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RESEARCH

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The role of deans in implementing smoke-free campus policies: the case of medical schools in France

Diane Geindreau^{1*}, Anne Girault¹ and Karine Gallopel-Morvan¹

Abstract

Background Smoke-free campus (SFC) policies prohibit smoking and vaping on all university grounds and for all users. The literature on SFC shows that these policies reduce exposure to secondhand smoke and increase smoking cessation. Engagement from high-level leaders has been proven to be a key determinant in the SFC implementation process, but their attitudes toward SFC has rarely been investigated, and only in the USA. The aim of this research is to analyze deans' perceptions of SFC in medical schools in France, where smoking prevalence remains high despite broad awareness of the harms of tobacco.

Methods We used semi-structured interviews to explore medical school deans' perceptions of SFC implementation in France. Between October 2022 and January 2024, we interviewed 31 deans and two associate-deans, representing 31 out of the 35 medical schools in mainland France. Interviews were transcribed and the results were thematically analyzed using Nvivo 14, mobilizing the "individuals domain" from the updated Consolidated Framework for Implementation Research.

Results One school had a SFC policy, 6 were in the SFC implementation process, 23 had no SFC policy, and 1 had abandoned it. A majority of deans were unaware that a SFC goes beyond a smoking ban. However, 28 deans held a net-positive perception of SFC, arguing that it is a coherent multi-modal intervention and is effective in reducing smoking. However, SFC were also perceived as stigmatizing smokers and displacing the problem rather than solving it. Perceived barriers to SFC implementation were competing priorities, lack of funding, and opposition from smokers. Perceived facilitators of SFC implementation were access to existing resources, support from medical students, and natural legitimacy of medical schools. Deans felt they had a leadership role to play in initiating, promoting, and enforcing the SFC policy.

Conclusions SFC are poorly developed in medical schools in France, mostly because medical school deans prioritize other issues over smoking prevention and are under-aware of the benefits of SFC policy. However, they hold a net-positive opinion on SFC policy and express a willingness to implement it. We provide a set of practical strategies to help remove the main barriers to SFC implementation.

Keywords Smoke-free campus, CFIR, High-level leaders, Implementation

Background

Smoke-free campus (SFC) policies prohibit smoking and vaping on all university grounds and for all users. A SFC policy, as defined by the American College Health Association (ACHA), comprises a series of strategies that

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help promote and perpetuate the policy: 1) “Develop a strongly worded tobacco policy that reflect the best practices in tobacco prevention, cessation and control”, 2) “Inform all members of the campus community by widely distributing the campus tobacco policy on an annual basis”, 3) “Offer and promote [...] services that include practical, evidence- and theory-informed approaches to end tobacco use, including [...] free/reduced-cost tobacco-cessation counseling, free/reduced-cost nicotine replacement therapy, [...] on campus” (free cessation services), 4) “Plan, maintain, and support effective and timely implementation, administration, and consistent enforcement” and 5) “Develop and maintain a tobacco task force on campus to identify and address needs and concerns related to tobacco policy, compliance, enforcement, and cessation” [1]. The literature on SFC has shown that when it is accompanied by all these components, the ban more effectively decreases pro-tobacco beliefs, reduces tobacco visibility, strengthens positive attitudes towards smoke-free places [2], decreases smoking initiation and exposure to secondhand smoke and on-campus pollution, and increases smoking cessation [3].

Article 8 of the WHO Framework Convention on Tobacco Control advocates the adoption of SFC policy to protect young people [4, 5]. Universities are indeed a favorable environment for health promotion, and SFC are a particularly good way of promoting physical and mental health and improving living and working environments [6]. The literature has highlighted a number of prerequisites to effective SFC policy implementation, such as engaging students in the process [7], having adequate funding [8], tasking a steering committee with drafting the policy [9], and engagement from high-level university leaders (i.e. deans) in the implementation process [10].

In France, where this study takes place, SFC policies remain a relative innovation as very few campuses have adopted them. We therefore used the updated Consolidated Framework for Implementation Research (CFIR) as a rationale for our study. The CFIR highlights contextual factors that work for or against the implementation of an innovation and thus become barriers or facilitators

(called ‘implementation determinants’). These determinants are categorized into 5 domains that we applied to SFC (see Table 1) [11]. Our research falls under the ‘individuals domain’ (IV), and particularly “high-level” university leaders [11]. Deans, as high-level university leaders, have a decisive role to play in SFC implementation. However, this role has been practically uninvestigated. The only paper that addressed the issue [10] was a cross-sectional survey conducted in the USA in 2014 that analyzed the acceptability and perceived barriers and benefits of SFC among 405 university/college presidents. The results showed high levels of acceptability among respondents: 84% were in favor of SFC policy and 80% reported that they had a lead role to play in SFC implementation. However, there was no description of what this role would entail and how they would take on this role. Although the study brought key insight, it may now be outdated, as SFC have since been widely developed within the USA, with 2,617 universities/colleges now being smoke-free in 2024 [12].

This research on engagement from high-level university leaders takes place in France, where the prevalence of tobacco smoking among young people is still very high: 28.7% of male and 27.9 of female 18–24-year-olds were daily smokers in 2021 [13], and 19.1% of university students were daily smokers in 2022 [14]. To decrease this high prevalence, the French national tobacco control plan 2023–2027 [15] advocates wider adoption of SFC, starting with health settings (medical, dental, pharmaceutical, nursing, and midwifery schools). The French School of Public Health (EHESP) was the first SFC in 2018, followed by a medical school and some nursing schools in Paris.

