

Mentioning smoking cessation assistance during healthcare consultations matters: findings from Dutch survey research

Naomi A. van Westen-Lagerweij ^{1,2}, Jeroen Bommelé¹, Marc C. Willemsen^{1,2}, Esther A. Croes¹

¹ The Netherlands Expertise Centre for Tobacco Control, Trimbos Institute, Utrecht, The Netherlands

² Department of Health Promotion, Maastricht University, Maastricht, The Netherlands

Correspondence: Naomi A. van Westen-Lagerweij, The Netherlands Expertise Centre for Tobacco Control, Trimbos Institute, PO Box 725, 3500 AS Utrecht, The Netherlands, Tel: +31 302971100, e-mail: nlagerweij@trimbos.nl

Background: Smoking cessation assistance (SCA) can help smokers to successfully quit smoking. It is unclear to what extent hearing about SCA from a healthcare professional is associated with using SCA during a quit attempt. **Methods:** We used pooled survey data from the 2016, 2018 and 2020 ‘Module Substance Use’ survey in the Netherlands ($N = 5928$). Multivariate logistic regression analyses were used to determine the association between having heard about SCA from one or more healthcare professionals in the last year and the use of SCA during the most recent quit attempt in the last year. We used two models: model 1 included any type of assistance; model 2 included assistance typically recommended by treatment guidelines (i.e. counselling and pharmacotherapy). **Results:** Hearing about any type of SCA from a healthcare professional in the last year was significantly associated with using any type of SCA during the most recent quit attempt [odds ratio (OR) = 2.96; 95% confidence interval (CI) 2.16–4.06; $P < 0.001$]. We found the strongest association between hearing about counselling and/or pharmacotherapy and using counselling and/or pharmacotherapy (OR = 5.40; 95% CI 4.11–11.60; $P < 0.001$). The odds of using SCA was not significantly higher for smokers who had heard about it from two or more healthcare professionals compared to one healthcare professional (OR = 1.38; 95% CI 0.79–2.42; $P = 0.26$). **Conclusions:** Healthcare professionals can play a greater role in stimulating the use of SCA, especially counselling and pharmacotherapy, by mentioning it to smokers during consultations.

Introduction

Tobacco use continues to be the leading cause of preventable disease and death worldwide.¹ Smoking cessation is the most effective way for smokers to lower their risk of developing and dying from smoking-related illnesses.² The majority of smokers intends to quit smoking now or in the future.^{3,4} Quitting smoking is, however, a difficult process due to the high addictiveness of tobacco products and only 3–5% of smokers who attempt to quit unaided manage to achieve abstinence after a year.⁵

For smokers who want to quit, different types of smoking cessation assistance (SCA) exist that significantly increase the chance of a successful quit attempt. These include behavioural counselling (individually or in a group), telephone support, nicotine replacement therapy (NRT) and medication (preferably in combination with behavioural support), eHealth and mHealth interventions and print-based self-help materials.^{6–12} In addition, recent research found modest evidence that nicotine e-cigarettes may also help smokers to quit.¹³

Despite the existence of SCA as well as national treatment guidelines which recommend the use of SCA,¹⁴ more than three quarters of European smokers, including smokers in the Netherlands, do not use SCA when attempting to quit smoking.¹⁵ There may be different reasons for this underutilization of SCA. Examples are a lack of awareness of SCA, misconceptions about the availability and effectiveness of SCA, limited access to SCA (e.g. because of a lack of insurance coverage), overconfidence (i.e. overestimating one’s ability to quit without help) and cultural values such as independence and autonomy.^{16–20} According to Article 14 of the WHO Framework

Convention on Tobacco Control (WHO FCTC), which has been ratified by 50 European countries, countries should ‘take effective measures to promote cessation of tobacco use and adequate treatment for tobacco dependence’.²¹ Healthcare professionals are considered to play a central role in promoting tobacco cessation and offering support to smokers.²² Previous research suggests that the mere offer of assistance by a physician can motivate smokers to attempt to quit.²³

