



Exploring the Influence of Civil Society Organizations on People's Smoking Behaviors: A Cross-sectional Study in Bangladesh

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Received: 12 January 2026

Revised: 25 March 2026

Accepted: 04 May 2026

Published: 30 June 2026

How to cite this paper:

Rana, S., Hossain, A., Ahmed, F.,
Rouf, M. A., & Hossain, M. A. (2026).
Exploring the Influence of Civil
Society Organizations on People's
Smoking Behaviors: A Cross-
sectional Study in Bangladesh. *Quest
Journal of Management and Social
Sciences*, 8 (2), 428-444.
<https://doi.org/10.3126/qjmss.v8i2.96121>

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Abstract

Background: Tobacco consumption results in serious health complexities and adverse socio-economic consequences. Bangladesh, one of the highest tobacco producing and consuming countries in the world, has an ambitious vision to be free from tobacco use by 2040. Realizing this vision requires synergistic efforts between the government and the Civil Society Organizations (CSOs) to combat the prevalence of tobacco use. However, no comprehensive attempt has been made to investigate whether anti-tobacco campaigns of Civil Society Organizations are associated with the quitting tendencies of youth smokers in Bangladesh's capital, Dhaka.

Purpose: This study seeks to explore whether CSOs influence the tobacco (cigarettes) quitting tendency of youth smokers in Dhaka City through their anti-tobacco campaigns.

Design/methodology/approach: Following a quantitative research approach, this study employed a Cross-Sectional Questionnaire Survey to collect data from 407 youth smokers from Dhaka. Descriptive and inferential statistics were used for understanding the smokers' exposure to CSOs' anti-tobacco campaigns along with various facets of those campaigns and their associations with respondents' quitting tendencies.

Findings: The findings indicate that age and occupation were significantly associated with youth smokers' quitting tendencies, and students were more likely to have a quitting tendency compared to youths in other occupations. Beyond socio-economic characteristics, we have found significant associations between different facets of anti-tobacco campaigns and respondents' tobacco quitting tendencies including the innovative and engaging strategies of the CSOs, dissemination of information regarding the dangers of tobacco use, and campaigns increasing respondents' health risks for tobacco consumption. Additionally, individuals who perceived that CSOs are influential in shaping tobacco control policies and those who heard about such policy reported higher quitting tendencies.

Conclusion: The study highlights that anti-tobacco campaigns are associated with higher quitting tendencies among Bangladeshi urban youths and underscores the aspects of campaign strategies that can be strengthened to further enhance their effectiveness in encouraging smoking cessation.

Keywords: Civil society organizations, anti-tobacco campaigns, youth smokers, tobacco quitting tendency.

1. Introduction

Tobacco consumption results in serious health complexities and adverse socio-economic consequences. This global public health concern affects not only smokers but also non-smokers exposed to secondhand smoke. Approximately, there are 1.3 billion tobacco users in the world (WHO, 2025), and while all forms of tobacco products (such as cigarette, smokeless tobacco products, waterpipe tobacco, heated tobacco) are detrimental to health, cigarette smoking remains the most prevalent form. The widespread exposure to tobacco products has alarming consequences since more than 7 million people die from tobacco consumption every year including 1.6 million non-smokers, exposed to secondhand smoke (WHO, 2025). The danger of tobacco use is also prevalent in Bangladesh which ranked the 5th largest tobacco consuming country as well as the 12th largest tobacco producing country in the world (Pandey, 2024; The Financial Express, 2025). 35.3% of the adults (aged over 15) in Bangladesh consumes tobacco, and tobacco use collectively accounts for 20% of the total annual deaths in the country (BBS, 2017). To control this tobacco epidemic, the government of Bangladesh aims to ensure a tobacco-free country by 2040 (Ahmad, 2022).

Under the circumstances, it is imperative to implement anti-tobacco initiatives. Acknowledging this urgency, Bangladesh ratified the World Health Organization's Framework Convention on Tobacco Control (FCTC) more than two decades ago in 2004 (Naznin et al., 2021). After its ratification, the tobacco control policies in the country gained momentum, and the first tobacco-related legislation was enacted in 2005, known as the "Smoking and Tobacco Products Usage (Control) Act 2005" (amended in 2013) (NTCC, 2013). Notable progress has been witnessed after its formulation since the prevalence of tobacco usage declined from 43.3% to 35.3% between 2009 and 2017 (Ahmad, 2022). However, Bangladesh still records a high prevalence of tobacco use, despite existing rules prohibiting its consumption (BBS, 2017). Therefore, legislations alone are not sufficient to control the waves of tobacco epidemic (Karmakar, 2010). It is more difficult in Bangladesh which is one of the largest tobacco consuming countries (Ahmed, 2020) with the widespread use of different forms of tobacco products (Islam, 2022). Against this backdrop, the involvement of Civil Society Organizations (CSOs) is crucial in Bangladesh to control the high prevalence of tobacco use. These non-government, non-profit, and voluntary organizations can play catalytic roles in tobacco control.

