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Original Article

Tobacco smoking and suicidal thoughts and attempts: Relationships from a general population survey

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ABSTRACT

Problem: Although there is rising support regarding a link between tobacco use and suicide, additional epidemiological evidence among adult samples is required. Moreover, there is a need to better understand this relationship independently of the influence of comorbid common mental disorders such as anxiety and depression. This paper examined the association of smoker status and nicotine dependence in relation to suicidal thoughts and attempts.

Methods: Secondary analyses of data from the 2007 Adult Psychiatric Morbidity Survey in England were conducted. Measures included the Revised Clinical Interview Schedule (CIS-R) and The Fagerström Test for Nicotine Dependence (FTND). Logistic regression analyses adjusting for age, gender, and severity of common mental disorders were carried out on a representative sample of 7403 adults from the general British population (48.6% male).

Results: After controlling for the influence of current mental disorder symptoms, being a non-regular smoker was associated with significantly lower odds of suicide ideation and suicide attempts in the past year and over the lifetime. Similarly, there was a lower risk for the presence of suicidal characteristics when tobacco users reported being non-dependent on nicotine.

Conclusion: The findings corroborate the results of relevant studies in the literature and warrant future investigations of underlying mechanisms to explain the complex inter-relationships between smoking, mental disorders, and suicide. Applied implications as well as recommendations for future longitudinal and directional research are discussed.

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1. Introduction

Suicide is a major public health problem; it represents approximately 2% of the world's total disease burden.

Worldwide suicide rates have gone up by 60% in the last 45 years.¹ However, completed suicide is not an isolated outcome as suicide attempts are up to 20 times more common than completed suicides. Suicidal thoughts, ranging from specific plans to fleeting considerations, are even more frequent.^{1,2}

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Using data from two cohorts of the National Psychiatric Morbidity Survey in Britain, Spiers et al³ showed that although suicide rates had decreased from year 2000–2007, suicidal thoughts did not diminish. As important precursors of completed suicide, both suicide thoughts and attempts are key proximal risk variables that require more understanding.

Identifying risk factors and determinants of suicide outcomes has become a top priority for health researchers and epidemiologists worldwide. In North America and in Europe, mental disorders, including substance use and abuse, have been identified as major risk factors for suicidal ideation and behaviours.^{3,4} In one large-scale American study, elevated rates of suicide attempts were strongly attributed to four specific DSM IV-Axis I and II disorders: 1) major depressive disorder, 2) borderline personality disorder, 3) posttraumatic stress disorder, and 4) nicotine dependence.⁵ Similarly, another US-based epidemiological survey revealed a positive association for nicotine dependence that was independent of comorbid psychiatric morbidity; however this study was limited to suicide attempts.⁶ Therefore, the aim of the present paper was to examine the relationship between nicotine use and suicidal attempts and suicidal thoughts.

There has been increased attention and support regarding the distinct role of tobacco use, smoking at large, and nicotine dependence more specifically, on suicide outcomes. Large epidemiological enquiries as well as smaller cross-sectional investigations with diverse samples have demonstrated various links between cigarette smoking and suicide variables.^{7,8} For instance, in a US sample of black adolescents, suicidality was five times more likely with a current smoking status of some kind.⁹ Scherrer et al¹⁰ found that nicotine dependence and “regular” smoking but not “ever” smoking, were linked to different combinations of suicide ideation, plans, and attempts. Among patients with serious mental illness, cigarette consumption is a significant predictor of previous suicide attempts.¹¹

Indeed, given consistent evidence that cigarette smoking is much more common among individuals with symptoms of psychiatric disorders,^{12–14} researchers have questioned their independent versus joint associations with suicide outcomes.⁶ It is argued that the steady overlap between cigarette use and psychiatric symptoms warrants that analyses be adjusted for their independent contributions in order to better understand unique effects. Some researchers have begun doing so, showing that future suicide-related outcomes were related to smoking independently of psychiatric comorbidity¹⁵ and that a concurrent history of depression can help explain a smoking-suicide ideation relationship, at least among army soldiers.¹⁶ Still, replication of such analyses is needed among less restricted samples to ascertain the relationship within the general population.