This paper focuses exclusively on medical schools, for various reasons: first, because the national tobacco control plan makes it a priority to develop SFC in these schools; second, because the prevalence of smoking is high among medical students in France (21.9% are daily and occasional smokers; [16]); third, because today’s medical students will be tomorrow’s prescribers of nicotine replacement therapy for their patients who smoke [17];

Table 1 Consolidated Framework for Implementation Research (CFIR): definitions of domains (applied to the implementation of SFC in French medical schools)

Domain	Definition
INNOVATION DOMAIN (I)	The innovation being implemented (<i>SFC</i>)
OUTER SETTING DOMAIN (II)	The setting (<i>university, city, country</i>) in which the Inner Setting exists (<i>higher education campus</i>)
INNER SETTING DOMAIN (III)	The setting in which the innovation is implemented (<i>higher education campus</i>)
INDIVIDUALS DOMAIN (IV)	The roles and characteristics of individuals involved in innovation adoption and implementation
IMPLEMENTATION PROCESS DOMAIN (V)	The activities and strategies used to implement the innovation and its components (<i>SFC, communication campaign, enforcement strategies, ambassador programs, free cessation services</i>)

and fourth, because the smoking status of physicians influences their tobacco counselling to patients [18, 19]. Medical schools are thus a crucial setting for developing SFC. In France, medical schools are run by deans who are in charge of executing the academic, instructional, and administrative policies and directives of their school that are laid down by the supervising university or the council of faculty [11]. All medical-school deans are professors in medicine/surgery and practice in a university-affiliated hospital, and as defined by article L713-3 of the French Code of Education,¹ they are elected by the council of faculty (professors, researchers, administration, students) for a five-year mandate. They are supported in their functions by elected associate-deans.

As mentioned, this research falls under the CFIR ‘individuals domain’ [11]. The CFIR, working up from Stanick (2021), describes how key characteristics of individuals may support or prevent implementation processes [20], i.e. i) their familiarity with the health innovation, value placed on it, and preconceived ideas (knowledge and beliefs about it); ii) stage of change in the innovation pathway (level of development of SFC in medical schools); iii) the extent to which they believe in their own capability (and the resources they have) to implement the innovation (self-efficacy). Here we explored these characteristics applied to medical deans in France, and we also analyzed their self-perceived role in SFC policy development. To do so, we used the ‘implementation leadership scale’ (ILS) to describe different actions that leaders can support to facilitate (or not) the implementation of an innovation in their organization [21], and the implementation leadership style these actions refer to. These actions include (i) the degree to which deans anticipate and address implementation challenges (proactive leadership); (ii) the degree to which deans have a deep understanding of the innovation (knowledgeable leadership); (iii) the degree to which deans support use of the innovation among staff (supportive leadership); (iv) the degree to which deans consistently respond to innovation implementation issues (perseverant leadership).

In this paper, we report French medical deans’ knowledge, beliefs, stage of change, and perceived self-efficacy in SFC policy and their self-perceived leadership role in implementing them.

Methods

We used a qualitative research approach (in-depth individual interviews) to explore these topics. Regarding ethical concerns, the French school of public health Ethics and deontology Commission found this study exempt

from the need for IRB review. Data collection and analysis were conducted in compliance with point 35 of the European General Data Protection Regulation (GDPR)² and with article 64 of the French data privacy law.³ The study protocol strictly followed the principles of the Declaration of Helsinki [22] and the guidelines outlined by the French Data Protection Authority⁴(CNIL in French). This research mobilizes social sciences with the aim of capturing and collecting medical-school deans’ perceptions. Consequently, French legislation on research involving human subjects, known as Jardé law,⁵ does not apply, and so this research only required oral and written informed consent to data collection, data analysis and publication [23]. The interviews were voluntary and confidential. Informed consent was obtained from all participants who were provided with detailed information about the study prior to their participation before (oral consent) and after (written consent) the interview.

To identify the name and number of medical-school deans in France, we inventoried all the French medical schools registered the official website of the Council of deans of medicine.⁶ All deans are part of this Council. We thus identified a total of 35 schools/deans. On the basis of this exhaustive list, which we cross-checked against the data found on each school’s website, we put together a database of the names and email contacts of the deans and associate-deans, and their secretariat offices. The deans of all 35 schools were contacted by email (with their secretary on copy) to invite them to participate in a 1-h interview. The email message introduced the researchers and the research (described as a study on medical-school deans’ knowledge and opinions on SFC, funded by the French national cancer institute). If no answer was received within two weeks, we sent a second email. If there was still no response after a month, we sent a third email. If these third emails remained unanswered, we called the secretariat to explain the study and ask for an answer. After two calls without answers or no way to speak to the secretary, we considered that the dean would not be included in the sample. To increase our chances of interviewing deans, we enlisted the support of the President of the Council of deans of medicine, who gave us the opportunity to briefly present the aim of our research at the monthly meeting of deans, and thus reach more respondents.