International evidences suggest that CSOs have been the engine of tobacco control in Latin America, the Caribbean, as well as in Indonesia where five operational roles of CSOs have been collectively recognized; advocacy, coalition builder among different organizations, provider of evidence-based information, watchdog, and service provider against tobacco (Champagne et al., 2010; Tandilittin, 2013). These studies discussed CSOs' influence on the policy level without mentioning their impact on individuals' smoking behavior. With similar policy level concentration, Matthes et al. (2025) showed that CSOs were essential in the implementation of tobacco control policies in six low- and middle-income countries.

Bangladeshi literature similarly concentrates on CSOs' influence at the policy level. CSOs here contributed to different fronts; advocacy to implement tobacco taxes (Hasan et al., 2025); implementing tobacco control taskforces at the rural areas (Jackson-Morris et al., 2015); anti-tobacco advocacy, law enforcement, evidence generation, and watchdog of anti-tobacco activities (Zaman et al., 2022); and implementing Article 5.3 of FCTC (Barry et al., 2022). Nevertheless, these studies have not addressed the questions whether exposure to CSOs' anti-tobacco campaigns and various facets of those campaigns influence individuals' smoking behavior.

However, a separate body of literature in Bangladesh examined interventions of CSOs and associated behavioral change. Naznin et al.'s (2023) four-wave longitudinal study demonstrates that anti-tobacco initiatives increased smokers' knowledge – which is linked to their quit intentions. Therefore, it recognizes awareness as an important prerequisite for behavioral change. Complementing this finding, Akter et al.'s (2024) meta-analysis revealed that anti-tobacco campaigns promoted smoking cessation. Moreover, pack-based graphic warning labels were associated with smokers quitting attempts in six administrative regions

in Bangladesh among smokers aged 16 to 55 years (Turk et al., 2018), and health warnings on tobacco packs were positively related to the respondents' quit intentions among the lower socio-economic groups of smokers in Bangladesh, (Mia et al., 2021). These studies collectively confirm that CSO campaigns disseminating health consequences due to tobacco consumption and warning-based stimuli can alter smoking behaviors.

As stated earlier, CSO-led anti-tobacco campaigns disseminate evidence-based information about the dangers of tobacco use, communicate associated policies against smoking, and provide support for quitting (Champagne et al., 2010; Tandilittin, 2013). Exposure to such information increases smokers' knowledge regarding health risks of smoking, and this awareness works as an important prerequisite for behavioral change and quit intentions (Naznin et al., 2023). Mia et al. (2021) and Turk et al. (2018) further linked exposure to health consequences due to tobacco consumption and warning-based stimuli to smoking behaviors and quit intentions. Taken together, these studies suggest a plausible pathway that exposure to tobacco-associated harm may shape smokers' risk perception of tobacco use which is likely to influence their decisions to quit.

However, this pathway remains unexplored among the youth smokers in Dhaka City. While the existing literature heavily focused on the policy level impacts of CSOs and limited studies sought to unpack the impacts of anti-tobacco initiatives on smoking cessation and quit intentions either among the people of rural areas, different age groups, or a particular social class, no comprehensive attempt has yet been made to explore whether anti-tobacco campaigns are associated with the quitting tendencies of youth smokers in Bangladesh's capital, Dhaka. The current study addresses this gap and seeks to explore whether such campaigns can truly influence their smoking behaviors as well as whether there are associations between different facets of these campaigns (such as innovative and engaging strategies, information dissemination regarding dangers of tobacco use, advocating awareness about smoking associated health risks, perceived influence of CSOs on tobacco control policies, knowledge about any such CSO-influenced policy) with their quitting tendencies. For this purpose, the research revolves around the following two research questions throughout the study – 1) Do the Civil Society Organizations' anti-tobacco campaigns influence youth smokers in Dhaka, Bangladesh? 2) What factors are associated with their current tobacco use, quitting tendencies, and behavioral change regarding smoking?