Several issues, however, remain unaddressed. First, it is unclear to what extent hearing about SCA from a healthcare professional is associated with SCA use during a quit attempt. Second, it is unclear whether the association between hearing about SCA from a healthcare professional and using SCA is influenced by the health condition of smokers. Smokers who report to suffer from a long-term illness in particular may feel a greater sense of urgency to quit smoking, as quitting is known to reduce existing health problems and prevent additional health problems.²⁴ It is, therefore, conceivable that the association between using SCA during a quit attempt and hearing about it from a healthcare professional is stronger for smokers who report suffering from a long-term illness compared to smokers who do not report suffering from a long-term illness. And finally, it is unknown what the influence is of hearing about SCA from multiple healthcare professionals. Our hypothesis is that the likelihood of using SCA during a quit attempt is greater for smokers who hear about SCA from multiple (i.e. two or more) healthcare professionals than smokers who hear about SCA from one healthcare professional.

More knowledge about the potential role of healthcare professionals may help to formulate recommendations for European countries

on how to increase SCA usage rates in their population. In this study, we used population survey data from the Netherlands to answer the following research questions:

To what extent is hearing about SCA from a healthcare professional associated with SCA use during a quit attempt, and is this association moderated by the health condition of a smoker?

What is the likelihood of using SCA during a quit attempt for smokers who hear about SCA from multiple healthcare professionals compared to smokers who hear about SCA from one healthcare professional?

Methods

Survey and respondents

We used cross-sectional data from the two-yearly 'Additional Module Substance Use' survey of the Lifestyle Monitor consortium in the Netherlands.²⁵ The Lifestyle Monitor Consortium comprises several research institutes in the Netherlands, including Statistics Netherlands (CBS), the National Institute for Public Health and the Environment (RIVM) and the Netherlands Institute of Mental Health and Addiction (Trimbos Institute). The 'Additional Module Substance Use' survey is used to investigate smoking behaviour, alcohol use and drug use of citizens in the Netherlands aged 15 years and older and is based on self-report. For the purpose of this study, we only included smokers aged 18 years or older. Smokers were defined as those who answered 'yes' to the question: 'Do you ever smoke any tobacco products?'

We pooled the survey data from 2016, 2018 and 2020. In each year (2016, 2018 and 2020), a representative sample of over 15 000 citizens in the Netherlands was selected from the Personal Records Database (BRP). The BRP includes personal data of all residents in the Netherlands, including residential address. Respondents first received a letter by mail in which they were invited to participate in an online version of the survey. A selection of non-respondents was re-approached to complete the survey in a face-to-face or telephone interview. The response rate was 57% in 2016, 54% in 2018 and 46% in 2020. A weighting factor was applied to the data to correct for imbalances between the survey sample and the population of the Netherlands.

Measures

Dependent variable

Self-reported use of SCA was assessed among smokers who had made at least one serious quit attempt in the last 12 months. Respondents who answered 'yes' to the questions 'Have you tried to quit smoking in the last 12 months?' and 'Did you manage to refrain from smoking for at least 24 hours?' were categorized as 'having made at least one serious quit attempt in the last 12 months'. Respondents indicated for each of the following types of SCA whether they had used this during their most recent serious quit attempt: professional counselling (individually or in a group), NRT such as patches or gum, medication, e-cigarette, online programme or app, a different type of SCA not mentioned here, or none of the above.

Independent variable

Respondents reported for four types of healthcare professional whether they had consulted the healthcare professional for themselves in the last 12 months. The four types of healthcare professionals were: general practitioners (GPs), medical specialists, dentists and mental health professionals. A 'mental health professional' included a psychologist, psychiatrist and psychotherapist. Respondents who answered 'yes' to the question 'Did the healthcare professional advise you to quit smoking?' were subsequently asked

whether they had heard about each of the following types of SCA from the healthcare professional(s): professional counselling (individually or in a group), NRT such as patches or gum, medication, e-cigarette, online programme or app, a different type of SCA not mentioned here, or none of the above.