¹ https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000006525362

² <https://www.cnil.fr/fr/reglement-europeen-protection-donnees>

³ https://www.legifrance.gouv.fr/loda/article_lc/LEGIARTI000037823065

⁴ <https://www.cnil.fr/fr/reglement-europeen-protection-donnees>

⁵ <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000025441587>

⁶ <https://conferencedesdoyensdemedecine.org/>

Table 2 Participant demographics (see Supplementary Materials I for detailed demographics)

Characteristic	Sample
A. Participants	33
Gender	
Male	25
Female	8
Position title	
Dean of medical school	30
Associate-dean of medical school	2
Dean of health campus training facility	1
Respondents' medical specialization	
Public health	2
Medicine	19
Surgery	6
Other (laboratory, imaging)	4
Years of experience as a dean or associate-dean	
< 5 years	18
5–10 years	15
Smoking status	
Non-smoker	25
Occasional smoker	3
Ex-smoker	5
B. Institutions	31
Locations (geographic regions)	
North-West France	7
North-East France	7
South-West France	4
South-East France	7
Paris Region	5
Overseas France	1

In total, we conducted 33 interviews (representing 31 out of the total 35 schools⁷): 30 respondents were deans of medical schools, two were associate-deans of medical schools, and one was dean of a health campus (which encompasses the medical school). Two deans refused to answer our questions themselves but suggested that we interview other members of their management team (a psychiatrist specialized in addictions, and an administrative director). We conducted these other interviews for the broader purpose of understanding the progress of medical schools towards implementing SFC, but we did not include them in the analysis presented here

⁷ Two medical schools were represented twice, the first due to a change in governance during the course of the study, and the second because we interviewed the dean of the medical school as well as the dean of the health campus (which encompasses the medical school).

since this research was focused exclusively on deans or associate-deans.

The sample comprised 25 males and 8 females (Table 2). Eighteen deans were on their first mandate, and 15 on their second. There were 25 non-smokers, 5 ex-smokers, and 3 occasional smokers. The deans represented medical schools from all around France: North-West France (7), North-East France (7), South-West France (4), South-East France (7), Paris (5), and overseas France (one).

Data collection and analysis were carried out in accordance with the Consolidated Criteria for Reporting Qualitative Research 32-item checklist [24] (see Supplementary Materials II).

Semi-structured interviews were conducted between October 2022 and January 2024 via video call ($n=32$) or face-to-face ($n=1$), and all were held in French. One researcher led the interview while the second researcher took notes. All participants were notified that all information provided would be anonymized for purposes of scientific publication. They were then asked to consent to the interview being recorded, transcribed, and analyzed.

Each interview started by presenting the general aim of the research (to gain insight on their knowledge and opinions on SFC). The interview guide, which was developed specifically for this study, was divided into three sections, as reported in Table 3. At the end of the interview, participants were asked to state their smoking and vaping status.

Interviews lasted for between 24 and 60 min. Total length of the interview material ($n=33$ interviews) was 23 h. The interviews were transcribed, read several times over, and summarized by one researcher to gain familiarity with the content. All transcriptions were loaded into Nvivo 14. One researcher performed the data coding from the transcripts. Analysis of the data for major themes was deductive and based on two models, i.e. the CFIR and the ILS [11, 21]. Four main themes were directly derived from the data, in line with our theoretical framework: 1) knowledge, beliefs and opinions on SFC policy and its components, 2) stage of change towards SFC in the medical school, 3) self-efficacy, and 4) self-perceived role of a dean in implementing a SFC. Analysis of these subcategories was inductive as they were coded based on respondents' answers. This coding process was conducted with the support of the other two authors, with constant back-and-forth discussion to refine the analysis and limit the risk of bias.

Results

What were the deans' perceptions of on-campus smoking and vaping?

None of the deans had available data regarding prevalence of smoking or vaping among users of their campus.

Table 3 Sections of the interview guide, and brief description**Section I: Introduction phase**

Short introduction on the aim of the interview (SFC) and the profiles of the researchers, and thanking the deans for their participation. At this stage of the interview, no definition of a SFC had been given to the participants

Themes

Knowledge and beliefs

Questions asked

- How would you describe smoking practices within your school?
- What is the level of prevalence? Among students? Among employees?
- How would you describe vaping on campus?
- How would you define a SFC?
- What do you think are the objectives of a SFC?

Section II: Centering the topic

General perceptions of a SFC

- What is your perception of a SFC?
- Do you run a SFC, and if so, since when, and why was it implemented? If not, has SFC policy ever been considered, and if so, how, and if not, why not?

Section III: In-depth study of the topic

This section started with the provision of the following definition of a SFC (as described for the first SFC implemented in France at the EHESP school of public health in 2018): "a total ban on smoking on all campus grounds (with vaping allowed outside), both indoors and outdoors, with free cessation services available on-site for all users. Communication campaigns and evaluation surveys complemented this policy. In addition, student ambassadors also toured the campus to meet smokers, help enforce the no-smoking rule, and promote the free cessation services. Finally, smoking shelters were installed around the outer boundaries of the campus"^a

Themes

Perception of the described SFC, feasibility of implementing it and perception of their role in a putative SFC implementation process

Questions asked

- What do you think of the described SFC?
- What would be the barriers and facilitators to deploying this kind of SFC and its components in your own medical school?
- What role would you, as a dean, have to play in implementing this kind of SFC?

^a <https://www.ehesp.fr/campus/campus-sans-tabac/>

We therefore asked the deans to give their own perception of smoking on-campus. A majority had the perception that smoking among medical students had reduced drastically over the past two decades, and had the feeling that smoking was no longer a problem. Twelve deans had the perception that student smoking rates were low or very low, whereas some still considered smoking as a problem: 9 perceived that the prevalence of student smoking was still high, and 3 cited high levels of smoking among professors. Sixteen deans perceived that smoking was mostly observed among staff in administrative and technical roles. Regarding vaping, 9 deans reported that they sometimes see people vaping, especially employees, and 11 thought that vaping was practically non-existent in their school.