2. Methods

2.1 Study Design

The data were collected using a cross-sectional survey between March and April 2025 from the youths of Dhaka City. The young tobacco users aged between 18 and 35 years from Dhaka City were included as the sample for the study since people aged between 18 and 35 years are considered as 'youth' in Bangladesh (Ministry of Youth and Sports, 2017). The reason for choosing youths is due to the high exposure of this age group to tobacco consumption in Bangladesh (BBS, 2017). The exact number of youth smokers in Dhaka City is unknown. However, total 33.6% of people from Dhaka division consumes tobacco according to the Global Adult Tobacco Survey (GATS) Bangladesh 2017 (BBS, 2017), and the age group 18 to 35 years comprise more than 35% of the total population of Bangladesh reported by the Bangladesh Bureau of Statistics (BBS, 2022). Therefore, exploring their exposure to the CSOs' anti-tobacco campaigns can help to examine the prevalence of CSOs' activities and the subsequent impact that these activities have on them.

Again, the justification for choosing Dhaka City for the study is that being the capital of Bangladesh, it provides ample scope for the CSOs to work regarding tobacco control, and they can easily reach the people to aware them of the dangers of tobacco. Besides, it provided researchers with ease of access to individuals from diverse educational, social, cultural, and economic backgrounds, allowing a comprehensive dataset to understand the level of influence of CSOs on changing their smoking behaviors. In doing so, the researchers relied on the quantitative research approach. Here, the quantitative method was employed to

portray the responses of the youths to explore how the CSOs' activities influence them, the association of their smoking status and their quitting tendencies with different variables, and what are the factors that influence their smoking status and quitting tendencies.

2.2 Sampling Design

The researchers relied on the non-probability convenience sampling technique to select respondents for the study. Since a complete sampling frame of youth smokers in Dhaka city did not exist at the time of this study, convenience sampling technique was the most appropriate and feasible one. To ensure a diversity in the sample, respondents were contacted at different public places such as university campuses, public parks, tea stalls, and bus stands that helped the researchers to collect data from people with different socio-economic backgrounds (age, gender, marital status, education, and occupation) as shown in Table 1. Respondents were included based on the following criteria: (i) youths aged between 18 and 35 as defined by the National Youth Policy 2017 of Bangladesh; (ii) daily smokers who smoke at least one cigarette every day (WHO, 2013); (iii) residents of Dhaka city; and (iv) willing to participate in the study providing informed consent. Respondents who did not meet any one of these criteria were excluded from the study. As the total number of youth smokers in Dhaka city was unknown, the researchers employed the sample size formula of Bartlett et al. (2001) for an infinite population as follows:

$$\frac{p(1-p) \times Z^2}{d^2} = 384.16$$

where: n = required sample size for infinite population (more than 50,000); Z = Z value (e.g., 1.96 for a 95% confidence level); P = expected population proportion (expressed as a decimal) assumed to be 0.5 (50%) since this would provide the maximum sample size; d = margin of error: 0.05 (at 5%). Based on this estimation, the sample size was determined to be 384, which was subsequently increased to 403 anticipating a non-response rate of 5%. Finally, the researchers contacted and collected data from a total of 407 youths from Dhaka City for the study.

2.3 Data Collection Instruments

For the study, the researchers collected data through a semi-structured questionnaire. Face-to-face interviews were conducted based on the questionnaire which included both open-ended and close-ended questions. For making the questions easily understandable to the respondents, the final version was translated into Bengali as it is the native language of Bangladesh. Then the printed version was used by the researchers for data collection from different locations of Dhaka City. When the respondents did not understand the research question(s) or were having difficulty in answering them, the researchers explained the question(s) and assisted them to accurately complete the questionnaire.

The questionnaire covered the respondents' socio-economic characteristics; tobacco consumption status; awareness and perceived effectiveness of the CSOs' anti-tobacco campaigns; CSOs' role in shaping their attitudes, health risks, and change in smoking behaviors; and perceived usefulness of CSOs on tobacco control policies. To ensure the validity of the questionnaire, a pre-testing was carried out on 40 respondents, and the final version was prepared with necessary modifications to enable the questionnaire to answer the research questions.

2.4 Data Analysis Techniques

Concrete Analysis

It was mentioned earlier that data for the study were collected through a questionnaire survey. The Statistical Package for Social Sciences (SPSS Version 27) and Microsoft Excel were used for analyzing the data. Then the data were interpreted following Descriptive Statistics, Chi-square tests, and Regression Analysis. Descriptive Statistics revealed the socio-economic information of the respondents. Chi-square revealed the association of different variables and binary logistic regression investigated the potential factors influencing smoking behaviors.

Chi-Square Tests

Two tests were performed. The first one was conducted to understand the association of the respondents' socio-economic characteristics with their current smoking status, tobacco quitting tendency, and exposure to the CSO campaigns (Table 2). The second test revealed the association of tobacco quitting tendency with awareness and perceived effectiveness of CSOs anti-tobacco campaigns; roles of CSOs in respondents' attitudes, health risks, and change in smoking behaviors; and the perceived usefulness of CSOs in tobacco control policies (Table 3). All the tests were considered significant at the 0.05 level ($p < 0.05$).

