

Original Article

Student behavior toward the implementation of smoke-free area policy in health higher education institutions: A descriptive study

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Abstract

Background

Smoke-Free Area (SFA) policies are an essential public health intervention aimed at reducing tobacco exposure and promoting a healthy environment, particularly in higher education institutions. However, compliance remains a challenge, even in health-focused universities where students are expected to model healthy behavior.

Objective

This study aims to analyze student behavior toward the implementation of the Smoke-Free Area (SFA) policy in a health higher education institution.

Methods

A descriptive quantitative study was conducted among 32 male students at STIKes Al-Maarif Baturaja using a total sampling technique. A structured questionnaire was used to assess students' knowledge, attitude, and practice regarding the SFA policy. Data were analyzed using univariate descriptive statistics.

Results

The findings revealed that while most students demonstrated a positive attitude toward the SFA policy (62.5%), only 28.1% had good knowledge and 18.8% showed favorable practices. The majority exhibited moderate levels of knowledge (37.5%) and practice (50%), with 34.4% showing poor knowledge and 31.2% demonstrating poor adherence in practice. Students were aware of the health risks of smoking and supported policy enforcement, but lacked sufficient knowledge of policy implementation and institutional mechanisms.

Conclusion

There is a notable gap between students' positive attitudes and their actual practices and knowledge regarding the SFA policy. This misalignment indicates that students are not yet fully engaged as active change agents in promoting a smoke-free campus. It is crucial for institutions to strengthen educational efforts, provide clear policy communication, and engage students in policy enforcement mechanisms. Integrating SFA values into academic and extracurricular activities may foster better awareness and behavioral alignment among health students.

Background

The Smoke-Free Area (SFA) policy represents a critical strategy in the effort to reduce tobacco consumption and protect the public from exposure to cigarette smoke (Martins et al., 2021). As a regulatory approach, SFA is designed to create a healthy environment, particularly in public spaces and educational institutions. Universities, as higher education institutions, hold a strategic role in supporting this policy due to their function as centers of learning and character development for younger generations (Yang et al., 2020). Nevertheless, the implementation of SFA policies continues to face significant challenges across institutions, especially regarding individual compliance with the established regulations (Danielsen, Jensen, Kjeld, Bast, & Andersen, 2023).

Health-related higher education institutions, which are expected to model healthy lifestyle behaviors, are not exempt from the issue of smoking behavior on campus (Martins et al., 2021). Ironically, a number of health students—future health professionals—engage in smoking behaviors that contradict the promotive and preventive values inherent in health sciences (Prijić & Igić, 2021). This phenomenon highlights a disconnection between students' health knowledge and their actual behavior. Such incongruence underscores the necessity to evaluate students' behavior toward the SFA policy, encompassing their level of understanding, attitudes, and adherence to the regulations (Riera-Sampol, Rodas, Martínez, Moir, & Tauler, 2022).

Student behavior regarding the SFA policy is influenced by various factors, including social

norms, risk perception, knowledge of smoking hazards, and the effectiveness of policy implementation within the campus setting (Kuwabara et al., 2023). Students with higher awareness of the dangers of smoking and a clear understanding of the purpose of SFA policies are more likely to exhibit positive attitudes and higher levels of compliance (Seo, Di Carlo, Dong, Fournier, & Haykal, 2021). In contrast, inconsistent enforcement and a permissive campus culture toward smoking may diminish the policy's effectiveness. Thus, it is crucial to further investigate the determinants that shape student behavior in relation to SFA enforcement (Rababah & Al-Hammouri, 2023).

Moreover, students' perception of the SFA policy is closely linked to how the policy is communicated and enforced by the institution (Mylocopos et al., 2024). Ineffective dissemination and the absence of clear sanctions for violations may contribute to the perception that the policy is non-compulsory or merely symbolic (Singh, Chand, & Chen, 2021). Additionally, the lack of student involvement in the formulation or monitoring of the SFA policy may reduce their sense of ownership, leading to disengagement or even open resistance (Garzillo et al., 2022).

Previous studies conducted internationally have demonstrated that the success of SFA policies is largely dependent on the level of acceptance and compliance among the campus community (Aini, Apriyanti, & Febriyanto, 2024). These studies suggest that individual responses to public health policies, such as SFA, result from the interplay between personal attitudes, social norms, and perceptions of institutional authority. Accordingly, research that focuses on student behavior—as a key component of the academic community—may offer a more comprehensive understanding of the challenges and opportunities associated with implementing SFA policies in higher education settings.