Fourteen deans perceived that smoking was common on outdoor campus spaces, especially at entries to buildings and in greenspace areas:

"[...] as we have a beautiful garden [...] they smoke outside, in the gardens" (d14)

What was the deans' level of knowledge on SFC policy?

To explore the question of knowledge of SFC policies, we first asked the deans to define these policies. Eighteen deans gave a partial definition in which they all mentioned the ban on smoking (but not on vaping) but none

mentioned components of SFC policy (i.e. free cessation services, ambassador programs):

"[...] not smoking in the buildings would surely be associated with not smoking once you enter the university grounds." (d19)

Twelve deans gave a full definition, describing the smoking ban and part of the associated components. Two participants did not know what a SFC policy was (one had never heard about it), and one confused SFC with the French Evin law that bans smoking indoors in public places.

Questions focusing on perceived objectives of an SFC captured 8 objectives: prevention efforts focused on the harms of tobacco ($n=25$); demonstrating exemplarity among future health professionals ($n=19$) and/or in medical schools ($n=16$); reducing smoking among campus users (students and employees) ($n=16$); improving the health of campus users ($n=11$); reducing the environmental impact of tobacco ($n=11$); reducing visible signs of smoking on campus ($n=3$); contributing to training future health leaders ($n=1$).

"exemplarity is fundamental; I mean, imagine if a pneumologist welcoming his patient in has a cigarette in his mouth, and tells him: "Sir, you have to stop smoking". It's, I mean... there's nothing else to do

but set an example” (d10)

What were the deans’ opinions on SFC policy and its components?

Deans’ beliefs and opinions on SFC were explored in two separate segments of the interview by canvassing their opinions: 1) before they were provided any description of an SFC, and 2) after they were provided with a description of a comprehensive SFC policy (based on ACHA’s 2012 definition as described in the background (see above) and “adapted” to the first French SFC implemented at the EHESP school of public health that does not ban vaping outdoors).

Even if deans did not initially know exactly what SFC were, they globally shared positive perceptions towards SFC policy. Figure 1 shows the main ideas expressed by the deans before and after being provided the description of an existing SFC, grouped in terms of the number of deans who had positive, negative, or both positive and negative opinions.

Before the description step, 28 deans expressed opinions on SFC. Among them, 16 held only positive opinions, three held only negative opinions, and 9 expressed both positive and negative opinions. After the description step, 8 other deans formulated positive reactions, two deans maintained their negative opinions, and one who previously had a negative opinion moved to a more

mitigated position mixing both positive and negative opinions.

Positive perceptions before the definition step were: it is a good idea, it is feasible to implement within their school, it is effective in reducing smoking.

“I think it’s certainly a very good idea. You’re hearing that from a non-smoker—from someone who considers, well, who tries to, to make his patients aware, even if he’s not... I’m not a pulmonologist” (d17)

“Who else but us should lead the way?” (d21)

Moreover, some deans showed a willingness to contemplate SFC implementation within their school. Indeed, they claimed that medical schools must take the lead on the issue, and that a SFC could federate medical schools around a common prevention project.

However, some negative perceptions also emerged. Some deans feared that a SFC policy could prove a burden for smokers by being liberticidal or stigmatizing them, or that it could prompt students to disobey or even increase their tobacco consumption. Some participants also expressed the view that the policy may not be effective, and that it was a denial of smokers’ addiction.

“I’m not sure it’s a good strategy, because in the end, people always find a way around [...] I can see the... the problems it might cause. It means that smok-

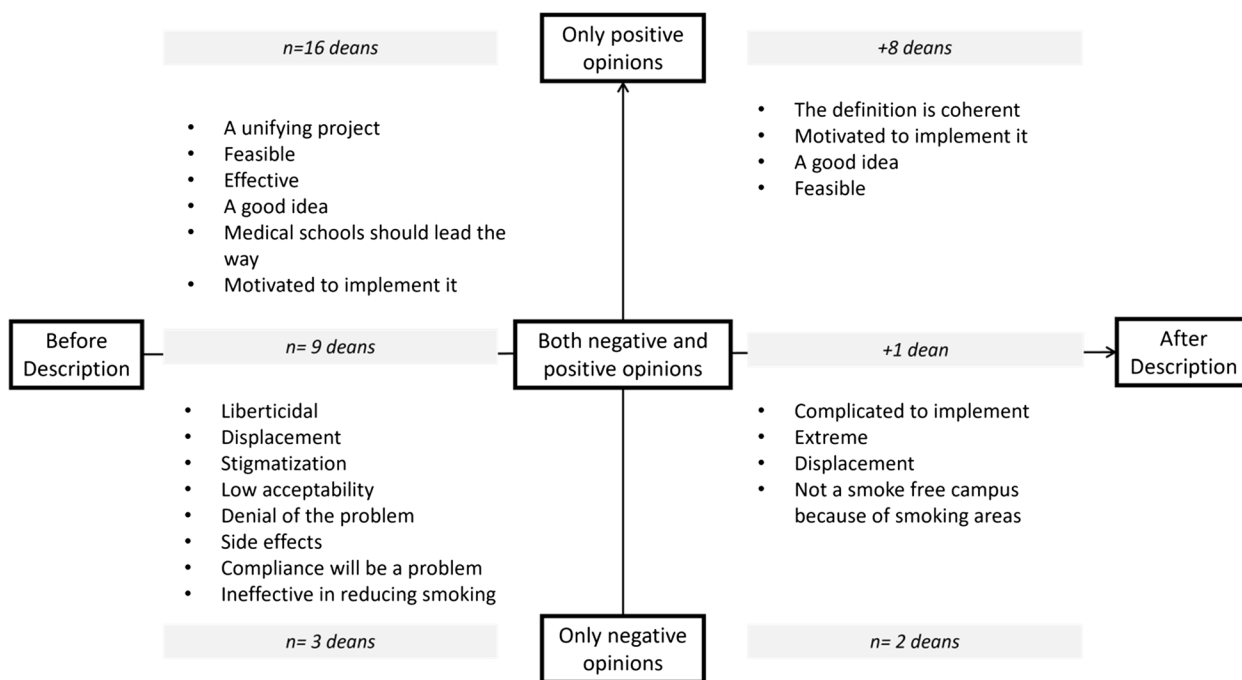


Fig. 1 Perceptions of deans towards SFC before and after receiving a definition

ers are going to smoke on the emergency stairs. And that's it. And we hide [...]” (d13)