Covariates

Several variables that are potentially associated with SCA use were included as covariates.

Demographics. Demographic variables included gender, age, educational attainment, migration background (i.e. at least one parent born in a country other than the Netherlands) and daily smoking. For 'educational attainment', we used the highest level of education either pursued (for respondents aged 18–24) or completed (for respondents over 24 years old). Educational attainment was categorized into 'low', 'medium' and 'high'. 'Low' corresponded to elementary school, lower secondary education or lower vocational education; 'medium' corresponded to intermediate vocational education or higher secondary education; and 'high' corresponded to higher vocational education or university.

Long-term illness. Respondents with a long-term illness included those who reported to have at least one of the following illnesses or conditions for at least 6 months: cancer, diabetes, cardiovascular disease, arrhythmia, cerebral haemorrhage, chronic lung disease (such as asthma and chronic obstructive pulmonary disease), musculoskeletal problems, severe headaches, gastrointestinal disease, severe skin disorder, psychological complaints, hearing problems, or 'other'.

Data analysis

We first examined descriptive statistics of the study population. We used multivariate logistic regression analyses to determine the association between use of SCA during the most recent quit attempt in the last 12 months (dependent variable) and hearing about SCA from one or more healthcare professionals in the last 12 months (independent variable), while adjusting for gender, age, educational attainment, migration background, daily smoking, long-term illness and survey year. We added an interaction term between long-term illness and the independent variable.

We conducted the analyses using two different models: in model 1, we included any type of SCA, while in model 2, we only included guideline-recommended types of SCA, i.e. professional counselling and pharmacotherapy (NRT or medication). National treatment guidelines typically recommend that smokers should be offered assistance to quit with counselling and pharmacotherapy.^{14,26} A model that only includes these types of SCA may therefore be most relevant to formulate recommendations for clinical practice. Statistical analyses were performed using IBM SPSS Statistics version 27.

Ethics

The Central Committee on Research Involving Human Subjects in the Netherlands required no ethical approval for this non-medical survey research study.

Results

Table 1 presents the characteristics of the study population ($N=5928$). Overall, most respondents were male (58.2%), had pursued or completed a medium level of education (42.4%), had no migration background (75.5%), were daily smokers (72.3%), had no long-term illness (69.4%), had not made a serious quit attempt in the last 12 months (66.4%) and had consulted at least one healthcare professional in the last 12 months (92.9%). Most respondents had consulted a dentist (73.2%) or GP (71.9%) in the last 12 months.

Table 2 presents the type(s) of SCA used by smokers during their most recent serious quit attempt in the last 12 months ($N=1973$; this corresponds with 33.3% of all smokers in the study population).

Table 1 Characteristics of the study population (weighted data)

	All smokers
<i>N</i>	5928
Gender (%)	
Male	58.2
Female	41.8
Age (%)	
18–29	25.8
30–39	18.0
40–49	17.5
50–64	25.7
65+	13.0
Educational attainment (%)	
Low	28.3
Medium	42.4
High	27.4
Unknown ^a	1.9
Migration background (%)	
Yes	24.5
No	75.5
Daily smoking (%)	
Yes	72.3
No	27.7
Long-term illness (%)	
Yes	30.6
No	69.4
At least one serious quit attempt in last 12 months (%)	
Yes	33.3
No	66.4
Consulted at least one healthcare professional in last 12 months (%)	
Yes	92.9
No	7.1
Type(s) of healthcare professional consulted in last 12 months (%)	
GP	71.9
Medical specialist	43.4
Dentist	73.2
Mental health professional	14.6

a: Unknown due to missing values.

Table 2 Rates of SCA use during most recent quit attempt (weighted data)

	Smokers who made a serious quit attempt in last 12 months
<i>N</i>	1973
Type(s) of SCA used during most recent serious quit attempt (%)	
Professional counselling	4.1
NRT	14.3
Medication	5.6
E-cigarette	11.2
Online programme or app	2.6
Other type of SCA	1.8
None of the above	65.0
Unknown ^a	3.7

a: Unknown due to missing values.