Regression Analysis

The binary logistic regression investigated the influencing factors on respondents' current smoking status, tobacco quitting tendency, and influence of CSOs to make them quit tobacco. For regression analysis, 1 indicates that there is no influence of the factors on the dependent variable, whereas 2 indicates that there is influence of the factors on the dependent variables. Education and occupation were merged into two and four dummy variables respectively since they had a very few cases in some of the responses. It was done to ensure greater stability and generalizability of the results.

2.5 Ethical Considerations

The research followed the principles of Helsinki Declaration. The respondents provided informed consent after hearing the purpose of the study, and prior to their consent, data were collected. Additionally, all of them were informed of their rights to withdraw their participation from the study at any point in time without any consequence. The identity of the respondents has been kept anonymous throughout the study.

3. Results

3.1 Socio-economic Characteristics of the Respondents

Table 1 shows the socio-economic characteristics of the respondents. 55.8% of the respondents aged between 25 and 30. 87% of them were male. Regarding marital status, 69.8% were unmarried and the rest of them were married. Moreover, 79.8% of the respondents had either undergraduate or postgraduate degrees. In terms of occupational status, almost half of them were students (49.1%). The findings underscore the dominance of male, unmarried, highly educated youths, and students in this study. The stark gender imbalance reflects higher smoking prevalence among males, signaling the higher need for male-targeted intervention through the campaigns. Besides, the high percentage of unmarried respondents is consistent with the young age profile of the respondents, and it reflects the fact that half of them were students. These three demographic characteristics – young, students, and unmarried should be the primary target of advocacy campaigns to refrain them from smoking before their initiation. Furthermore, the concentration of highly educated respondents reveals that even highly educated youths are susceptible to tobacco use.

Table 1

Socio-economic characteristics of the respondents (n= 407)

Variables	Category	Frequency (N)	Percentage (%)
Age	18-24	126	31%
	25-30	227	55.8%
	31-35	54	13.3%
Gender	Male	354	87%
	Female	53	13%
Marital Status	Married	123	30.2%
	Unmarried	284	69.8%

Variables	Category	Frequency (N)	Percentage (%)
Education	No Formal Education	4	1%
	Primary Education	5	1.2%
	Secondary Education	14	3.4%
	Higher Secondary Education	56	13.8%
	Undergraduate/Postgraduate	325	79.8%
	MPhil/ PhD	3	0.7%
Occupation	Student	200	49.1%
	Job seekers	54	13.3%
	Employed (Government)	20	4.9%
	Employed (Private)	57	14%
	Self-employed	41	10.1%
	Doctor	7	1.7%
	Homemaker	2	0.5%
	Lawyer	3	0.7%
	Unemployed	23	5.7%

3.2 Prevalence of Smoking and the Association between Variables

Table 2 shows the chi-square analysis of the respondents' current smoking status, tobacco quitting tendency, and CSOs' campaign exposure with socio-economic characteristics. Age, gender, and education level of the respondents were significantly associated with their current smoking status. It indicates that smoking status varies by the age group of the youths, their gender, and across their education level. The significance in the age group indicates that the smoking prevalence varies by respondents' age where higher age had more smoking prevalence, although this association did not reach statistical significance in the regression analysis (Table 4). The association with gender reveals that smoking prevalence is higher among males compared to females evidenced through the results of regression analysis. The statistical significance of education implies that it has positive role to play in respondents' smoking status, where higher educated youths were less likely to smoke than lower educated youths similar to regression analysis. In addition, respondents' tobacco quitting tendency was associated with their age and occupation. The association with occupation demonstrates that respondents' smoking status varied through the nature of their occupation. Regression analysis further states that students among all the occupation categories were more likely to have a quitting tendency. Moreover, marital status and education level were significantly associated with respondents' exposure to CSO campaigns implying that respondents' exposure to the campaigns was systematically varied by their marital status and educational attainment.