The description of an existing SFC brought out new reactions, but also reinforced certain ideas that had already been formulated. Indeed, deans re-asserted their interest in the policy as a good idea. The policy was deemed coherent, and its implementation was deemed feasible. It also triggered motivation to implement a SFC policy in their school.

“I'm fine with it and I'm ready to... to replicate it tomorrow.” (d13)

However, some negative perceptions also emerged (although less than before the description step) that were related to the nature of the ban, which was deemed both too extreme and insufficiently strict due to the existence of designated smoking areas. The issue of displacement re-emerged, and some deans stated that it would be hard to implement all the components of the policy.

Stage of change: how many medical schools had already implemented a SFC policy?

The implementation of a SFC remained an innovative health measure that had rarely been adopted in the medical schools investigated here. Only one school had implemented a comprehensive SFC in 2019, i.e. a policy comprising a ban on smoking (indoors and outdoors), free cessation services, ambassador programs, evaluations, and communication campaigns (inspired by the first SFC implemented in France in 2018). Six medical schools had adopted a ban on smoking outdoors but had not yet developed the other components of an SFC, either due to lack of knowledge about SFC policy or due to organizational issues (discussed further down). Twenty-three schools had not implemented an SFC policy and had not considered adopting one at the time of our interviews. One school had started a SFC in 2010 (limited to signs stated a “smoking ban”) but stopped it in 2018 due to disengagement by the new management team who prioritized other issues.

Self-efficacy: did deans believe in their own or their school's capacity to implement a SFC?

This section explored the concept of self-efficacy by analyzing the extent to which deans believe in their school's capacity to implement a SFC policy. To do so, we used a multi-level approach to describe micro-level, meso-level and macro-level contextual factors that shape processes of change, i.e. implementing a SFC policy [25].

Table 4 below reports the perceived micro-level (individual) facilitators and barriers to implementation of a

Table 4 Micro-level determinants of SFC policy implementation in medical schools

	Micro-level
Facilitators	Support from students (n=12) Support from other managers (n=5) Support from the dean (n=3) Support from employees and professors (n=2) Support from smokers (n=1) Students are future medical doctors (n=1) Few smokers (n=1)
Barriers	Reluctance and opposition from different groups of cigarette-users (n=10) Addiction (n=2) Stress management strategies (n=2) Lack of support from the dean (n=2) or deans from other schools (n=1)
Strategies	Advocacy and education adapted to all different groups of users (n=11) Conducting feasibility studies (n=10)

SFC policy in French medical schools, and the solutions proposed by deans to overcome these barriers.

At the micro level, the most cited facilitator was engagement in the implementation process from users, i.e. students (n=12), other managers (n=5), and the dean (n=3). The main perceived barriers were expected opposition from tobacco users (n=10) and lack of support from the dean (n=2):

“[...] students will say to us: “I can't go out for a smoke between two classes and come back”. [...] It's the same with the staff. The staff, they'll say to you: “But how are we going to do it?” (d17)

The perceived strategy for addressing this resistance was to conduct feasibility studies (to assess users' needs and use the results to advocate and educate opponents).

Table 5 reports the perceived meso-level (organizational level) facilitators and barriers to implementation of a SFC policy in French medical schools. At this level, the key facilitator was having internal resources, especially effective communication services to help promote the policy, signage (n=14), and a dedicated budget (n=7):

“We have a communication department that complements that of the university, with professionals who are highly competent and very committed. Certainly very sensitive to these issues.” (d2)

Four deans considered that medical schools were the most legitimate space for banning smoking, which they saw as a key argument for justifying the SFC policy.

Many meso-level barriers were identified. Sixteen deans deplored the lack of internal resources to be able to develop this kind of health innovation, and 10 highlighted

Table 5 Meso-level determinants of SFC policy implementation in medical schools

	Meso-level
Facilitators	Internal resources, i.e. communications department ($n=14$), budget ($n=7$), students engaged in prevention programs ($n=4$) Campus configuration – ongoing renovation work ($n=5$) Legitimacy of medical schools ($n=4$) Autonomy of the medical school (not under university supervision) ($n=2$)
Barriers	Lack of internal resources ($n=16$) Other priorities: reforms ($n=8$), other health topics ($n=14$) Limited autonomy of the school ($n=10$) Campus configuration ($n=7$) Lack of adherence to the SFC policy ($n=3$) Students are not always on campus, don't read university emails, and rules are different elsewhere (in hospitals or other schools) ($n=2$) Sustaining the effort (loss of momentum) ($n=2$) Administrative burden ($n=1$) Lack of support from other schools ($n=1$) Difficulties in supporting smokers ($n=1$), enforcing the policy ($n=2$), and communicating on it ($n=2$)
Strategies	Proceed to a phased implementation ($n=4$) Taking a "health promotion" approach ($n=4$) Evaluating and communicating the policy evaluation results ($n=3$) Having an enforcement plan ($n=2$) Providing positive feedback to smokers who comply with the policy ($n=1$)

the lack of autonomy of medical schools (which depend on their governing universities in France) that restricts their ability to develop such projects on their own:

"Clearly, we won't be getting any extra resources. So that would mean taking resources from elsewhere to do this. And we're so, we're so limited in terms of resources." (d5)

The other main barrier was the prioritization of issues. Fourteen deans said that other health topics to address on-campus that were as urgent if not more urgent (alcohol, sexual violence and harassment), and 8 said they were already struggling with the current national medical training reform:

"Because, with alcohol on the other hand, I think there's a real problem." (d1)

However, the deans also formulated several strategies to facilitate SFC implementation despite these barriers, such as a step-by-step implementation approach (starting with designated smoking areas allowing vaping; $n=4$), having a well-established enforcement plan to compel adherence to the ban ($n=2$), and proceeding to evaluate the policy in order to communicate on its positive impacts and increase its acceptability ($n=3$).

Table 6 reports the perceived macro-level (societal-level factors and norms) facilitators and barriers to implementation of a SFC policy in French medical schools. This level was essentially perceived as facilitating SFC implementation, especially due to the national context in France that is increasingly favorable to smoke-free places.

Table 6 Macro-level determinants of SFC policy implementation in medical schools

	Macro-level
Facilitators	Support from the university ($n=15$) Support from regional health agencies ($n=6$) Smoke-free hospitals ($n=5$) Coherent with environmental challenges/issues ($n=4$) Consistency with medical training reforms ($n=2$) Support from the Ministry for Health ($n=2$) Support from other health schools (i.e. midwifery, nursing) ($n=2$) Political window of opportunity (new national plan against smoking) ($n=1$) Support from city council ($n=1$)
Barriers	Post-COVID period ($n=2$)
Strategies	Obtain external funding ($n=7$)

The deans identified the need for support to help implementation, such as the university which can facilitate the process by validating the project, mobilizing resources and demonstrating support ($n=15$), and regional health agencies that can finance the adoption and implementation of health measures in universities ($n=6$). As a strategy, 7 deans proposed securing funding through calls for proposals ($n=7$):

"We can likely get budgets, and that's something to ask for. In other words, [...] XXX city council would probably be a candidate to help us; and the local

health agency, well, I mean, that's for sure." (d29)

Self-efficacy: did deans believe in their own or their school's capacity to implement the different components of SFC?

In order to get a clear picture of what parts of SFC implementation were deemed feasible or not by the deans, we also questioned them on each of the components of a SFC policy, i.e. allowing vaping, ambassador programs, free cessation services, communication, designated smoking areas, evaluation campaigns, inclusion of the SFC in the internal rules and regulations, the use of sanctions, and establishing a steering committee for the SFC policy.

Cessation services, communication, inclusion of the policy within the school's internal rules and regulations (provided it is backed up by a purpose-tasked steering committee) were components that drew unanimous support. Participants considered that these components were key for the success of the policy, and that existing resources for cessation services were already available in local hospitals that were generally located close to their medical schools:

"[...] There's everything, including sophrology and everything, to, to help people [QUIT SMOKING]. For students, for staff here, they can... they can also benefit from occupational medicine services." (d14)

Evaluation campaigns were considered useful to improve the impact of SFC policy, but were also considered costly and demanding in terms of people and time. Likewise, ambassador programs were globally perceived as positive ('peer-to-peer works well') as long as students are properly trained, but some deans feared that it would be hard to recruit volunteers and that student volunteers may lack the legitimacy needed to actually approach

smokers. However, almost all deans thought that ambassador programs could be included in the prevention programs (through medical service, an equivalent to the military service model but for medical students) that all students have to complete during their training in order to validate their academic credits.

Allowing vaping outside and/or in designated smoking areas as part of SFC policy was an object of debate. Some deans thought it might increase adherence to the policy, whereas others considered it problematic as it would not work to clearly de-normalize tobacco use.

The use of sanctions to punish people who smoke on campus was the most controversial policy component. Eight deans had no opinion on it. Some deans agreed the policy would require enforcement and that the use of sanctions should be debated within the campus community (n=7), while others considered that education (n=10) and cessation services (2) would be more effective than sanctions to ensure policy compliance. Seven deans thought sanctioning was not feasible, and four thought that a sanction-based punishment strategy would not work:

"I'm not into sanctioning, that's all, I'm sorry but I don't think that punishments or sanctions are a guarantee of success in stopping smoking or compliance with (SMOKE-FREE CAMPUS) policy." (d27).

Implementation leadership: how did deans perceive their role in implementing an SFC?

Finally, we explored the deans' thoughts on what their role would be if their school moved to implement an SFC policy. We classified the deans' responses using the ILS-model factors of leadership (Table 7) [21].

Three participants stated that they had no specific role to play. Our analysis of the deans' responses identified three types of leadership according to the ILS model.