Most smokers did not use any type of SCA during their most recent serious quit attempt (65.0%). Among smokers who did use one or more types of SCA during their most recent serious quit attempt, NRT was most often reported (14.3%) followed by the e-cigarette (11.2%).

A total of 5508 smokers had consulted at least one healthcare professional in the last 12 months, of which 1812 smokers (i.e. 32.9%) received the advice to quit smoking. Among those who received the advice to quit smoking from a healthcare professional, the majority of smokers did not hear about any type of SCA (61.1%), as presented in table 3. Table 3 also shows that 30.2% of smokers who received the advice to quit smoking heard about any type of

Table 3 The number of healthcare professionals who mentioned any type of SCA and type(s) of SCA mentioned by healthcare professionals (weighted data)

	Smokers who received advice to quit smoking in last 12 months
<i>N</i>	1812
Number of consulted healthcare professionals who mentioned any type of SCA in last 12 months (%)	
0	61.1
1	30.2
2 or more	8.7
Type(s) of SCA mentioned by at least one consulted healthcare professional in last 12 months (%)	
Professional counselling	16.2
NRT	17.6
Medication	11.9
E-cigarette	2.6
Online programme or app	4.2
Other type of SCA	2.3

SCA from one healthcare professional; and 8.7% heard about any type of SCA from two or more healthcare professionals. NRT was most often mentioned by at least one consulted healthcare professional (17.6%), followed by professional counselling (16.2%).

Table 4 and Supplementary table S1 present the results from the logistic regression analyses. Table 4 shows that, adjusted for all covariates, hearing about any type of SCA from a healthcare professional (model 1) was significantly associated with using any type of SCA during the most recent quit attempt in the last 12 months [odds ratio (OR) = 2.96; 95% confidence interval (CI) 2.16–4.06; $P < 0.001$]. Also, hearing about guideline-recommended types of SCA from a healthcare professional (model 2) was significantly associated with use of guideline-recommended types of SCA during the most recent quit attempt in the last 12 months (OR = 5.40; 95% CI 4.11–11.60; $P < 0.001$). When adding the interaction between hearing about SCA from a healthcare professional and long-term illness to the model, we found that this was not significant in both models.

We conducted an additional analysis for smokers whose most recent quit attempt took place in the last month, presented in Supplementary table S2. Adjusted for all covariates, the odds of using any type of SCA in the last month was 10.95 times higher for smokers who had heard about any type of SCA from a healthcare professional in the last 12 compared to smokers who had not heard about any type of SCA from a healthcare professional in the last 12 months (95% CI 3.91–30.63; $P < 0.001$).

Supplementary table S1 shows that the odds of using any type of SCA in the last 12 months was not significantly higher for smokers who had heard about any type of SCA from two or more healthcare professionals in the last 12 months compared to smokers who had heard about any type of SCA from one healthcare professional in the last 12 months (model 1; OR = 1.38; 95% CI 0.79–2.42; $P = 0.26$). The same also applied to guideline-recommended types of SCA (model 2; OR = 1.52; 95% CI 0.83–2.76; $P = 0.17$).

Discussion

We used survey data to address three important issues. The first aim of this study was to determine the extent to which hearing about SCA from a healthcare professional is associated with SCA use during a quit attempt. In our analyses, we distinguished between ‘any type of SCA’ and ‘guideline-recommended types of SCA’. We found that smokers who had heard about any type SCA from a healthcare professional were around 3 times more likely to use any type of SCA during their last quit attempt compared to those who did not discuss

Table 4 Associations between use of SCA during most recent quit attempt in last 12 months and hearing about SCA from a healthcare professional in last 12 months (weighted data)