Overall, studies have shown that the relationship between cigarette smoking and suicide may be as strong as that of smoking and physical ailments like heart disease, albeit only the latter is widely accepted as being a causal association [see Malone et al¹⁷ for supporting evidence]. Indeed, the physical dangers of smoking are well-established, including an increased threat of premature death.¹⁸ The WHO cautions that the ‘tobacco epidemic’ is one of the largest public health threats

inflicted around the world. Given that suicide is likewise identified as a leading worldwide health crisis, understanding the relationship between these two health issues, and specifically how one may feed off the other, is of paramount importance. In Europe, and Britain specifically, a large-scale investigation of the association between smoking (and nicotine dependence) and suicide outcomes in the general population is lacking. Past reports on suicidal ideation, self-harm, and attempted suicide from the 2000 British Psychiatric Morbidity Survey did not specifically examine links with smoking or nicotine addiction.¹⁹ Moreover, more studies are needed that report the unique contributions of regular smoking and nicotine dependence to suicide outcomes above and beyond the influence of common psychiatric disorders.

Therefore, the purpose of this article was to examine associations between tobacco use (i.e., smoker status, nicotine dependence) and suicidality (i.e., suicide thoughts, attempts) above and beyond the influence of current mental disorder symptom severity. Specifically, the goal was to use data from a national, representative sample of British adults to investigate the relationship for both lifetime and past-year suicidal ideation and suicide attempts.

2. Method

2.1. Sample and survey

This paper presents results from secondary analyses of the 2007 Adult Psychiatric Morbidity Survey (APMS) in England.²⁰ The survey was commissioned by the NHS Information Centre for Health and Social Care. Using a two-stage sampling approach and stratified random probability sampling, adults aged 16 and over living in private households in England were recruited to partake in the survey (October 2006–December 2007). The overall response rate was 57% (N = 7461). Details pertaining to participant recruitment as well as a complete description of the methods of the APMS are reported elsewhere.²⁰ The Royal Free Hospital and Medical School Research Ethics Committee approved the protocol for the 2007 APMS and therefore all actions were performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

The current analyses were based on phase one interview data as carried out by NatCen interviewers (computer-assisted; <http://www.natcen.ac.uk/>). Participants were informed of the voluntary and confidential nature of the study and each respondent was assigned a unique identification number. The interviews took around 90 min to complete and were comprised of different screening questionnaires as well as structured assessments of current neurotic mental disorders, as described below. Additional questions pertained to demographics, service use, and other related variables.²⁰

2.2. Measures

2.2.1. Mental disorders and suicide variables

The Revised Clinical Interview Schedule (CIS-R)²¹ was administered to participants in a phase one interview of the APMS to evaluate current non-psychotic psychiatric disorders. The

Table 1 – Gender and age breakdown for suicidal thoughts and attempt for past year and lifetime.

Variable	Full sample N (%)	Thoughts past year N (%)		Thoughts lifetime N (%)		Attempt past year N (%)		Attempt lifetime N (%)	
		Yes	No	Yes	No	Yes	No	Yes	No
Gender									
Male (%)	3197 (48.6)	115 (38.2)	3077 (49.1)	403 (42.5)	2789 (49.6)	14 (32.7)	3179 (48.7)	125 (37.4)	3068 (49.1)
Female (%)	4206 (51.4)	224 (61.8)	3973 (50.9)	675 (57.5)	3522 (50.4)	38 (67.3)	4164 (51.3)	262 (62.6)	3940 (50.9)
Age									
Mean age (SD) ^a	46.35 (18.60)	40.28 (16.92)	46.62 (18.63)	41.86 (15.94)	47.06 (18.89)	33.80 (13.63)	46.43 (18.60)	41.71 (15.91)	46.58 (18.94)

Note. SD = Standard Deviation. Actual numbers, weighted percentages per variable category.

^a Weighted means (SD).

CIS-R is comprised of 14 sections and uses the last 7 days as the reference time frame. Six different so-called “common mental disorders” or “neurotic psychiatric disorders” can be diagnosed using the CIS-R (depressive episode, generalized anxiety disorder, all phobias combined, panic disorder, obsessive compulsive disorder, mixed anxiety and depression disorder). Summary scores for all sections taken together range from 0, indicating no or a mild presence of disorder, to a maximum of 57 denoting extreme severity of symptoms of a psychiatric disorder. The threshold score of 12 is indicative of clinically significant psychiatric morbidity (i.e., disorder present).²¹

In addition, a series of questions regarding suicide issues were asked as part of the CIS-R interview. Suicidal thoughts were assessed as follows: “Have you ever thought of taking your life, even though you would not actually do it?” (lifetime). Suicide attempts were assessed by asking: “Have you ever made an attempt to take your life, by taking an overdose of tablets or in some other way?” (lifetime). If a positive answer was provided for either lifetime variables, follow-up questions were asked to enquire about past-year occurrences.

