International Journal of Statistical Sciences *ISSN 1683-5603*
Vol. 25(1), March, 2025, pp 87-98
DOI: https://doi.org/10.3329/ijss.v25i1.81047

Current Pattern of Correlates of Successful Quitting Methods of Tobacco Smoking in Bangladesh

Sheikh Sumaya Mahim, Md. Mahfuz Uddin, Md. Fahim and Papia Sultana*

Department of Statistics, University of Rajshahi, Rajshahi-6205, Bangladesh
*Correspondence should be addressed to Papia Sultana
(Email: papia.stat@ru.ac.bd)

[Received February 24, 2025; Accepted March 22, 2025]

Abstract

Tobacco smoking remains a significant public health issue, particularly in low- and middle-income countries like Bangladesh, where cessation rates are low despite extensive tobacco control initiatives. The aims of this study are to examine the patterns and prevalence of successful quitting methods for tobacco smoking and to identify the factors associated with successful cessation in Bangladesh. This study is based on a nationally representative sample of 12,783 individuals aged 15 years or older from the Global Adult Tobacco Survey (GATS), 2017. Binary logistic regression has been employed to evaluate significant factors of quitting methods along with descriptive analysis. Counseling by healthcare providers and switching to smokeless tobacco are identified as the most effective cessation strategies. Key correlates of successful quitting include gender, division, occupation, educational level, and wealth index. The model demonstrated good predictive accuracy (Predicted Accuracy = 77.3 and AUC = 0.702). This study highlights the need for targeted, evidence-based interventions to address socio-demographic disparities and promote effective quitting strategies. Future research should focus on longitudinal analyses and exploring alternative cessation methods tailored to susceptible populations in Bangladesh.

Keywords: Tobacco smoking, Quitting method, GATS, Logistic Regression, AUC.

AMS Classification: 62M10.

1. Introduction

Tobacco smoking is a major public health concern, contributing to a significant burden of morbidity and mortality worldwide, including Bangladesh. Effective smoking cessation strategies play a pivotal role in reducing tobacco-related health risks and improving public health outcomes. However, the success of these strategies often depends on various demographic, behavioral, and socioeconomic factors(Anon n.d.). In Bangladesh, despite governmental and non-governmental efforts to promote smoking cessation, the prevalence of tobacco use remains high. Identifying the correlates of successful quitting methods is essential and to develop targeted interventions that address the unique socio-cultural and economic factors influencing tobacco cessation in this population(Hakim, Chowdhury, and Uddin 2017). With an average of 50% of young men and 10% of young women worldwide starting to smoke and only a small percentage quitting, the number of tobacco-attributable deaths will increase from roughly 5 million in 2010 to over 10 million in a

