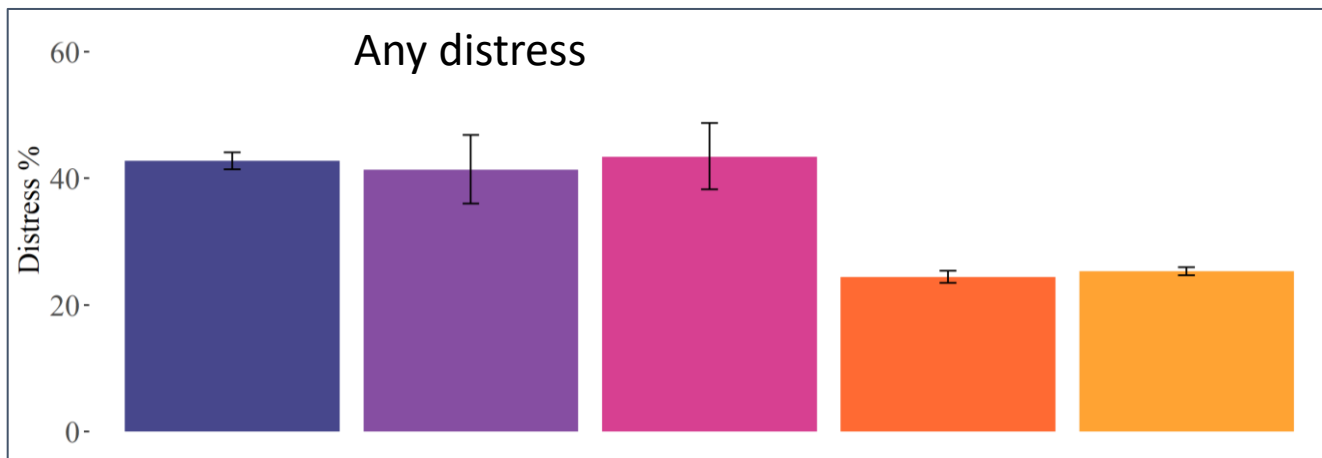
	<b>Smoking status</b>	<b>% (N)</b>
	Current smoking	16.5
	Stopped ≤ 6 months	1.0
	Stopped 6-12 months	1.0
	Stopped >1 year ago	23.5
	Never smoked	58.0

# Smoking status and distress

Smoking status	% (N)	Association with any distress Adjusted OR (95% CI)
Current smoking	16.5 (5,311)	Reference
Stopped ≤ 6 months	1.0 (317)	0.81 (0.52 – 1.22)
Stopped 6-12 months	1.0 (341)	0.99 (0.68 – 1.42)
<b>Stopped &gt;1 year ago</b>	23.5 (7,576)	<b>0.86 (0.76 – 0.98)</b>
<b>Never smoked</b>	58.0 (18,718)	<b>0.72 (0.65 – 0.81)</b>

N = 32,727

Adjusted for socio-demographic characteristics and ever diagnosis with a mental health condition