Table 2

Chi-square tests-Current Smoking Status, Tobacco Quitting Tendency, and CSO-led Campaign Exposure with Respondents' Socio-economic Characteristics

Variables	N (%)	Current smoking status p-value	Tobacco quitting tendency p-value	Exposure to CSO campaigns p-value
Age Group				
18-24	126 (31%)	0.038	0.048	0.065
25-30	227 (55.8%)			
31-35	54 (13.3%)			

Variables	N (%)	Current smoking status p-value	Tobacco quitting tendency p-value	Exposure to CSO campaigns p-value
Gender				
Male	354 (87%)	<0.001	0.092	0.281
Female	53 (13%)			
Marital Status				
Married	123 (30.2%)	0.322	0.730	0.006
Unmarried	284 (69.8%)			
Education				
No formal education	4 (1%)	0.014	0.502	0.020
Primary education	5 (1.2%)			
Secondary education	14 (3.4%)			
Higher secondary education	56 (13.8%)			
Undergraduate/Postgraduate	325 (79.8%)			
MPhil/PhD	3 (0.7%)			
Occupation				
Student	200 (49.1%)	0.676	0.026	0.159
Job seekers	54 (13.3%)			
Employed (Government)	20 (4.9%)			
Employed (Private)	57 (14%)			
Self-employed	41 (10.1%)			
Doctor	7 (1.7%)			
Homemaker	2 (0.5%)			
Lawyer	3 (0.7%)			
Unemployed	23 (5.7%)			

Bold values are considered statistically significant at the 0.05 level ($p < 0.05$).

Table 3 shows the association of tobacco quitting tendency with awareness and perceived effectiveness of CSOs' anti-tobacco campaigns; roles of CSOs in shaping respondents' attitudes, health risks, and change in smoking behaviors; and perceived usefulness of CSOs in tobacco control policies. The innovative and engaging strategies of the CSOs were significantly associated with respondents' tobacco quitting tendency. Again, CSOs' information regarding the dangers of tobacco, and campaigns that increased their awareness about health risks were positively associated with their tobacco quitting tendency. The findings suggest that quality and content of the campaigns are statistically associated with respondents' readiness to quit smoking. Moreover, data revealed that perception of respondents that CSOs could influence them to quit tobacco was significantly associated with their quitting tendency. It signifies the importance for building trust and credibility with their audiences through the campaigns, as perceived influence and credibility of CSOs appear to be effective in fostering smokers' quitting tendency. Finally, the responses

of those who perceived the CSOs to influence tobacco control policies in Bangladesh and those who heard about any such policy were significantly associated with their tobacco quitting tendency. This implies that success evidence of CSOs increases its influence on smokers.

Table 3

Chi-square test-tobacco quitting tendency with awareness and perceived effectiveness of CSOs' anti-tobacco campaigns; COSs' roles in shaping respondents' attitudes, health risks, and change in smoking behaviors; and their usefulness in tobacco control policies

Variables	N (%)	p-value
Awareness and perceived effectiveness of CSOs' anti-tobacco campaigns		
Exposure to CSO campaigns		
Yes	257 (63.1%)	0.153
No	150 (36.9%)	
Innovative and engaging strategies employed by CSOs		
Strongly Agree	43 (10.6%)	0.005
Agree	168 (41.3%)	
Neutral	118 (29%)	
Disagree	64 (15.7%)	
Strongly Disagree	14 (3.4%)	
Campaigns informed about the dangers of tobacco		
Yes	218 (53.6%)	< 0.001
No	189 (46.4%)	
CSOs' campaigns increased awareness about health risks		
Strongly Agree	61 (15%)	0.021
Agree	160 (39.3%)	
Neutral	117 (28.7%)	
Disagree	49 (12%)	
Strongly Disagree	20 (4.9%)	
CSOs' role in shaping respondents' attitudes, health risks, and change in smoking behaviors		
CSOs can influence you to quit tobacco		
Yes	275 (67.6%)	< 0.001
No	132 (32.4%)	
CSOs can change the smoking behaviors of people		
Yes	210 (51.6%)	0.056
No	77 (18.9%)	
Not Sure	120 (29.5%)	
CSOs have long-term impact on reducing tobacco consumption in society		

Variables	N (%)	p-value
Strongly Agree	67 (16.5%)	0.110
Agree	156 (38.3%)	
Neutral	137 (33.7%)	
Disagree	35 (8.6%)	
Strongly Disagree	12 (2.9%)	
CSOs have contributed to reducing tobacco use in Dhaka		
Yes, significantly	82 (20.1%)	0.249
Yes, somewhat	138 (33.9%)	
No impact	113 (27.8%)	
Not Sure	74 (18.2%)	
Perceived usefulness of CSOs in tobacco control policies		
CSOs influence tobacco policies in Bangladesh		
Yes	198 (48.6%)	0.040
No	81(19.9%)	
Not Sure	128 (31.4%)	
Heard about tobacco policy influenced by CSOs		
Yes	117 (28.7%)	< 0.001
No	290 (71.3%)	
GO-NGO collaboration is crucial for tobacco control		
Strongly Agree	122 (30%)	0.646
Agree	193 (47.4%)	
Neutral	79 (19.4%)	
Disagree	7 (1.7%)	
Strongly Disagree	6 (1.5%)	

Bold values are considered statistically significant at the 0.05 level ($p < 0.05$).