Students in health-focused higher education institutions constitute a particularly important population to study, given their academic background in public health (Budianto, 2020). Their behavior regarding the SFA policy not only affects the campus environment but also reflects their readiness to serve as agents of change within society (Pamungkas, Maramis, & Tucunan, 2020). When health students fail to

comply with basic health policies such as SFA, it raises concerns about their future professional integrity. Conversely, if they demonstrate positive behaviors, it reinforces public health messages and sets a tangible example within the broader community (Arisandi & Novitry, 2024).

This study aims to analyze student behavior toward the implementation of the Smoke-Free Area (SFA) policy in health higher education institutions.

Methods

Study Design

This study employed a quantitative approach with a descriptive design. The primary aim of this design was to portray student behavior toward the implementation of the Smoke-Free Area (SFA) policy within a health higher education setting. A descriptive design was selected to identify patterns, tendencies, and levels of knowledge, attitudes, and practices without introducing any direct intervention.

Sampling

The population of this study comprised all active male students enrolled at STIKes Al-Maarif Baturaja. A total sampling technique was applied, involving all 32 individuals within the population. This method was chosen due to the relatively small population size, allowing comprehensive representation. The data collection was conducted over a three-month period, from January to March 2025.

Instruments

The research instrument consisted of a structured questionnaire covering three main variables: knowledge, attitude, and practice toward the SFA policy. The questionnaire was adapted from a previous study by Pamungkas et al. (2020) and included closed-ended statements rated using a Likert scale. The knowledge section assessed students' understanding of the content and objectives of the SFA policy; the attitude section evaluated their perceptions and viewpoints; and the practice section examined their actual behaviors in supporting the SFA policy on campus.

Data Collection

Data were collected directly by distributing the questionnaire to all respondents. Prior to completion, participants were given a clear explanation of the study objectives and the procedures for filling out the questionnaire. The questionnaire was completed independently by the students without external influence. Afterward, all completed forms were collected and reviewed for completeness before being analyzed.

Data Analysis

The collected data were analyzed using univariate descriptive statistical methods. Frequency and percentage distributions were used to describe each variable: knowledge, attitude, and practice. The results were presented in tables and narrative descriptions to facilitate interpretation. Descriptive statistics were deemed appropriate given the study's aim to describe phenomena rather than test relationships between variables.

Ethical Consideration

This study adhered to ethical principles applicable in social and health research. Ethical

approval was obtained from STIKes Al-Maarif Baturaja prior to data collection. Each respondent received an informed consent form detailing the study objectives, benefits, confidentiality assurances, and their rights to decline or withdraw from participation at any point without consequence. Respondent anonymity was maintained by excluding names and personal identifiers from the final report.

Results

Knowledge is one of the key factors influencing an individual's behavior toward a policy, including the Smoke-Free Area (SFA) policy. In this study, students' knowledge regarding the implementation of the SFA policy was assessed through 16 statements that reflect their level of understanding concerning the objectives, legal basis, implementation strategies, and supporting elements of SFA within the campus environment. Each statement was rated using a five-point Likert scale: Strongly Disagree (SD), Disagree (D), Slightly Agree (SA), Agree (A), and Strongly Agree (SA). Table 1 presents the distribution of student responses to all statements within the knowledge domain.

Table 1. tudents' Knowledge Questionnaire Results on the Implementation of Smoke-Free Area (SFA) Policy in Health Higher Education Institutions