few decades as today's youth smokers enter middle and old age(Jha and Peto 2014). Rising population and increased smoking rates among newer generations are driving a tobacco epidemic. Tobacco caused 100 million deaths in the 20th century, mostly in developed countries, and is projected to kill 1 billion people in the 21st century, primarily in low- and middle-income countries, with half of these deaths occurring before age 70. The 2013 World Health Assembly called for a one-third reduction in smoking prevalence by 2025, potentially saving over 200 million lives(Jha and Peto 2014; Abdullah et al. 2015). According to the literature, there are a few research on tobacco use conducted in Bangladesh that only look at the prevalence and predictors of tobacco use(Sultana et al. 2020; Barkat et al. 2012; M. A. Kabir, Goh, and Khan 2013; Mohammad Alamgir Kabir et al. 2013; Kabir, Goh, and Khan 2015). Few studies address the tobacco use policy at home and offices and cessation of tobacco smoking(Hakim et al. 2017; Barkat et al. 2012; Sultana et al. 2018; Begum and Sultana 2018). As far as we are aware, no research has looked into how people in Bangladesh can stop using tobacco. In a recent study conducted by (Islam and Williams 2023) of rural area of Bangladesh included 307 adults aged 30–75 years with high blood pressure. The study assessed cigarette consumption, SLT use, and quitting intentions. Rasch and regression analyses were applied, revealing that lower education levels and older age were linked to smoking and SLT use, respectively. On average, the 62 smokers consumed 9.6 cigarettes or bidi daily, and 87% recognized the link between smoking and cancer. Intentions to quit varied, with 41.6% of farmers compared to 58.9% of employees, and 53% of individuals with no education compared to 75% of those with higher education expressing willingness to stop smoking and SLT use. Another study implemented in Bangladesh by (Sultana et al. 2020) found that 47.38% of smokers attempted to quit tobacco, with 27.13% of them utilizing some method. Among smokeless tobacco users, 31.89% made attempts to quit, and 24.83% used a quitting method. Counseling emerged as the most commonly used cessation approach. Logistic regression analysis indicated that age, education, and wealth index were significant factors influencing the use of methods to quit smoking. In contrast, gender, age, and wealth index were significantly associated with the use of methods to quit smokeless tobacco. Another recent study executed by (Md. Abdullah-Al-Maruf et al. 2024) identified a diverse demographic, with 40% aged 18–39 and a male majority (55%). Half had dropped out of primary school. Tobacco use was reported by 30%, while 20% used both smoking and non-smoking forms. Initiation after age 30 was noted in 30% of users. Long-term tobacco uses significantly impacted health, with 76% experiencing related issues. Additionally, 30% engaged in other recreational activities, 25% attempted to quit, and psychiatric awareness was low (10%). A study developed by (Islam et al. 2022) focused on men aged 15–49 years, with cigarette smoking prevalence as the primary outcome. Both pooled and country-specific analyses were performed using multivariable logistic regression. Among the countries studied, the Maldives had the highest smoking prevalence (41.2%), while Pakistan had the lowest (20.1%). The pooled analysis revealed significant associations ($p < 0.001$) between smoking and factors such as older age, lower education, lower wealth status, and employment in any occupation. Another study performed in(Khan et al. 2024) suggest that individuals with strong quit intentions, higher socioeconomic status, lower nicotine dependency, past quit attempts, and non-smoking friends have a higher likelihood of successfully quitting smoking. Additionally, factors such as social support, public smoking regulations, and anti-smoking campaigns in schools and communities can encourage quit attempts. The study emphasizes the need for collaborative efforts involving officials, peers, parents, and religious leaders to promote smoking cessation.

Aims of this study, therefore, are to find the pattern and prevalence of successful quitting methods and find the correlates of successful quitting methods of tobacco smoking in Bangladesh.

2. Materials and Methods

2.1 Data Source

Data from the Global Adult Tobacco Survey (GATS), 2017 conducted by the Centers for Disease Control and Prevention has been used in this study(for Disease Control 2017). A nationally representative household survey, the GATS is a global standard for meticulously tracking major tobacco control indicators and monitoring tobacco use among adults (15 years of age or older) in 14 countries. Only data from Bangladesh, comprising details on 12783 respondents who are 15 years of age or older, were used in this study. With the use of a standardized questionnaire, sample design, data collecting, aggregation, and analysis techniques, it was intended to generate globally comparable data on tobacco smoking, secondhand smokers who inhaled direct tobacco smoke, smokeless tobacco users, and tobacco control efforts. The National Institute of Population Research and Training (NIPORT), the Bangladesh Bureau of Statistics (BBS), the National Statistical Organization of the Government of Bangladesh, under the ministry of planning, and the National Institute of Preventive and Social Medicine (NIPSOM) collaborated to conduct the survey in Bangladesh. Technical support was given by the World Health Organization and the United States' Centers for Disease Control and Prevention (CDC) [Global Adult Tobacco Survey, 2017].

2.2 Design of the Study

The Global Adult Tobacco Survey (GATS) Bangladesh used the Bangladesh Bureau of Statistics (BBS) population census as the sampling frame, with explicit stratification based on eight administrative divisions and urban-rural strata. A total of 496 Primary Sampling Units (PSUs) were selected nationwide using probability proportional to size (PPS), and 30 households were systematically chosen per PSU, yielding a sample of 14,880 households. Each household was randomly assigned as "man" or "woman" to ensure equal representation, and one eligible individual was randomly selected using an Android app. Further details on the methodology are available in the GATS 2017 report and Sample Design Manual. Details about the study design will be found in Global Adult Tobacco Survey Report, 2017 (https://ntcc.gov.bd/ntcc/uploads/editor/files/GATS%20Report%20Final-2017_)

2.3 Statistical Methods

Descriptive analysis has been executed to know characteristics of respondents. Chi-square test has been used compare the characteristics to quitting status and binary logistic regression has been performed to identify the significant correlates. STATA has been used for computation of the statistical analysis.

2.4 Analytical Results

Characteristic of study subjects are summarized in Table 1. From Table 1, it has been observed that male and female respondents are approximately equal (female 52.45% and male 47.55%). Respondent’s average age is about 38.76 years and the maximum respondents (about 26%) belong to the age group 25-34. Also, it has been observed that 50.27% respondents are from rural areas and 49.72% are from urban areas. Approximately equal number of respondents has been taken from different divisions. Further, by education, among the respondents about 28.01% are of no formal education. It has been also found that maximum of the respondents are homemaker/domestic worker (42.96%).