2.2.2. Smoking variables

In the phase one survey, respondents were asked if they smoked at all nowadays. If they provided a positive response, they were asked to disclose the number of cigarettes typically smoked on a weekday and on a week-end day. Weekday and week-end numbers (per day) were multiplied by two and five respectively and then totalled to achieve an estimated number of cigarettes consumed per week. For analyses purposes, a variable that divided the sample into those who smoked 6 cigarettes or less or none at all and those who smoked seven or more cigarettes on average per week was derived. According to McManus, Meltzer and Campion,²² this partition permits assigning individuals the label of “regular smoker” versus those that are not. This dichotomous variable was used in our analyses.

In addition, the 2007 survey included a measure of nicotine addiction: The Fagerström Test for Nicotine Dependence (FTND).²³ The reliability of the FTND has been confirmed across studies, showing evidence of high internal consistency.²⁴ This instrument is comprised of six items, enquiring about respondents' smoking habits and behaviours, for example “Do you smoke if you are so ill that you are in bed most of the day?” Three items are scored as 1 (yes) or 0 (no) while the other three items are assigned values of 0–3. The summed

items yield a total score ranging from 0 to 10, the latter reflecting a very high nicotine dependence. Although the FTND can be used as a continuous variable, it is frequently dichotomized so that individuals having a score of 4 or greater are classified as dependent- and not dependent otherwise [see other case-control clinical studies such as Broms et al²⁵]. This dichotomous variable was employed in the present analyses. The FTND questions were assigned a response value of ‘not applicable’ for non-regular smokers.

2.3. Statistical analyses

All data were analysed using SPSS Statistics 20.0. To adjust for the probability of selection bias and for non-response, survey weights were applied to the data. As described by Weich and colleagues,²⁶ survey weights were derived in three stages to adjust for household non-response and for selection of different-sized households as well as to calibrate responses on the basis of age, gender and geographical region in order to match the national population. Additional information on weighting procedures and derivation can be found elsewhere.²²

Analyses were conducted separately for past-year and lifetime suicide variables, namely thoughts and attempts. Basic prevalence statistics, including chi-squared values to establish differences, were computed first. Associations between suicide outcomes and smoker status and by nicotine dependence were examined using logistic regression analyses. Each model was adjusted for age and gender given consistent evidence of their distinct associations with suicide outcomes and behaviours in the British population.^{19,27} In addition, the first step of each model (i.e., Model 1 Full Sample, Model 2 Tobacco Users; see Table 2) also included the derived psychiatric morbidity variable to control for its effect. Adjusted odds of suicide attempts and thoughts were examined using 95% confidence intervals for smoker status (non-regular smoker, smoker) and nicotine dependence levels (none, high). A *p*-value of 0.05 was considered to be statistically significant.

3. Results

For the present investigation, APMS data were analysed for 7403 respondents who provided complete interviews (51.4% female). The average age of respondents was 46.35 years (weighted). Twenty-two percent of the sample was identified

Table 2 – Suicidal thoughts and attempt (past year, lifetime) by smoker status, nicotine dependence (Fagerstrom test), and mental disorder scores (actual numbers, weighted percentages).

Variable	Full sample N (%)	Thoughts past year N (%)		Thoughts lifetime N (%)		Attempt past year N (%)		Attempt lifetime N (%)	
		Yes	No	Yes	No	Yes	No	Yes	No
Full sample N	7403 (100)	339 (4.3)	7050 (95.3)	1078 (13.7)	6311 (86.1)	52 (0.7)	7344 (99.2)	387 (4.8)	7008 (95.1)
Smoker status (cigarettes/day)									
Non-regular smoker	5775 (77.8)	205 (59.0)	5561 (78.8)	680 (62.2)	5086 (80.4)	22 (41.7)	5749 (78.1)	193 (49.6)	5578 (79.3)
Smoker (≥ 7)	1618 (22.1)	133 (41.0)	1480 (21.2)	395 (37.8)	1218 (19.6)	29 (58.3)	1585 (21.9)	192 (50.4)	1422 (20.7)
Nicotine dependence among tobacco users									
Low	1000 (61.4) ^a	44 (36.4)	953 (63.6)	190 (48.6)	807 (65.4)	6 (25.0)	992 (62.1)	81 (44.8)	917 (63.5)
High	679 (38.6) ^b	90 (63.6)	587 (36.4)	215 (51.4)	462 (34.6)	23 (75.5)	654 (37.9)	114 (55.2)	563 (36.5)
All mental disorders severity									
Low (< 12)	6216 (84.9)	91 (27.0)	6119 (87.6)	574 (54.1)	5636 (89.9)	10 (22.4)	6201 (85.4)	178 (48.7)	6033 (86.8)
High (≥ 12)	1187 (15.1)	248 (73.0)	931 (12.4)	504 (45.9)	675 (10.1)	42 (77.6)	1142 (14.6)	209 (51.3)	975 (13.2)