Independent variable	Used SCA during most recent quit attempt in last 12 months			
	Model 1 (used any type of SCA)		Model 2 (used NRT, medication, and/or professional counselling)	
	OR (95% CI)	P value	OR (95% CI)	P value
Did not hear about SCA from a healthcare professional in last 12 months ^a	Ref	–	Ref	–
Heard about SCA from a healthcare professional in last 12 months ^b	2.96 (2.16–4.06)	<0.001	5.40 (4.11–11.60)	<0.001
Covariates				
Gender				
Male	Ref	–	Ref	–
Female	1.22 (0.89–1.67)	0.22	1.07 (0.75–1.53)	0.72
Age				
18–29	Ref	–	Ref	–
30–39	1.85 (1.09–3.14)	0.02	2.27 (1.13–4.53)	0.02
40–49	3.33 (1.96–5.66)	<0.001	3.22 (1.64–6.34)	0.001
50–64	2.27 (1.40–3.70)	0.001	3.63 (1.94–6.78)	<0.001
65+	1.44 (0.79–2.62)	0.23	2.43 (1.16–5.10)	0.02
Educational attainment				
Low	Ref	–	Ref	–
Medium	1.09 (0.75–1.57)	0.67	0.90 (0.59–1.36)	0.61
High	1.03 (0.66–1.62)	0.89	0.83 (0.49–1.39)	0.48
Migration background				
No	Ref	–	Ref	–
Yes	0.86 (0.60–1.22)	0.40	1.10 (0.74–1.65)	0.63
Daily smoking				
No	Ref	–	Ref	–
Yes	1.47 (0.96–2.25)	0.08	0.93 (0.57–1.52)	0.78
Long-term illness				
No	Ref	–	Ref	–
Yes	1.15 (0.83–1.58)	0.40	1.25 (0.87–1.79)	0.24
Survey year				
2016	Ref	–	Ref	–
2018	1.14 (0.79–1.65)	0.50	1.41 (0.91–2.16)	0.12
2020	1.47 (0.99–2.17)	0.05	2.53 (1.63–3.95)	<0.001

a: Model 1: did not hear about any type of SCA, model 2: did not hear about NRT, medication, and/or professional counselling.

b: Model 1: heard about any type of SCA, model 2: heard about NRT, medication, and/or professional counselling. P values below 0.05 were considered statistically significant.

any type of SCA with a healthcare professional. Moreover, smokers who reported that they had specifically heard about a guideline-recommended type of SCA (i.e. counselling and/or pharmacotherapy) from a healthcare professional were over 5 times more likely to use a guideline-recommended type of SCA during their last quit attempt. These are positive findings, because they suggest that smokers may benefit from healthcare professionals raising the topic of using (guideline-recommended) SCA during consultations. In particular healthcare professionals who are most often seen by smokers (i.e. the dentist and GP) can play an important role in promoting the use of SCA. Smokers seen in dental and general practice may benefit from SCA being provided by professionals in those practices.^{26,27}

The second and third aims of this study were to investigate the role of the health condition of smokers and the role of hearing about SCA from multiple healthcare professionals. Contrary to our expectations, we did not find that the relationship between hearing about SCA from a healthcare professional and using SCA during a quit attempt is moderated by the health condition of smokers. This means that hearing about SCA from a healthcare professional is equally important for smokers with and without a long-term illness. Additionally, hearing about SCA from multiple healthcare professionals does not seem to further increase the likelihood of using SCA during a quit attempt. It should be noted that this finding only applies to a 1-year timespan. Within 1 year, it may be sufficient to hear about SCA from just one healthcare professional. However, we do not know whether it is sufficient for smokers to hear about SCA

from a healthcare professional just once, or whether they could benefit from hearing about SCA again after this 1-year period. Further research on this issue is recommended.

Smoking cessation guidelines

We found that when smokers in the Netherlands hear about SCA from healthcare professionals, they usually hear about guideline-recommended types of SCA. Health care professionals in the Netherlands thus take their professional responsibility and promote guideline-recommended cessation strategies. However, they can do this more often. The majority of smokers (>60%) reports that SCA was not discussed at all after receiving the advice to quit smoking.