Table 1: Characteristics of the study subjects.

Characteristic Variables	N = 12783 Frequency (%)
Gender	
Male	6079(47.55)
Female	6704(52.45)
Age	
15-24	2214(17.31)
25-34	3324(26.00)
35-44	3116(24.37)
45-54	2100(16.43)
55 and above	2029(15.87)
Residence	
Urban	6356(49.72)
Rural	6427(50.27)
Occupation	
Govt./Non govt. employee	1154(9.02)
Business	2268(17.74)
Worker/Day laborer	2124(16.62)
Homemaker/Domestic worker	5491(42.96)
Others	1746(13.66)
Educational level	
No formal schooling	3581(28.01)
Less than primary school	2057(16.09)
Primary school	1573(12.31)
Less than secondary school	2710(21.20)
Secondary school and above	2862(22.39)
Division	
Barishal	1609(12.59)
Chattogram	1577(12.34)
Dhaka	1506(11.78)
Khulna	1621(12.68)
Mymensingh	1591(12.45)
Rajshahi	1705(13.33)
Rangpur	1653(12.93)
Sylhet	1521(11.90)
Wealth index	
Poorest	2558(20.01)
Poorer	2563(20.05)
Poor	2603(20.36)
Rich	2721(21.29)
Richest	2337(18.28)

Tobacco quitting methods which are available in Bangladesh are summarized in Table 2 along with success rate ratio. Information on not-success and success are screened from current smoker

who tried to quit in the last six months and ex-smoker, respectively, who had used any form of quitting method(s). Results show that most successful method for quitting smoking was self-willing (without assistance). However, the values of rate ratio indicate that success rate was 5 times more among the respondents who switched to smokeless tobacco (RR=5.50). To be noted that a significant percentage of success quitters and of currents smokers who attempted to quit in the last six months of the survey but failed have not used any form of quitting methods and hence have not been reported in Table 2.

Table 2: Current pattern of quitting methods of tobacco smoking in Bangladesh

Quitting methods	Attempted to quit but failed (N = 1069)	Successful to quit (N = 69)	Rate Ratio	P-value
Counseling by a health care provider	127(11.88)	16(23.19)	1.95	0.08
Nicotine replacement, such as the patch or gum	5(0.47)	0(0.00)	_	_
Traditional medicines (Ayurvedic, Unani)	3(0.28)	0(0.00)	_	_
A quit line or a smoking telephone support line	1(0.09)	0(0.00)	_	_
Switching to smokeless tobacco	31(2.90)	11(15.94)	5.50	0.12
Try to quit without assistance	756(70.72)	47(68.12)	0.96	0.03
Anything else	23(2.15)	3(4.35)	2.02	0.09

[Note: "-" indicates cannot be computed rate ratio]

Comparison of characteristics to not-success and success quitters has been reported in Table 3. It is observed that the socio-economic and demographic characteristics such as gender (p-value<0.001), division (p-value <0.001), educational level (p-value <0.001), occupation (p-value <0.001), and wealth index (p-value <0.001) are statistically associated with success status of quitting of tobacco smoking. But age of respondents (p-value = 0.246) and residence of respondents (p-value = 0.073) are not statistically associated with success status of quitting of tobacco smoking at 5% level of significance.

Table 3: Comparing socio-demographic and economic characteristics of the respondents to success status of quitting.

Covariates	Success status of quitting methods		
	Attempted to quit but failed N = 2493(%)	Successful to quit N = 788(%)	P-value
Gender			
Male	2452(98.36)	726(92.13)	<0.001
Female	41(1.64)	62(7.87)	