Knowledge on the Implementation of the Smoke-Free Area (SFA) Policy	SD	D	SA	A	SA
Aware that the SFA aims to protect the public from the harmful effects of cigarette smoke	0	1	5	10	16
Aware that the implementation of the SFA is based on legal regulations	0	4	14	10	4
Aware that university campuses are included as target areas for SFA implementation	0	2	7	11	12
Aware that the SFA has been implemented within the campus environment	1	5	12	10	4
Aware of the existence of studies or discussions related to the SFA policy on campus	2	8	17	4	1
Aware of the presence of a task force or implementing team for the SFA policy on campus	3	9	14	5	1
Aware of the existence of a written policy prohibiting smoking within the campus	2	6	12	9	3
Aware of the availability of facilities or infrastructure supporting SFA implementation, such as smoke-free areas	1	4	10	12	5
Aware that the campus has previously conducted SFA-related socialization	3	10	13	5	1
Aware that there is monitoring of SFA implementation on campus	2	8	14	6	2
Aware that sanctions exist for violations of the SFA policy	1	7	12	9	3
Aware of a smoking ban across all areas of the campus	0	3	8	11	10
Aware of a smoking ban on campus transportation or public transport used by the academic community	1	4	11	10	6
Aware that tobacco industry advertisements and promotions are prohibited on campus	2	5	12	9	4
Aware that sponsorships from tobacco companies are not permitted in student activities	3	6	11	9	3

*Score Description: Strongly Disagree (SD), Disagree (D), Slightly Agree (SA), Agree (A), and Strongly Agree (SA).

Based on Table 1, it is evident that male students' knowledge of the Smoke-Free Area (SFA) policy remains varied. Most students agreed or strongly agreed with general statements regarding the purpose of the policy and the smoking ban. However, a considerable lack of awareness was observed in relation to institutional aspects, such as the existence of a

task force, policy reviews, and monitoring systems for SFA implementation. These findings highlight the need to strengthen the dissemination and transparency of the SFA policy on campus to ensure that all students fully understand its content and implementation mechanisms.

Table 2. Students' Attitudes Toward the Implementation of the Smoke-Free Area (SFA) Policy in Health Higher Education Institutions

Attitudes Toward the Implementation of the Smoke-Free Area Policy	SD	D	SA	A	SA
The SFA policy is necessary to protect the public from health risks associated with smoking.	0	0	1	11	20
The SFA policy should be supported by written legal regulations to ensure fair enforcement.	0	1	4	15	12
University campuses should be designated as smoke-free zones, as they are centers for teaching and learning.	0	0	2	13	17
The SFA policy should be implemented consistently within health higher education institutions.	0	0	3	14	15
Regular reviews or evaluations of the SFA policy implementation should be conducted on campus.	0	0	5	12	15
A dedicated task force should be established to oversee the implementation of the SFA policy.	0	0	3	13	16
A written policy prohibiting smoking in campus areas should be in place.	0	0	2	14	16
Supporting facilities or infrastructure for SFA enforcement should be available on campus.	0	0	4	15	13
Socialization or awareness campaigns regarding the SFA policy should be conducted regularly.	0	0	2	12	18
Direct monitoring of SFA policy implementation should be carried out on campus.	0	0	3	14	15
Firm sanctions should be imposed on individuals who violate the SFA policy.	0	0	2	13	17
Smoking bans should be enforced throughout the entire campus environment.	0	0	3	12	17
Smoking should be prohibited on all modes of transportation used by academic community members.	1	1	5	14	11
Advertising and promotion of tobacco products should not be allowed on campus.	0	1	6	13	12
Student activities should not be sponsored by the tobacco industry.	1	2	7	11	11

*Score Description: Strongly Disagree (SD), Disagree (D), Slightly Agree (SA), Agree (A), and Strongly Agree (SA).

Based on Table 2, the majority of students demonstrated a positive attitude toward the implementation of the Smoke-Free Area (SFA) policy. This is reflected in the high percentage of "Agree" and "Strongly Agree" responses to most statements, particularly those related to the need for written regulations, enforcement, and sanctions for violators. However, a number of respondents expressed less support for the prohibition of tobacco industry promotions and sponsorships, indicating a degree of ambivalence toward the external aspects of the SFA policy. These findings highlight the

importance of strengthening health advocacy values within the academic curriculum and student activities.

Table 3 indicates that most students perceive the implementation of the Smoke-Free Area (SFA) policy as partial. Although some students agreed that the campus has formally adopted and implemented the policy, there remains considerable uncertainty regarding the existence of a task force, policy evaluations, monitoring mechanisms, and enforcement of sanctions. These findings suggest a need for

institutional efforts to strengthen the implementation and communication aspects of the policy to establish a genuinely smoke-free

learning environment in a systematic and integrated manner.