There may be multiple explanations why Dutch healthcare professionals do not frequently mention SCA after advising patients to quit. First, Dutch treatment guidelines typically use the '5A' model for smoking cessation. This model recommends that all smokers seen during consultation should be advised to quit smoking.²⁸ Smokers who are found to be willing to make a quit attempt at that time should be offered an evidence-based treatment.²⁸ Consequently, smokers who are not yet ready to quit do not hear about evidence-based treatment during consultation. It may, therefore, be necessary to extend treatment guidelines to include offering evidence-based treatment even to smokers who are not ready to quit at the time of the consultation. This recommendation applies to both national treatment guidelines and those guidelines in European countries which still use the '5A' model for smoking cessation.²⁹ Healthcare

professionals that use new methods, such as the Very Brief Advice method, actively mention counselling and pharmacotherapy to all smokers, regardless of their readiness to quit.²³ For nondaily smokers it may be most appropriate to mention counselling only and not pharmacotherapy, since nondaily smokers show less signs of nicotine dependence.³⁰

A second reason why Dutch healthcare professionals do not frequently mention SCA may be that the majority of healthcare professionals in the Netherlands still considers smoking a personal choice and above all the responsibility of the smoker.³¹ As a result, they are less inclined to provide smoking cessation care to smokers compared to healthcare professionals who perceive smoking as an addiction and thus hold factors beyond smokers' own choice more accountable.³¹ This barrier has also been reported in other European countries, where healthcare professionals perceive addiction and lifestyle to be the patient's own choice and responsibility.^{32,33} A change in perception is needed towards one in which healthcare professionals view smoking as a serious addiction which needs to be addressed.

Types of SCA used

A notable finding is that over 10% of smokers in the Netherlands used e-cigarettes during their most recent quit attempt, while e-cigarettes are not often mentioned by healthcare professionals during consultations. A similar pattern is found in other European countries, where e-cigarettes are often used during a quit attempt but rarely discussed with healthcare professionals.³ One reason why healthcare professionals not often mention the use of e-cigarettes may be that in many European countries e-cigarettes are currently not recommended in treatment guidelines for cessation. As there is growing evidence for the effectiveness of nicotine e-cigarettes,¹³ it is possible that treatment guidelines may change in the future and consequently also the advice of healthcare professionals.

Interestingly, we found that smokers were more likely to use any type of (guideline-recommended) SCA in 2020 compared to 2016. As of 2020, smoking cessation programmes in primary care which offer counselling and pharmacotherapy are fully reimbursed in the Netherlands, meaning that SCA has become more accessible to smokers. The existence of adequate financial reimbursement is an important determinant of smokers' interest in using SCA¹⁸ and may also be an extra reason for healthcare professionals to mention SCA to patients. Another explanation for the increase in SCA use in 2020 may be that more smokers became aware of the urgency to quit smoking due to the Covid-19 crisis and sought out (effective) methods to quit smoking. More research is needed to confirm this.

Limitations

To our knowledge, this is the first study to investigate the relationship between smokers' use of SCA and hearing about SCA from healthcare professionals. However, a few limitations should be acknowledged. First, due to the cross-sectional design of the study it is difficult to draw conclusions on the extent to which hearing about SCA influences the use of SCA. It is possible that survey respondents used SCA during their most recent quit attempt before they heard about SCA from a healthcare professional, or that SCA was used in the last 12 months but not during the most recent quit attempt. Our findings may therefore be an underestimation of the actual relationship between hearing about SCA and using SCA. This was also confirmed by our additional analysis: among smokers whose most recent quit attempt took place in the last month, and for whom it is thus more likely that they heard about SCA before their most recent quit attempt, we found a stronger relationship between hearing about SCA and using SCA.

A second limitation is that respondents might not have reported all conversations in which SCA was mentioned by a healthcare professional. As the survey was based on self-reports, respondents may

have either forgotten or may have been unaware that a healthcare professional advised them to quit smoking and/or mentioned the use of SCA. Additionally, it is possible that a healthcare professional mentioned the use of SCA during a consultation without first giving the advice to quit smoking; unfortunately these conversations were not assessed in the survey.