Age			
15-24	382(15.32)	102(12.94)	
25-34	613(24.59)	197(25.00)	
35-44	671(26.92)	223(28.30)	
45-54	432(17.33)	154(19.54)	0.246
55 and above	395(15.84)	112(14.21)	
Residence			
Urban	1176(47.17)	400(50.76)	0.073
Rural	1317(52.83)	388(48.24)	
Division			
Barishal	235(9.43)	108(13.71)	
Chattogram	278(11.15)	21(2.66)	
Dhaka	309(12.39)	88(11.17)	
Khulna	300(12.03)	122(15.48)	
Mymensingh	413(16.57)	114(14.47)	
Rajshahi	334(13.40)	106(13.45)	<0.001
Rangpur	317(12.72)	143(18.15)	
Sylhet	307(12.31)	86(10.91)	
Educational level			
No formal schooling	895(35.90)	303(38.45)	
Less than primary school	512(20.54)	127(16.12)	
Primary school	291(11.67)	73(9.26)	
Less than secondary school	435(17.45)	103(13.07)	<0.001
Secondary school	360(14.44)	182(23.10)	
Occupation			
Govt./Non govt. employee	270(10.83)	98(12.44)	
Business	939(37.67)	291(36.93)	
Worker/Day laborer	998(40.03)	180(22.84)	<0.001
Homemaker	27(1.08)	47(5.96)	
Others	259(10.39)	172(21.83)	
Wealth index			
Poorest	586(23.51)	175(22.21)	
Poorer	563(22.58)	144(18.27)	
Poor	556(22.30)	147(18.65)	
Rich	473(18.97)	146(18.53)	<0.001
Richest	315(12.66)	176(22.36)	

Significant correlates of successful quitting have been identified using binary logistic regression. The odds ratio with its 95% confidence interval has been observed and picked up in Table 4.

Results [Table 4] show that female respondents are 64% less likely and significantly successful to quit than male respondents (OR=0.36, CI= (0.16, 0.78)) and respondents who belongs to the age group 25-34 are 39% more likely successful to quit than the respondents who belongs to the age group 15-24 (OR=1.39, CI= (0.85, 2.27)), the respondents who belongs to the age group 35-44 are 42% more likely successful to quit than the respondents who belongs to the age group 15-24 (OR=1.42, CI= (0.90, 2.23)), the respondents who belongs to the age group 45-54 are 34% more likely successful to quit than the respondents who belongs to the age group 15-24 (OR=1.34, CI= (1.00, 1.79)), the respondents who belongs to the age group 55 and above are 24% more likely successful to quit than the respondents who belongs to the age group 15-24 (OR=1.24, CI= (0.93, 1.67)). It has also been observed that the respondents who come from rural areas are 4% more likely successful to quit than the respondents come from urban areas (OR=1.04, CI= (0.87, 1.25)) and also we find that the respondent who come from Chattogram division are 65% more likely successful to quit than the respondents from Barishal division (OR=1.65, CI= (1.02, 2.67)), the respondents who come from Dhaka division are significantly and 80% less likely successful to quit than the respondents from Barishal (OR=0.20, CI= (0.11, 0.37)), the respondents who come from Khulna division are 1% less likely successful to quit than the respondents from Barishal division (OR=0.99, CI= (0.61, 1.62)), the respondents who come from Mymensingh division are 72% more likely successful to quit than the respondents from Barishal division (OR=1.72, CI= (1.07, 2.74)), the respondents who come from Rajshahi division are significantly and 25% more likely successful to quit than the respondents from Barishal division (OR=1.25, CI= (0.89, 1.75)), the respondents who come from Rangpur division are 43% more likely successful to quit than the respondents from Barishal division (OR=1.43, CI= (1.01, 2.02)), the respondents who come from Sylhet division are 99% more likely successful to quit than the respondents from Barishal division (OR=1.99, CI= (1.42, 2.80)). We also see that the respondents who have less than primary school are significantly and 11% more likely successful to quit than the respondents have no formal schooling (OR=1.11, CI= (0.81, 1.49)), the respondents who completed their primary school are 12% less likely successful to quit than the respondents have no formal schooling (OR=0.88, CI= (0.64, 1.22)), respondents having less than secondary school are 14% less likely successful to quit than the respondents have no formal schooling (OR=0.86, CI= (0.60, 1.23)), the respondents who are secondary school completed and above are 35% less likely successful to quit than the respondents have no formal schooling (OR=0.65, CI= (0.48, 0.88)) and also the respondents having business are 52% less likely successful to quit than the respondents having govt./non govt. employee (OR=0.48, CI= (0.35, 0.68)), the respondents who are worker/day laborer are 55% less likely successful to quit than the respondents having govt./non govt. employee (OR=0.45, CI= (0.35, 0.58)), respondents who are homemaker/domestic worker are 72% less likely successful to quit than the respondents having govt./non govt. employee (OR=0.28, CI= (0.21, 0.37)) and it is found statistically significant, the respondents who have other services are 19% more likely successful to quit than the respondents having govt./non govt. employee (OR=1.19, CI= (0.48, 2.96)).It has also been found that the respondents who belong to poorer group are 43% less likely successful to quit than the respondents who belong to the poorest group (OR=0.57, CI= (0.41, 0.80)), respondents belonging to poor group are 51% less likely successful to quit than the respondents belonging to the poorest group (OR=0.49, CI= (0.35, 0.69)), respondents belonging to rich group are 43% less likely successful to quit than the respondents belonging to the poorest group (OR=0.57, CI= (0.41, 0.77)) and finally the respondents who belong to richest group are 36% less likely successful to quit than the respondents belonging to the poorest group (OR=0.64, CI= (0.49, 0.86)).