Table 3. Students' Practices Toward the Implementation of the Smoke-Free Area (SFA) Policy in Health Higher Education Institutions

Practices Regarding the Implementation of the Smoke-Free Area Policy	SD	D	SA	A	SA
The SFA policy has been implemented to protect the public from the dangers of smoking within the campus environment.	2	4	15	9	2
The university has established written legal regulations related to the SFA policy.	3	6	14	7	2
The university has been designated as one of the target areas for SFA policy implementation.	2	3	16	9	2
The SFA policy has been formally adopted and enforced within the campus.	1	5	13	10	3
Policy-related studies or reviews on the SFA have been conducted by the institution.	2	7	14	8	1
A task force responsible for implementing the SFA policy has been formed on campus.	2	6	13	9	2
The written smoking prohibition policy has been officially published.	1	4	15	9	3
Supporting infrastructure for the SFA (e.g., no-smoking signs, designated smoke-free areas) is available on campus.	0	3	14	11	4
Socialization or awareness efforts regarding the SFA policy have been conducted.	3	8	15	5	1
Monitoring of SFA policy implementation has been actively carried out.	2	6	16	6	2
Sanctions for violations of the SFA policy have been enforced on campus.	3	7	14	6	2
A comprehensive smoking ban has been implemented across all campus areas.	2	4	12	10	4
Smoking bans have been applied to campus vehicles and public transportation used by the academic community.	1	5	13	10	3
There are no tobacco advertisements or promotional materials within the campus environment.	0	2	5	14	11
Student activities are no longer sponsored by the tobacco industry.	1	3	8	13	7

*Score Description: Strongly Disagree (SD), Disagree (D), Slightly Agree (SA), Agree (A), and Strongly Agree (SA).

Table 4. Distribution of Respondents Based on Knowledge, Attitude, and Practice Toward the Smoke-Free Area (SFA) Policy in Health Higher Education Institutions

Categories	Knowledge	Attitude	Practice
Good	9 (28.1%)	20 (62.5%)	6 (18.8%)
Moderate	12 (37.5%)	8 (25.0%)	16 (50.0%)
Poor	11 (34.4%)	4 (12.5%)	10 (31.2%)

Based on the table 4, the majority of students demonstrated a positive attitude toward the implementation of the Smoke-Free Area (SFA) policy, with 62.5% categorized as having a good attitude. However, only 28.1% of students exhibited good knowledge, and an even smaller proportion (18.8%) demonstrated good practices. Most students' practices fell into the moderate category (50%), while the proportion of students with poor knowledge remained relatively high (34.4%). These findings suggest that although students generally support the SFA policy in terms of attitude, there is a need

for educational efforts and behavioral reinforcement to enhance the alignment between knowledge, attitude, and practice in promoting a smoke-free campus environment.

Discussion

The findings of this study indicate that students' knowledge regarding the Smoke-Free Area (SFA) policy is still highly variable, with the majority of respondents falling into the moderate (37.5%) and poor (34.4%) categories. Only 28.1% of respondents demonstrated good

knowledge about the objectives, legal basis, and implementation of the SFA policy within the campus environment. This suggests that even though students are enrolled in a health education institution, their understanding of public health policies remains uneven. Many were unaware of key indicators such as the existence of a task force, policy evaluations, and enforcement mechanisms. This lack of comprehensive knowledge may hinder students' readiness to fully support and comply with the SFA policy. Therefore, it is essential to enhance educational outreach and socialization efforts so that students can better understand the significance and urgency of the policy (Emre, Edirne, & Ozsahin, 2021; Rodakowska et al., 2020).

Despite the suboptimal level of knowledge, most students (62.5%) exhibited a positive attitude toward the SFA policy. This indicates a generally favorable view and support for the policy among students. Their attitudes were reflected in agreement with the need for written regulations, enforcement, and rejection of tobacco industry influence in campus activities. This phenomenon aligns with theories suggesting that attitudes may be shaped by social and cultural values, even in the absence of in-depth formal knowledge. Moreover, campus norms and environmental influences may contribute to the formation of positive attitudes toward health-related policies such as SFA. Thus, it is important for institutions to maintain and reinforce a campus environment that fosters health-conscious and smoke-free attitudes (Yang, Yang, & Zhang, 2022).