A third limitation was that the data collection faced some challenges in 2020. First, fewer people were approached for a telephone or face-to-face interview compared to previous years. Second, in 2020 no face-to-face interviews could take place for several months due to Covid-19 measures. Third, the sampling method contained a small number of inaccuracies which partially affected the telephone and face-to-face re-approach. While these three challenges did not affect the 2016 and 2018 data, additional analyses showed that without these challenges, the smoking prevalence in the sample would have most likely been higher in 2020. However, we expect that these challenges had limited influence on our conclusions, as this study only focused on associations between hearing about SCA from a healthcare professional and using SCA, and not on prevalence rates.

Conclusion

This study shows that healthcare professionals can play a greater role in stimulating the use of SCA. They can do this by mentioning different types of SCA, especially counselling and pharmacotherapy, more often to patients who smoke.

Supplementary data

Supplementary data are available at *EURPUB* online.

Funding

This study was funded by ZonMw under project number 531003017. The survey data used in this study were collected at the request of the Netherlands Ministry of Health, Welfare and Sport (VWS). The sponsors had no role in the study design, data collection, interpretation of the data, writing of the report or the decision to submit a report for publication. This was the sole responsibility of the authors.

Conflicts of interest: None declared.

Key points

- Currently, most Dutch smokers do not hear about smoking cessation assistance (SCA) during consultations with healthcare professionals.
- We found that smokers who had heard about (guideline-recommended) SCA from a healthcare professional were 3–5 times more likely to use (guideline-recommended) SCA during their last quit attempt.
- Healthcare professionals can play a greater role in stimulating the use of (guideline-recommended) SCA by mentioning it to smokers during consultations.
- It may be necessary to extend treatment guidelines to include offering SCA to smokers regardless of their readiness to quit.

References

- 1 Reitsma MB, Kendrick PJ, Ababneh E, et al.; GBD 2019 Tobacco Collaborators. Spatial, temporal, and demographic patterns in prevalence of smoking tobacco use and attributable disease burden in 204 countries and territories, 1990–2019: a