Table 7 Perceived role for deans to play in implementing a SFC policy in their medical school (based on the ILS model; [21])

Factors of leadership	Actions and behaviors that deans would take on
None	No role to play in SFC implementation (n=3)
Proactive leadership	Promoting the SFC (n=16) Initiating and supervising implementation (n=10) Allocating resources (n=4) Engaging a steering committee (n=3) Including tobacco and the SFC in the training offer (n=3) Enforcing SFC policy (n=2) Using earlier models (n=1) Putting SFC policy on the agenda (n=1)
Transformational leadership	Being exemplary by not smoking (n=6) Manifesting support for SFC policy in decision-making bodies (n=3) Being a figure of authority (the dean has the last word in decision-making) (n=1)
Perseverant leadership	Addressing the challenges of ensuring that a SFC policy lasts the test of time (n=4) Addressing forms of opposition and finding compromises (n=2)

Most deans perceived their role as “proactive” leadership. Sixteen deans explained that they would promote the SFC, as they had the legitimacy and the space to make official announcements about it:

“Well, first of all, if you will, you have to endorse, I’d say spread the... the desire.” (d29)

Ten deans said they would act as catalysts, initiating and driving SFC implementation: they have decision-making powers and can set up a steering committee:

“I think the role of the dean is to give direction, to give the, the, the, the... impetus.” (d10)

Participants identified a role to play as mediators in reallocating resources, including putting modules on tobacco use into the training offer and using prior models to build the strategy but also to enforce the policy.

A second type of implementation leadership was “transformational leadership” (which was not retained in the final ILS). Medical-school deans stated that they had to be exemplary and lead the way, first to embody the policy, and second because they represent the image of the school and its university. The position of dean was also described as a position of power that commands authority.

“[...] remind people that we, that we bring the right values [...] I embody the model.” (d7)

The third perceived type of leadership was “perseverant” leadership. Participants stated that they would defend and drive a SFC policy despite the challenges. They also had a role to play in addressing smokers’ difficulties with the SFC, receiving their complaints and finding compromises to help bring about broader policy compliance:

“In fact, we really have a... a role which is... I’ll say central, which can also be about taking the heat, a lightning rod, an umbrella.” (D21)

Discussion

This research analyzed the leadership roles and individual characteristics of deans in relation to SFC implementation in medical schools in France. We explored the deans’ knowledge and beliefs around SFC policy and their stage of change, self-efficacy, and perceived leadership role to play in developing SFC policy in medical schools. We used the updated CFIR and the ILS model to bring insights on how high-level leaders can influence a health innovation implementation process.

A first finding is that the majority of French medical schools have not yet implemented an SFC policy. The deans gave several possible reasons that may explain this

slow pattern of SFC uptake. First, they did not consider smoking a top priority, unlike alcohol consumption and sexual and gender-based violence, and so most of them did not put smoking prevention on their agenda. Second, they had only limited knowledge on SFC policy and its components. Most deans believed that a SFC policy was just a smoking ban, and they did not know that it is a multi-modal intervention (including communication, ambassadors programs, and free cessation services). After providing them the ‘complete’ definition of a SFC, the deans mostly came away with positive opinions, believing it was a well-conceived and effective measure perfectly aligned with the missions of a medical school. Having more knowledge on what a SFC actually entails triggered a new belief that it was feasible to implement this innovative measure in their schools, and gave them fresh motivation to do so. This finding is coherent with Stanick (2021) who showed that knowledge of an intervention is one of the better-known predictors of motivation to implement it.

Our finding that there is a high acceptability of SFC policy among French deans is consistent with the only previous research that explored the acceptability of SFC among presidents of universities (in the USA; [10]). Here we went further by analyzing the determinants of SFC acceptability and by classifying pre-implementation barriers and facilitators based on a micro-, meso- and macro-level approach. At the micro-level, the most important facilitator was gaining student support for the project, while the strongest barrier was opposition from various groups of campus users. At the meso-level, the deans highlighted the need for dedicated resources (human resources, collaboration with communication services, and funding), as they considered that lacking resources was a barrier, if not a counter-indicator for SFC implementation. Macro-level analysis found that the deans perceived the global French context as highly favorable to smoke-free places in general, which was a facilitator as it was seen as enabling political backing and opportunities to gain funding. These results on the perceived self-efficacy of high-level leaders in terms of SFC implementation provide precious insight for elaborating concrete recommendations adapted to the needs of medical-school deans and the barriers they have to address.

The “individuals domain” of the CFIR describes the characteristics of individuals that impact implementation [20] but it also considers their role in the implementation process (i.e. the leadership role undertaken by high-level leaders). We therefore asked deans about their perceived role (what would they do) if they were to implement a SFC. Most deans answered that they would initiate the implementation (agenda-setting), contribute to the process by leading arbitration (decision-making), and

promote the SFC and policy compliance. Moreover, they also believed that they have to embody the SFC by setting an exemplary example. This position of exemplarity, which Aarons (2014) described as ‘transformational leadership’, is linked to the fact that the interviewed deans all are medical doctors who consider that they have to set an example in terms of non-smoking, both to their patients and their students [18, 19]. However, as shown by the ILS analysis, this transformational leadership is not sufficient to ensure successful implementation and has to be complemented by proactive, knowledgeable, supportive, and perseverant leadership [21].

Some participants commented on the fact that they felt that medical schools had a legitimate role to play in initiating the movement towards SFC in France, but also in setting an example and helping to spread the policy. Indeed, there is a congruence between the values, missions and skills of medical faculties and deans on one side, and the objectives of a SFC on the other, i.e. prevention and the protection of individuals and populations. In addition, deans of medicine are opinion-leaders in health, which means that their status puts them in a strong position to effectuate the adoption of a health innovation, and also to defend and promote it [26].