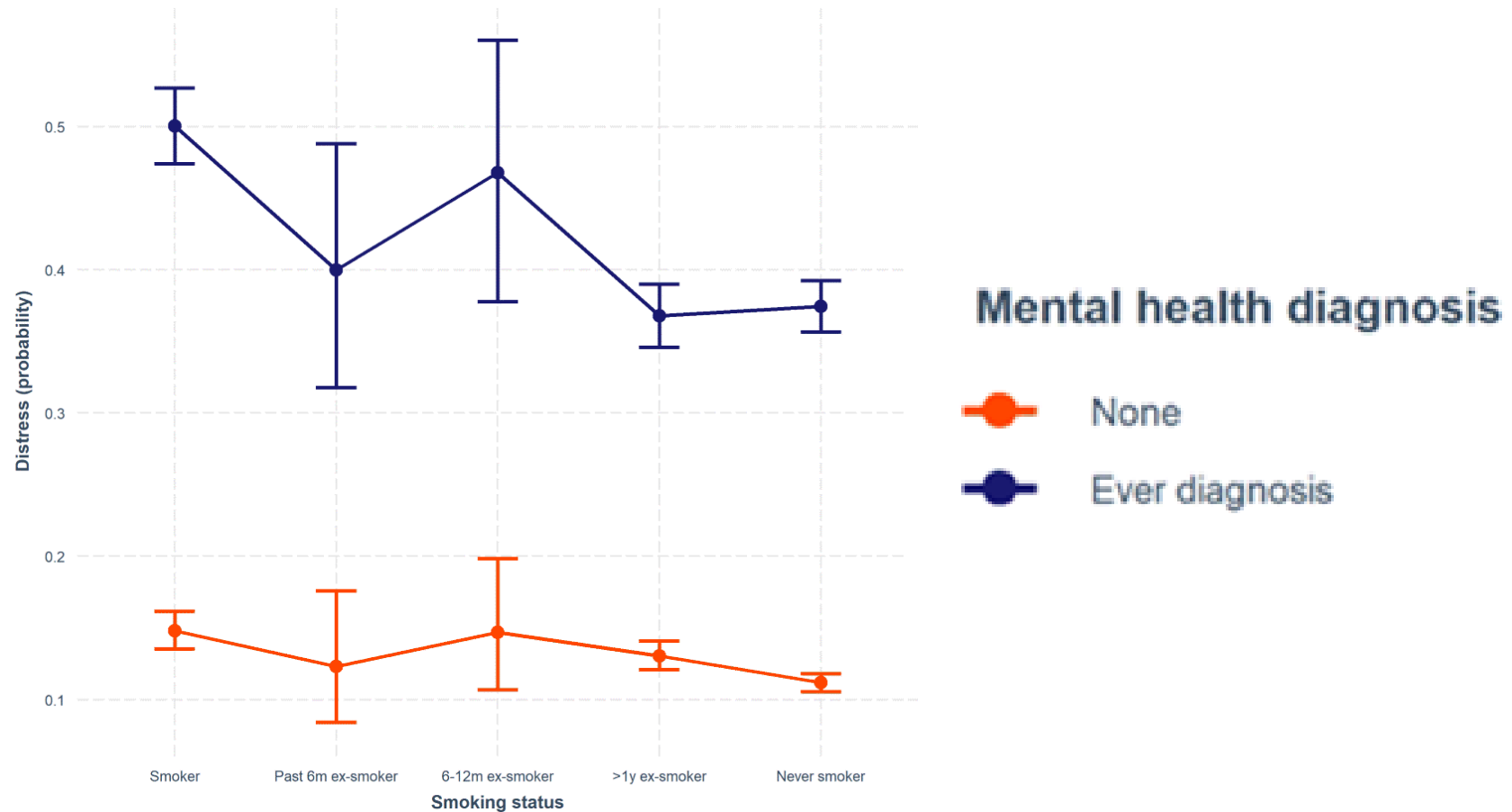
# Smoking status and distress – sensitivity analyses

Results affected by people experiencing acute withdrawal phase?



- Separated those who quit up to one month ago among those who quit in past six months

No impact on results

# Distress by smoking status and interaction with mental health diagnosis

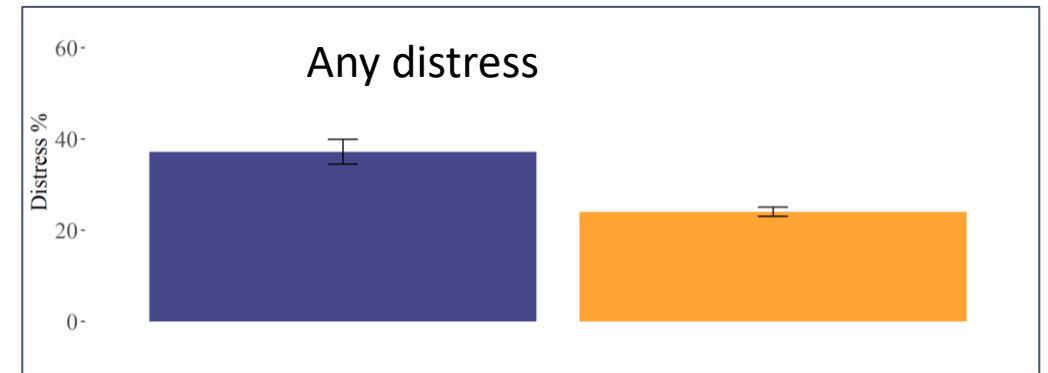


# Nicotine use among people who had stopped smoking

Use of any nicotine product		% (N)
	No	85.1
	Yes	14.9

# Distress and continued nicotine use after smoking cessation

Use of any nicotine product	% (N)	Association with any distress Adjusted OR (95% CI)
No	85.1	
Yes	14.9	1.23 (1.06 - 1.42)