3.3 Factors Associated with CSOs' Influence on Smokers and Their Tobacco Quitting Tendency

Table 4 displays the results of regression analysis for finding the factors influencing respondents' current smoking status, tobacco quitting tendency, and perceived influence of CSOs to encourage them to quit. Being male had a positive association with current smoking status. They were 3.7 times more likely to consume tobacco than females, documenting gender differences in smoking prevalence. Respondents with above higher education (undergraduate/postgraduate, MPhil/PhD) were 67% (OR= 0.333, 95% CI: 0.112 – 0.993, $p=.049$) less likely to be a smoker than those with below higher education (reference category). It suggests that education works as a protective factor against tobacco use, and higher education is linked to greater health concern and reduced odds of smoking. Interestingly, exposure to CSO campaigns (OR=2.061, 95% CI: 1.082–3.927, $p=.028$) and awareness about CSO-influenced tobacco control policy (OR=3.261, 95% CI: 1.430–7.437, $p=.005$) were significantly associated with higher odds of smoking. The finding is counterintuitive since campaign exposure and awareness about policy are expected to reduce the odds of smoking. The reason for such findings indicates reverse causality and selective exposure which explains that anti-tobacco campaigns are designed to target the smokers, and the regular smokers were more likely to recall their campaign exposure and the related policies compared

to occasional smokers and those who reduced smoking. Again, while the campaigns might increase their awareness about CSO-influenced tobacco control policy, they might not be influential enough to make them quit. This limitation delineates the needs for integrated and information-driven interventions to influence the smokers in cessation. Another interesting finding is that age group 25-30 and 31-35 had respectively 1.4 and 4.3 times higher odds of tobacco consumption than the reference category, although neither variable reached statistical significance. This is likely due to the small number of respondents in these groups, particularly in the latter one with only 54 (13.3%) respondents, reducing the statistical power and precision of the estimates. However, marital status, occupation, and information about the dangers of tobacco did not reach statistical significance with current smoking status.

Table 4

Logistic Regression for finding the factors influencing respondents' current smoking status, tobacco quitting tendency, and their perceived influence of CSOs to make them quit smoking.

Variables	Current smoking status		Tobacco quitting tendency		Perceived influence of CSO campaigns to make smokers quit smoking	
	AOR (95% CI)	p-value	AOR (95% CI)	p-value	AOR (95% CI)	p-value
Age Group						
18-24	-	-	-	-	-	-
25-30	1.399 (0.675-2.901)	.367	1.126 (0.642-1.973)	.680	1.044 (0.551-1.980)	.894
31-35	4.282 (0.981-18.689)	.053	.937 (0.390-2.249)	.884	.630 (0.240-1.656)	.349
Gender						
Female	-	-	-	-	-	-
Male	3.706 (1.741-7.892)	.001	.863 (0.432-1.724)	.677	1.253 (0.573-2.740)	.572
Marital Status						
Married	-	-	-	-	-	-
Unmarried	.948 (0.447-2.012)	.890	.586 (0.331-1.038)	.067	1.773 (0.955-3.291)	.070
Education						
Below Higher Education	-	-	-	-	-	-
Above Higher Education	.333 (0.112-0.993)	.049	1.066 (0.610-1.863)	.822	1.616 (0.871-2.998)	.128
Occupation						
Student	-	-	-	-	-	-
Unemployed	.848 (0.356-2.020)	.709	.476 (0.255-0.888)	.020	.550 (0.277-1.093)	.088
Employed	.561 (0.228-1.382)	.209	.402 (0.200-0.806)	.010	1.073 (0.496-2.322)	.858

Variables	Current smoking status		Tobacco quitting tendency		Perceived influence of CSO campaigns to make smokers quit smoking	
	AOR (95% CI)	p-value	AOR (95% CI)	p-value	AOR (95% CI)	p-value
Others	.494 (0.116-2.100)	.339	.510 (0.143-1.816)	.299	2.750 (0.525-14.397)	.231
Exposure to CSO campaigns						
No	-	-	-	-	-	-
Yes	2.061 (1.082-3.927)	.028	.936 (0.575-1.524)	.791	.712 (0.415-1.222)	.218
Informed about dangers of tobacco						
No	-	-	-	-	-	-
Yes	.613 (0.312-1.204)	.155	1.626 (0.994-2.660)	.053	3.904 (2.253-6.764)	.001
Heard about CSO influenced tobacco policy						
No	-	-	-	-	-	-
Yes	3.261 (1.430-7.437)	.005	3.067 (1.751-5.371)	.001	4.212 (2.047-8.667)	.001