Note. Percentages are weighted column percentages per variable category.

^a % of smokers only; 14.2% of full sample (weighted).

^b 8.9% of full sample (weighted).

as 'regular smoker' and roughly 39% of smokers were classified as being highly nicotine dependent. The presence of clinically significant mental disorder, primarily in the form of depression and anxiety, was reported among 15% of participants. Prevalence rates for smoking and suicide categories are displayed in [Tables 1 and 2](#).

Approximately 14% of respondents had thought about suicide over the lifetime, with 5% having made concrete attempts. Overall, females were more likely than males to report having thought about suicide, $\chi^2 (1) = 14.33$, $p < .001$, and to report having made attempts, $\chi^2 (1) = 5.02$, $p < .05$, both in the past year (see [Table 1](#) for percentages). Similar results were observed over the lifetime [thoughts, $\chi^2 (1) = 17.55$, $p < .001$; attempts, $\chi^2 (1) = 18.59$, $p < .001$]. In addition, individuals who had thought about suicide or had attempted suicide were likely to be younger in age, particularly those having made suicide attempts in the past year (mean age 33.8).

Logistic regression models revealed that reporting little or no common mental disorder symptomatology was associated with significantly low odds of suicidal thoughts in the last year and over the lifetime ([Table 3](#)). Whereas 27% of respondents with none to mild symptoms of mental disorder reported thoughts of suicide in the past year, 73% of those with substantial mental disorder(s) had thought about suicide in the last 12 months. After adjusting for current mental disorder severity as well as age and gender, being a non-regular smoker was associated with significantly lower odds of suicidal thoughts, both over the lifetime (OR = 0.51; 95% CI = 0.43–0.59) and in the last year (OR = 0.60; 95% CI = 0.46–0.77). Among non-regular smokers, 12% of respondents had thought about suicide in their lifetime; however, this rose to over 31% among smokers.

Similar results were obtained for suicide attempts which can be found in [Table 3](#). After controlling for the significant influence of current mental disorder severity (P 's < 0.001), being a non-smoker was linked to significantly lower odds of reporting any attempted suicides in the past year as well as over the lifetime, with adjusted odds ratios of 0.38 (95% CI = 0.21–0.69) and 0.32 (95% CI = 0.26–0.40) respectively. Only

3% of non-regular smokers responded yes to having attempted suicide over their lifetime, however, 12% of smokers admitted to having made at least one lifetime attempt. Fifty-eight percent of the 52 respondents stating 'yes' to a suicide attempt in the past year were regular smokers, while only 22% of respondents answering 'no' to the same question were regular smokers.

Among smokers, associations between nicotine dependence and suicide thoughts and attempts were also examined, adjusting for mental disorder severity as well as age and gender in each model. Compared to those with a high nicotine dependence, smokers with little to no dependence were at lower odds of suicidal thoughts, both in the past year (OR = 0.43; 95% CI = 0.21–0.69) and over the lifetime (OR = 0.59; 95% CI = 0.46–0.75). Sixty four percent of smokers who had reported thoughts of suicide in the last year were dependent on nicotine. In addition, the response rate for 'yes' to having thoughts about suicide (versus 'no') over the lifetime was double among nicotine dependent persons (45%) compared to non-nicotine dependent individuals (22%).

Likewise for suicide attempts, and after controlling for the significant influence of current mental disorder severity, low nicotine dependence (and non-dependence) was associated with significantly lower odds of reporting any suicide attempt in the past year and over the lifetime, with adjusted odds ratios of 0.29 (95% CI = 0.12–0.70) and 0.57 (95% CI = 0.21–0.69) respectively. Associations were particularly strong over the past year (see [Table 3](#)). Specifically, 23 out of the 29 (75%) past-year suicide attempts were reported among nicotine dependent smokers. Moreover, among smokers who reported never having made a suicide attempt in their life, a much higher percentage (63%) had low nicotine dependence, whereas 36% of this group were identified as highly nicotine dependent.