- systematic analysis from the Global Burden of Disease Study 2019. *Lancet* 2021;397:2337–60.
- 2 U.S. Department of Health and Human Services. *Smoking Cessation: A Report of the Surgeon General*. Atlanta, Georgia: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2020.
 - 3 Hummel K, Nagelhout GE, Fong GT, et al. Quitting activity and use of cessation assistance reported by smokers in eight European countries: findings from the EUREST-PLUS ITC Europe Surveys. *Tob Induc Dis* 2018;16:A6.
 - 4 CDC Foundation. The GATS Atlas [Internet], 2015. Available at: <http://gatsatlas.org> (14 June 2021, date last accessed).
 - 5 Hughes JR, Keely J, Naud S. Shape of the relapse curve and long-term abstinence among untreated smokers. *Addiction* 2004;99:29–38.
 - 6 Lancaster T, Stead LF. Individual behavioural counselling for smoking cessation. *Cochrane Database Syst Rev* 2017;3.
 - 7 Stead LF, Carroll AJ, Lancaster T. Group behaviour therapy programmes for smoking cessation. *Cochrane Database Syst Rev* 2017;3.
 - 8 Matkin W, Ordóñez Mena JM, Hartmann Boyce J, et al. Telephone counselling for smoking cessation. *Cochrane Database Syst Rev* 2019;5.
 - 9 Cahill K, Stevens S, Perera R, Lancaster T. Pharmacological interventions for smoking cessation: an overview and network meta-analysis. *Cochrane Database Syst Rev* 2013;5.
 - 10 Taylor GMJ, Dalili MN, Semwal M, et al. Internet-based interventions for smoking cessation. *Cochrane Database Syst Rev* 2017;9.
 - 11 Whittaker R, McRobbie H, Bullen C, et al. Mobile phone text messaging and app-based interventions for smoking cessation. *Cochrane Database Syst Rev* 2019;10.
 - 12 Livingstone-Banks J, Ordóñez Mena JM, Hartmann Boyce J, et al. Print-based self-help interventions for smoking cessation. *Cochrane Database Syst Rev* 2019;1.
 - 13 Hartmann-Boyce J, McRobbie H, Lindson N, et al. Electronic cigarettes for smoking cessation. *Cochrane Database Syst Rev* 2021;4.
 - 14 Nilan K, McNeill A, Murray RL, et al. A survey of tobacco dependence treatment guidelines content in 61 countries. *Addiction* 2018;113:1499–506.
 - 15 European Commission. *Special Eurobarometer 506: Attitudes of Europeans Towards Tobacco and Electronic Cigarettes*. Brussels: Directorate-General for Communication, 2021.
 - 16 Hammond D, McDonald PW, Fong GT, Borland R. Do smokers know how to quit? Knowledge and perceived effectiveness of cessation assistance as predictors of cessation behaviour. *Addiction* 2004;99:1042–8.
 - 17 Gross B, Brose L, Schumann A, et al. Reasons for not using smoking cessation aids. *BMC Public Health* 2008;8:1–9.
 - 18 Filippidis FT, Gerovasili V, Vardavas CI, et al. Determinants of use of smoking cessation aids in 27 European countries. *Prev Med* 2014;65:99–102.
 - 19 Myers MG, Strong DR, Linke SE, et al. Predicting use of assistance when quitting: a longitudinal study of the role of quitting beliefs. *Drug Alcohol Depend* 2015;149:220–4.
 - 20 Smith AL, Carter SM, Chapman S, et al. Why do smokers try to quit without medication or counselling? A qualitative study with ex-smokers. *BMJ Open* 2015;5:e007301.
 - 21 World Health Organization. *Framework Convention on Tobacco Control*. Geneva: WHO, 2005.
 - 22 WHO. Guidelines for implementation of Article 14 of the WHO Framework Convention on Tobacco Control [Internet]. 2010. Available at: <https://www.who.int/ctc/Guidelines.pdf> (19 October 2021, date last accessed).
 - 23 Aveyard P, Begh R, Parsons A, West R. Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance. *Addiction* 2012;107:1066–73.
 - 24 Royal College of Physicians. *Hiding in Plain Sight: Treating Tobacco Dependency in the NHS*. London: Royal College of Physicians, 2018.
 - 25 Trimbos Institute, RIVM & Statistics Netherlands. *Additional Module Substance Use/Lifestyle Monitor, 2016, 2018, 2020*. The Netherlands: Trimbos Institute, RIVM & Statistics Netherlands.
 - 26 Holliday R, Hong B, McColl E, et al. Interventions for tobacco cessation delivered by dental professionals. *Cochrane Database Syst Rev* 2021;2.
 - 27 Lindson N, Pritchard G, Hong B, et al. Strategies to improve smoking cessation rates in primary care. *Cochrane Database Syst Rev* 2021;9.
 - 28 Fiore M, Jaén C, Baker T, et al. *Treating Tobacco Use and Dependence: 2008 Update*. Rockville, Maryland: U.S. Department of Health and Human Services, 2008.
 - 29 Verbiest M, Brakema E, van der Kleij R, et al. National guidelines for smoking cessation in primary care: a literature review and evidence analysis. *NPJ Prim Care Respir Med* 2017;27:2–11.
 - 30 Shiffman S, Ferguson SG, Dunbar MS, Scholl SM. Tobacco dependence among intermittent smokers. *Nicotine Tob Res* 2012;14:1372–81.
 - 31 Meijer E, Chavannes NH. Lacking willpower? A latent class analysis of healthcare providers' perceptions of smokers' responsibility for smoking. *Patient Educ Couns* 2021;104:620–6.
 - 32 Jallinoja P, Absetz P, Kuronen R, et al. The dilemma of patient responsibility for lifestyle change: perceptions among primary care physicians and nurses. *Scand J Prim Health Care* 2007;25:244–9.
 - 33 Russell C, Davies JB, Hunter SC. Predictors of addiction treatment providers' beliefs in the disease and choice models of addiction. *J Subst Abuse Treat* 2011;40:150–64.