In terms of quitting tendency, occupation acted as an important determinant. The unemployed, and employed (government, private, and self-employed) were less likely to quit compared to students. So, the students in this study were more likely to have a quitting tendency. The respondents who were informed about the dangers of tobacco use had 1.6 times higher odds of having a quitting tendency (OR=1.626, 95% CI: 0.994-2.660) than those who were not informed. However, this association did not reach statistical significance, which is likely due to the number of youths informed about the dangers of tobacco was insufficient to reach a conclusion. This warrants further study with larger sample size to confirm this relationship with quitting tendency. Respondents who heard about CSO-influenced tobacco control policy were 3 times more likely to have the quitting tendency (OR=3.067, 95% CI: 1.751-5.371) than those who had not. So, it was a highly significant factor that influenced the quitting tendencies of the respondents. Other variables including age, gender, marital status, education, and exposure to campaigns, were not associated with respondents' quitting tendency for this study which warrants future studies with larger samples and diverse geographic settings to investigate their associations to either complement this study or explore new findings.

Respondents who were informed about the dangers of tobacco were nearly 4 times more likely to report to be influenced by the CSOs to quit (OR = 3.90, 95% CI: 2.25–6.76). Another significant factor for which the respondents were influenced to quit smoking was their awareness about CSO-influenced tobacco control policy. Those who had heard about any such policy were 4.2 times more likely to quit smoking (OR = 4.21, 95% CI: 2.05–8.67). Therefore, knowledge about the dangers of tobacco and awareness of policy success may enhance CSOs' influence on the respondents to quit. All other variables were not associated with perceived influence of CSOs in making them quit smoking.

4. Discussion

The findings explored whether the anti-tobacco campaigns of CSOs influence the smoking behaviors of youth smokers in Dhaka City. The findings demonstrated that age, gender, and education level of the respondents were significantly associated with their current smoking status. Regression analysis further established gender and education as the significant predictors of smoking among youths in Dhaka, where

male and less educated smokers had higher smoking prevalence compared to females and highly educated youths. The results are not only consistent within this study context, but they also resonate with previous studies within and beyond Bangladesh. For instance, studies found that males, respondents of higher age groups, and with lower educational backgrounds were more likely to smoke in Bangladesh (Aziz et al., 2015; Choudhury et al., 2007; P et al., 2016). Complementing this findings, Chockalingam et al. (2013) and Prabhakar et al. (2012) reported that smoking was higher among male, older, and illiterate people compared to their counterparts in India. However, although age of smokers was not statistically significant with their smoking status in the regression analysis due to the reduced statistical power and precision of the estimates, the higher age groups were found to have higher smoking rates compared to younger youths in line with above studies. This indicates that smoking prevalence is also related to youths' age similar to their gender and education level.

The respondents' tobacco quitting tendency was associated with age and occupation where occupation has been found as a significant predictor in their quitting tendencies. Furthermore, the findings revealed that students were more likely to have quitting tendencies which corroborates with the study of Nargis et al. (2019), who have found that students had higher quitting rates in eight low-and middle-income countries including Bangladesh. However, our study did not find the association of gender, marital status, and education with tobacco quitting tendencies which refute the findings of other studies that have reported higher quitting tendency among female, married, and higher educated smokers (Chandola et al., 2004; Chinwong et al., 2018; Ruokolainen et al., 2021; Schaap et al., 2008). This is likely attributed to selection bias, a limitation in cross-sectional studies (Wang & Cheng, 2020), as the distribution of our respondents shows severe sample imbalance in gender, marital status, and education. Future studies with balanced representation are recommended to validate the findings.

Previous studies have revealed that exposure to anti-tobacco campaigns has positive impacts on quit attempts and it reduced the rate of smoking (Aker et al., 2024; Sharma et al., 2024; Tangari et al., 2007; Yang et al., 2019). Our study reiterates this finding. However, it found that exposure alone does not significantly influence smokers to quit smoking. Rather, different facets of the campaigns were associated with tobacco quitting tendencies such as the innovative and engaging strategies of the campaigns, dissemination of information regarding the dangers of tobacco use, and increasing awareness about health risks through such campaigns. Furthermore, the results reported that building trust and credibility with the respondents through these campaigns is essential to encourage their quitting tendency – a finding reinforces Ranney et al. (2018) and Schmidt et al.'s (2016) studies that persuasion from trusted sources influence people's behavior.