4. Discussion

There is mounting support that smoking is associated with increased rates of suicide outcomes, and the relationship has

Table 3 – Adjusted odds ratios and confidence intervals for smoking and suicide with mental disorder severity (CIS-R).

	Suicidal thoughts (Yes)				Suicide Attempt (Yes)			
	Past year		Lifetime		Past year		Lifetime	
	AOR ^a	95% CI	AOR ^a	95% CI	AOR ^a	95% CI	AOR ^a	95% CI
Model 1. Full sample								
Mental disorder severity (CIS-R < 12 low)	0.060‡	(0.05–0.08)	0.148‡	(0.13–0.17)	0.068‡	(0.03–0.14)	0.178‡	(0.14–0.22)
Non-regular Smoker (≤ 6 cigarettes per week)	0.598‡	(0.46–0.77)	0.506‡	(0.43–0.59)	0.38†	(0.21–0.69)	0.320‡	(0.26–0.40)
Model 2. Tobacco users								
Mental disorder severity (CIS-R < 12 low)	0.091‡	(0.06–0.14)	0.199‡	(0.15–0.26)	0.066‡	(0.02–0.19)	0.204‡	(0.15–0.28)
Nicotine dependence (not dependent)	0.429‡	(0.29–0.64)	0.587‡	(0.46–0.75)	0.286†	(0.12–0.70)	0.57†	(0.41–0.78)

Note. All values are weighted value.

* $p < .05$; † $p < .01$; ‡ $p < .001$.

^a Adjusting for age and gender in each model.

held true across different populations.^{7,8} This paper, using data from the 2007 APMS in England, imparts findings that are consistent with those of other studies looking at outcomes of suicidal ideation and attempts (e.g., Hooman et al¹¹ and Clarke et al²⁸). Specifically, in the current representative sample of British adults it was shown that being a non-regular smoker was significantly associated with lower odds of suicidal thoughts and attempts, both in the past year and over the lifetime. Thus, after controlling for age and gender as well as current severity of common mental disorder symptoms, regular smoking was identified as a significant and dangerous factor for thinking of ending one's life as well as endeavouring to do so.

The results of this study also revealed that among those who regularly smoke tobacco cigarettes, being identified as highly nicotine dependent via the Fagerström Test also increased the odds of suicidal outcomes in the last year and over the lifetime. Results indicated that the rates of suicidal thoughts and attempts were lowered by not presenting a nicotine addiction, albeit being a non-regular smoker altogether carried lower overall mental health risks. Other researchers have also supported a relationship between nicotine dependence and outcomes such as para-suicide (i.e., attempt without death intent) and specific suicide gestures and attempts among others.^{5,29}

Still, the relationships uncovered in our study can be seen as particularly compelling having accounted for the presence of current mental disorder symptoms in the analyses. Consistent with other research,⁶ these results allow for more convincing inferences about increased risk of suicidal thoughts and attempts from smoking and nicotine dependence, namely that it cannot be uniquely accounted for by a comorbid, common mental disorder. This is an important conclusion given the extensive literature that has exposed an important link between mental disorder and suicide across gender and age groups, an association that cannot be understated.^{4,27} From the current findings it was determined that being a regular smoker, and developing a nicotine dependence in particular, presents additional risk above psychiatric symptomatology that is worth attracting clinical attention.

Some researchers have proposed that mental disorder symptoms, such as depression and anxiety most notably, might underlie the relationship between smoking and suicide attempts.³⁰ Alternatively, Hooman et al¹¹ showed that alcohol abuse/dependence more so than mood disorders may provide an important trigger that connects tobacco use with suicide attempts. There is also interesting evidence by Dierker and Donny³¹ that psychiatric disorders like depression, alcohol abuse and phobia among smokers may signal a predisposition for meeting a nicotine dependence diagnosis. Thus, our results, in accordance with the actual literature, are indicative of a potentially complex interconnection between key suicide variables, smoking, nicotine dependence and psychiatric disorders which deserves continued expert attention.