This ability of an opinion leader in health to adopt and promote an innovation can be linked to the concept of personification. In marketing, personification corresponds to the use of the traits, values and characteristics of an expert, in this case the dean, to highlight the qualities of an innovation, in this case the SFC [27]. Taking this concept of personification from marketing and applying it to public health to grow SFC uptake in France is a real strategic challenge. Indeed, the personal commitment of a dean of medicine to the issue of SFC lends credibility to the scheme, not only for the users of the campus where it will be adopted, but also for other deans who can take reassurance that the project is feasible and take motivation from the model set by pioneering deans and medical schools.

Note too that deans have dual status, as both university managers and as practitioners in university hospitals. In France, healthcare facilities have begun the transition to a smoke-free environment slowly but at a faster pace than universities, although compliance to the ban remains a problem [28]. If medical-school deans demonstrate broad commitment to SFC policy, then it would serve to grow expertise and community awareness of smoke-free places, and thus help to effectively develop effective smoke-free hospitals in France.

This research adds to previous literature on SFC by deeply exploring high-level leaders’ knowledge, beliefs, stage of change, self-efficacy, and perceived role around SFC implementation.

Despite this contribution, our research has some limitations. First, four deans (out of the 35 medical schools in France at the time the survey was led) did not take part in the study. As such, our sample cannot be considered entirely exhaustive. However, 33 interviews is a significant number, given that medical-school deans are a hard target to reach. Second, social desirability may have biased some of the answers given during interviews. Moreover, medical-school deans have some political weight, and they are opinion leaders in the field of health, which in a way compels them to hold exemplary positions and stick to them. Third, during the interviews, we provided deans with a description of the first SFC implemented in France at the ‘EHESP’ school of public health, which allows vaping in outside areas. We chose this definition, rather than the ACHA definition, because it better suits the French context where the denormalization of tobacco has made less ground. Finally, all the data was coded by one researcher. We proceeded to researcher triangulation by discussing with all three researchers throughout the coding process, in order to enhance the reliability of the research findings and limit the risk of interpretation bias.

Despite these limitations, this research has several policy implications and opens up pathways towards developing SFC policy in medical schools. Deans’ motivations to implement a SFC, as identified here, can be linked to the transtheoretical model that explores the level of motivation of individuals to adopt a pro-health behavior, and in our case to implement a health innovation [29]. The transtheoretical model identifies six stages of motivation: precontemplation, contemplation, preparation, action, maintenance, and termination [29]. A large majority of the deans we interviewed were precontemplators (they were aware of SFC policy but had no interest in it – due to lack of knowledge and/or other priorities) or contemplators (interested in SFC policy and weighing up the advantages and disadvantages of implementing it). As Andreasen (1995) showed, strategies exist that can help individuals move from one stage to the next [30]. To move from the precontemplation stage to the contemplation stage requires efforts to raise awareness. To move from the contemplation stage to the preparation stage requires efforts to convince individuals of the value and benefit of the innovation. Based on these conclusions and on the findings reported here, we propose several actions to put in place.

To raise awareness of deans on SFC policy, we recommend 1) conducting local investigations to demonstrate that student smoking is still a prevalent problem in France, 2) educating deans and their teams on SFC policy, and 3) using the “conference of medical-school deans” to reach all deans across the country.

To convince deans to implement an SFC, we recommend 1) providing them with a list of evidence-based arguments in favor of SFC, 2) proposing methodological support (toolkits, webinars), 3) promoting testimonials of those who have already implemented an SFC, and 4) communicating on the many potential sources of external funding (from the regional health agencies or NGOs).

These 33 medical schools, as centers of expertise in health, are not representative of the 3,500 higher education establishments in France (which together serve over 2,927,200 students⁸). It would therefore be interesting to explore the opinions of university presidents outside the field of health.

Conclusion

The findings of this study add to the literature by examining SFC policy implementation through the case of medical schools in France. Our results showed that SFCs are under-developed in medical schools in France, which may be explained by the fact that deans lend higher priority to other health topics, lack internal resources, have limited autonomy from their governing university authority, consider that their campus is not appropriate for SFC policy (too large or split across different locations), fear low policy adherence and acceptability. The deans spontaneously had little real understanding of SFC policy (as more than just a smoking ban) until we provided them with a complete definition of a SFC. Nevertheless, most deans held positive opinions toward SFC policy, especially once they were given a fuller picture of what SFC policies entail. The main barriers to SFC adoption are i) anticipated opposition from campus users and ii) a lack of resources. To ease these barriers, we provided a set of strategies that are useful for moving from what the transtheoretical model frames as a precontemplation or contemplation stage to the preparation stage.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

DG, AG and KGM. conceptualized the study design, and the interview guide. KGM and DG conducted the interviews. DG coded the data and prepared all figures and tables. DG, AG and KGM interpreted the data, and DG summarized the results. DG and AG wrote the first draft. KGM reviewed and edited the

manuscript. KGM supervised the entire process. All authors have read and approved the final manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Regarding ethical concerns, the French school of public health institutional review board (IRB) found this study exempt from the need for IRB review. Data collection and analysis were conducted in compliance with point 35 of the European General Data Protection Regulation (GDPR)⁹ and with article 64 of the French data privacy law.¹⁰ The study protocol strictly followed the principles of the Declaration of Helsinki [22] and the guidelines outlined by the French Data Protection Authority¹¹ (CNIL in French). This research mobilizes social sciences with the aim of capturing and collecting medical-school deans' perceptions. Consequently, French legislation on research involving human subjects, known as Jardé law,¹² does not apply, and so this research only required oral and written informed consent to data collection, data analysis and publication [23]. The interviews were voluntary and confidential. Informed consent was obtained from all participants who were provided with detailed information about the study prior to their participation before (oral consent) and after (written consent) the interview.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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