Moreover, information about the dangers of tobacco use and awareness of CSO-influenced tobacco control policy are related to quitting tendencies. Respondents who had been informed about the dangers of tobacco by CSO campaigns reported higher influence of these campaigns on their quitting tendencies. Other studies reported similar findings. For instance, Brennan et al. (2011) and Durkin et al. (2012) found that campaigns disseminating information regarding health risks of tobacco can promote quit intentions. Therefore, awareness campaigns are essential to reduce the danger of tobacco use. Indicating their influence, Rao et al. (2014) showed that adolescents who were not informed about the health risk associated with smoking were more likely to be smokers in Bangladesh, Pakistan, India, and Nepal. Similarly, awareness of the respondents about CSO-influenced tobacco control policy reinforced their quitting tendencies. This finding is consistent with Rennen et al.'s (2014) study that showed that awareness about tobacco-related policies heightened discomfort with smoking which further reduced the odds of smoking among adult smokers in three European countries.

Our findings demonstrate that respondents exposed to anti-tobacco campaigns were more aware of the dangers associated with smoking, and different facets of the campaigns influenced them to quit. These findings are consistent with the assumed pathway of the study that campaign exposure was associated with increased awareness of respondents about tobacco-associated harms and policies, which corresponded with

their awareness regarding health risks and influenced behavioral change towards smoking and quitting tendencies. However, persistent smoking despite campaign exposure, observed both in the present study and prior research (Majumder & Parvin Shoma, 2019), necessitates more active role of CSOs in reducing tobacco consumption.

There are some limitations in the study. First, it employed convenience sampling for data collection. Although this was not ideal for greater generalizability and external validity, the absence of a complete sampling frame of the youth smokers in Dhaka City necessitated this method. Therefore, despite including respondents from varied socio-economic characteristics, findings might not be generalizable to other groups of smokers. Second, given the cross-sectional nature of this study, establishing causal relationships from the findings is not possible as noted by Setia (2016) and Wang & Cheng (2020). As a result, findings of this study show associations, not causal relationships. Longitudinal studies are recommended to validate the findings. Lastly, sample imbalances are present in some demographic characteristics— particularly in age, gender, and education, which limits generalizability of findings to respondents of higher age groups, female, and lower educated people compared to their respective counterparts. Nevertheless, the findings can guide future research on anti-tobacco campaigns and their impacts on smokers using probability sampling on a large scale and in diverse geographical settings. Moreover, longitudinal designs can be employed to establish causal relationships to identify the long-term impacts of anti-tobacco campaigns on smokers.

5. Conclusion

The study explored the influence of CSO-led anti-tobacco campaigns on youth smokers in Dhaka City and explored different facets of the campaigns and their associations with their smoking status, quitting tendencies, and perceived influence of those campaigns. Among the socio-economic characteristics, age and occupation were associated with youth smokers' quitting tendencies, and among all occupational categories, students were more likely to have a quitting tendency. Moreover, findings demonstrated that different facets of CSOs were positively associated with respondents' tobacco quitting tendencies including the innovative and engaging strategies of the CSOs, dissemination of information regarding the dangers of tobacco consumption, campaigns increasing their awareness about health risks associated with smoking, perceived influence of CSOs in tobacco control policies, and respondents' awareness about any such policy. This research has found that respondents who were informed about the dangers of tobacco use through exposure to CSO-led anti-tobacco campaigns and who were aware of any CSO-influenced anti-tobacco policy were more likely to report being influenced by CSOs to quit. Hence, these two are significant predictors to be influenced by CSOs to quit.

The findings of this study highlight the need for well-designed anti-tobacco campaigns to disseminate anti-tobacco information among smokers and society at large. Therefore, effective policy response should focus on arranging campaigns that are innovative and engaging, well designed to influence smokers, and include messages that go beyond mere exposure since exposure alone does not impact the smokers' quitting tendencies. Moreover, since one-third of the smokers in Bangladesh are youth and a good proportion of them are students, campus-based campaigns and smoke-free campuses should be advocated. With this consideration, the University Grants Commission should issue a binding directive to be followed by all educational institutions to use tobacco control measures and cooperate with CSO-led campaigns. Furthermore, it is imperative to communicate the dangers of tobacco use as well as the policies that restrict tobacco consumption – the aspects of the campaigns that our respondents labeled as successful predictors of influencing their quitting tendencies. Therefore, future campaigns should highlight the consequences of smoking and associated policies in a compulsive manner. Apart from all these initiatives concerning anti-tobacco campaigns, stricter enforcement of laws remains essential for implementing advertising bans, smoking bans, higher pricing, and tobacco taxes intended to deal with the tobacco epidemic and to actualize the vision of a tobacco free Bangladesh by 2040.

Acknowledgments: The authors of this article duly acknowledge the contribution of the study participants and thank them for their time and cooperation.

Funding Information: The authors state no funding involved.

Conflict of Interest: The authors declare no conflict of interest.

Data Availability Statement: The data of the survey are available from the corresponding author on reasonable request

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