However, these positive attitudes have not fully translated into tangible actions. Data show that only 18.8% of students demonstrated good practices, while the majority fell into the moderate category (50%). This suggests that although students conceptually support the SFA policy, most have yet to engage actively in its enforcement, socialization, or compliance. This discrepancy between attitude and practice calls for further attention. A possible explanation is the weakness in institutional oversight and limited student involvement in policy implementation. Students may not feel

empowered or responsible for the policy's execution, resulting in passive behaviors.

These findings support those of Pamungkas et al. (2020), who argued that although students may have positive attitudes toward SFA policies, their actions are often limited due to a lack of structural support from the institution. The presence of formal policies, effective communication strategies, and dedicated implementation teams are crucial for encouraging student participation in creating a smoke-free campus. Without clear structures and genuine engagement, students are likely to remain passive recipients of the policy rather than active agents of change. This emphasizes that behavioral change depends not only on knowledge and attitudes but also on environmental and institutional systems that promote participation. Therefore, universities should systematically develop student involvement through forums, advocacy training, and campus-wide SFA campaigns (Aoike et al., 2022).

In addition to institutional factors, social influences such as peers, lecturers, and staff also play a role in shaping student behavior. When smoking is normalized or goes unchallenged on campus, students may not feel obligated to comply with the SFA policy. This study also found that students lacked awareness of sanctions or real-time monitoring, signaling weak enforcement by the university. In fact, social control is a vital element in shaping behavior. Without consistent and visible enforcement, students may perceive the SFA policy as non-binding. Therefore, forming student-led change agents and enforcing rules with consistency are essential steps in fostering appropriate behavior (Benny et al., 2023).

The SFA policy should not merely be understood as a rule, but as a commitment by health higher education institutions to foster a healthy and addiction-free learning environment (Hutchesson et al., 2022). With their health-oriented background, students are expected to be pioneers in advocating for healthy, smoke-free lifestyles. However, in practice, there remains ambivalence in fulfilling this role, as the policy has not yet been fully embedded in the

organizational culture of the campus (Mansouri et al., 2020). This study serves as a reflection on the need to integrate SFA values across all educational components, including curricula, extracurricular activities, and institutional policies. A cross-sectoral and integrative strategy should be developed to ensure that students not only cognitively understand the policy but also internalize it both socially and morally (Al-Othman, Ghanim, & Alqaraleh, 2021).

Viewed holistically, this study reveals a gap that must be bridged between knowledge, attitudes, and practices. According to Green and Kreuter's theory of health behavior, behavioral change requires an interaction of predisposing factors (knowledge and attitude), enabling factors (institutional support, infrastructure), and reinforcing factors (rewards, social monitoring) (Chen et al., 2024). In this study, the enabling and reinforcing factors appear to be suboptimal, which hinders the translation of positive attitudes into concrete actions. Therefore, intervention strategies to support SFA implementation must address all these factors in an integrated and sustained manner (van Hooijdonk et al., 2022).

In conclusion, the success of the Smoke-Free Area policy in health higher education institutions cannot rely solely on formal regulation. A comprehensive approach is needed—one that includes ongoing education, the cultivation of a smoke-free culture, and the active involvement of students as change agents. This study recommends that institutions intensify policy dissemination efforts, establish implementing teams that involve students, and integrate SFA values into both academic and campus life. Through such strategies, the vision of a healthy, smoke-free campus can be realized in a concrete and sustainable way.

Conclusion and Recommendation

The findings of this study reveal a significant gap between students' knowledge, attitudes, and practices regarding the implementation of the Smoke-Free Area (SFA) policy in health higher education institutions. While students generally express positive attitudes and conceptual

support for the policy, this support is not sufficiently reflected in their level of understanding or in their actual behavior. Many students remain unaware of critical institutional components of the policy, and their involvement in its practical enforcement is limited.

This disconnect indicates that awareness alone is not enough to drive effective implementation. Without comprehensive knowledge and active participation, students are unlikely to function as effective agents of change within the campus environment. Therefore, a more integrated approach is needed—one that reinforces education, enhances communication strategies, and ensures institutional structures are in place to empower students and encourage sustained engagement with the policy. Promoting a truly smoke-free campus requires more than regulation; it demands a cultural shift supported by continuous learning and meaningful student involvement.

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The authors declare no competing interests.

Declaration on the Use of AI

No AI tools were used in the preparation of this manuscript.

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