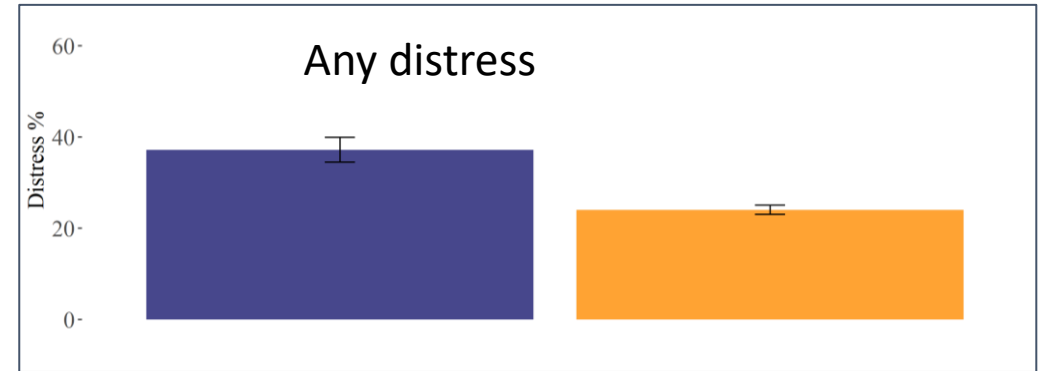
N =8,651

Adjusted for socio-demographics and ever diagnosis with a mental health condition



# Distress and continued nicotine use after smoking cessation

Use of any nicotine product	% (N)	Association with any distress Adjusted OR (95% CI)
No	85.1	
Yes	14.9	1.23 (1.06 - 1.42)



Similar patterns for moderate and serious distress

Use of specific product	% (N)	Association with any distress Adjusted OR (95% CI)	Distress %
No			22.9
E-cigarette*	11.3	1.12 (0.94 - 1.33)	34.8
HTP/Pouch	0.3	1.61 (0.70 - 3.64)	42.9
<b>NRT</b>	<b>3.4</b>	<b>1.61 (1.21 - 2.13)</b>	<b>39.3</b>

N =8,651

Adjusted for socio-demographics and ever diagnosis with a mental health condition

## Continued nicotine use – sensitivity analyses

Results driven by recent quitters?

- Excluded those who had quit less than 1 year ago

No impact on results

Results affected by non-nicotine vaping?

- Excluded those who reported using non-nicotine e-cigarettes and no other nicotine product

No impact on results

# Better mental health after >1 year cessation

Similarity to physical health improvements

Held when separating those more likely experiencing acute withdrawal

People with history of mental health disorder/s may experience greater improvements

Driven by mental health improvements preceding smoking cessation?

Would expect lower levels of distress among more recently quit

Some people may have quit smoking for health reasons that remained distressing during the immediate period of abstinence

# Better mental health after >1 year cessation

Nicotine users may experience distress due to ongoing regular withdrawal

- But may prevent relapse and will lead to improvements in health

Confounding: People with poorer mental health and higher nicotine dependence may be more likely to continue to use nicotine

Higher distress clearest for NRT rather than vaping or other products

Unable to include frequency and duration

# Comparison with recently published international data

1379 ever-daily smoking ex-smokers, Australia, Canada, US, England

Quit up to 5 years

27.1% vaping daily



Positive perceived changes in wellbeing post-quitting



Effects greater among those who had quit more than 1 year prior, not influenced by daily vaping

# Conclusions

- Among adults in Great Britain, those who had never smoked or not smoked for >1 year had lower levels of distress than people who currently smoked or had quit smoking in the past year
- Nicotine use among people who formerly smoked associated with higher levels of distress
  - Due to potential selection bias and confounding more research needed to determine causality
- Public health messaging generally focuses on physical health
  - Persistent socioeconomic and mental health gradient in smoking prevalence
  - Messaging on mental health may appeal to the third of smokers with mental health problems