Still, the specific mechanism(s) by which smoking may increase the risk of suicide continues to elude researchers in the area.¹¹ In a review by Hughes⁷ in 2008, three theories were presented to explain the relationship between nicotine dependence and suicidal behaviour: 1) smoking as an indirect marker, with other factors like psychiatric illness being stronger predictors; 2) smoking itself acting as a toxin (physical, psychological), 3) smoking as a self-induced “medicine” to combat the risk of suicide. Our findings and those of Yaworski et al⁶ tend to go against evidence supporting the first theory given that the smoking-suicide relationship persisted after adjusting for symptoms of common mental disorders. There is some empirical backing vis-à-vis smoking, and nicotine more specifically, as a toxin. Namely, biological studies have linked chronic nicotine use with decreased serotonin levels, the latter of which carries implications for suicidal behaviour¹⁷ and there is evidence regarding a decline in suicide attempt with smoking cessation.⁶ However, this evidence is preliminary and more studies are needed in this regard.

Although we did not investigate underlying mechanisms, there are several important strengths of this study. First, data for the 2007 APMS in England were collected on a large representative sample of British residents living in community households, thus enabling certain generalizations in the English population. Although suicide rates are much higher among certain groups, for instance among prison inmates and

institutionalized individuals,³² suicide is a major public health burden and thus a better understanding of risk factors among community-based individuals is an important priority in epidemiological research and for suicide prevention strategies. A related statistical strong point of this study was that it employed weighted data, thus allowing the researchers to draw on a larger sample, to effectively deal with non-response, and to provide a basis for comparison with similar surveys.³³ Moreover, adjusting for the influence of age, gender, and common mental disorders in the first step of our logistic regression analyses permitted sorting out the unique contribution of tobacco use above and beyond other important and perhaps allied influences.

Certain limitations of this investigation should also be acknowledged. First, APMS data were achieved through face-to-face interviews. Given the sensitive and stigmatized nature of suicide, the possibility of response biases and underreporting cannot be ruled out. The findings of this study should be replicated using self-report survey data and/or proxy measures from close family members and friends. Second, for analyses purpose, no attempt was made to distinguish non-smoker (zero cigarettes) from non-regular smokers, which brings additional complexity. Moreover, data pertaining to previous smoker status or quitting attempts (past or current) were not analysed. From previous research, smoking cessation data may be a viable route in order to examine changing patterns of suicidal outcomes. Also on the subject of measurement, since mental illness evaluation was limited to the last seven days, lifetime prevalence influences were not considered. Third, despite the broad, representative age range of adults that participated in this study, caution must be exercised in generalizing the findings to youth or adolescent cohorts since they may be exposed to different risk factors.³⁴ Fourth, the severity of suicidal thoughts and attempts were not quantified, nor were specific suicide plans evaluated, the latter of which could act as an intermediary between the two.³⁵ Conceivably, quantifiers such as frequency and reports of hospitalization could offer more precise results and practical recommendations.

Several interesting avenues of future research and application could be targeted. Given that current understanding is inconclusive regarding the underlying cause and effect relationship between smoking and suicide, it may be wise to target different directions in terms of clinical applications. For example, when screening individuals for eligibility in smoking cessation programs, it may be prudent to assess factors such as suicidal ideations, and at regular intervals. This could help better inform clinicians of the latent risks individuals may pose to themselves as they undergo this type of lifestyle change. Similarly, when admitting individuals in psychotherapy to address suicidal behaviours, screening for smoking status (and nicotine dependence) may help direct the intensity and course of treatment in terms of finding strategies aimed at simultaneously halting nicotine consumption among other existing risk factors.

In addition greater application of longitudinal designs in future research may help ascertain elusive cause and effect associations, for instance by examining fluctuations in suicide indicators within the scope of smoking cessation

interventions (i.e., baseline, mid-point, endpoint) or even within broader lifestyle change interventions involving a smoking component. In terms of suicide prevention and avenues of future enquiry, it may be important to consider protective elements alongside different risk factors such as smoking. For example, higher social support is tied to lower risk of suicidal behaviour and less mental disorder.^{27,36,37} Although studies have typically examined and/or adjusted for risk and protective factors separately, some authors advocate for their interdependent effects, particularly in the development and progression of suicidal behaviour.³⁸ Testing probable interactions may inform us of different moderating factors, such as social support, that may weaken or strengthen the association between behavioural factors like smoking and suicidal thoughts and attempts. Such knowledge could help tailor and improve suicide prevention programming.³⁹

Conflicts of interest

All authors have none to declare.

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