The Hosmer-Lemeshow goodness of fit test result shows that the p-value is more than 0.05 for the data under consideration, indicating that the model is fitted well to the data. The predicted accuracy of the required model is 77.3, that means prediction accuracy of the model is good. Form Table 4 and also from Figure 1, we see that the AUC (area under the ROC curve) is 0.702, indicating that the model is good fitted.

Table 4: Identifying significant correlates using binary logistic regression to success status of quitting using quitting methods of the respondents.

Socio-Demographical Variables	Odds Ratio (95% CI)
Gender	
Male (RC)	1
Female	0.36(0.16, 0.78)
Age	
15-24(RC)	1
25-34	1.39(0.85, 2.27)
35-44	1.42(0.90, 2.23)
45-54	1.34(1.01, 1.79)
55 and above	1.24(0.93, 1.67)
P-value for trend	0.365
Educational level	
No formal schooling (RC)	1
Less than primary school	1.11(0.81, 1.49)
Primary school	0.88(0.64, 1.22)
Less than secondary school	0.86(0.60, 1.23)
Secondary school and above	0.65(0.48, 0.88)
P-value for trend	0.003
Wealth Index	
Poorest (RC)	1
Poorer	0.57(0.41, 0.80)
Poor	0.49(0.35, 0.69)
Rich	0.57(0.41, 0.77)
Richest	0.64(0.48, 0.86)
P-value for trend	<0.001
Residence	
Urban(RC)	1
Rural	1.04(0.86, 1.22)
Division	
Barishal (RC)	1

Chattogram	1.65(1.02, 2.67)
Dhaka	0.20(0.11, 0.37)
Khulna	0.99(0.61, 1.61)
Mymensingh	1.72(1.07, 2.74)
Rajshahi	1.25(0.89, 1.75)
Rangpur	1.43(1.01, 2.02)
Sylhet	1.99(1.42, 2.80)
P-value for trend	<0.001
Occupation	
Govt./Non govt. employee (RC)	1
Business	
Worker/Day laborer	0.48(0.35, 0.67)
Homemaker	0.45(0.35, 0.58)
Others	0.28(0.21, 0.37)
	1.19(0.48, 2.96)
P-value for trend	<0.001
Hosmer-Lemeshow goodness of fit test (Chi square and P-value)	14.14(0.078)
Nagelkerke R square	0.143
Predicted Accuracy	77.30%
AUC	0.70

[Note: RC= Reference Category; OR= Odds Ratio; CI= Confidence Interval; AUC= Area Under the ROC Curves is for prediction accuracy of the adjusted model]

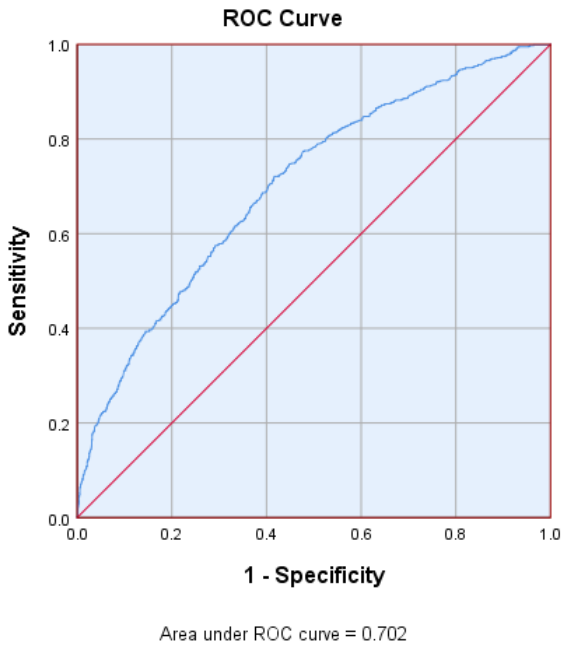

Figure 1: ROC curve for the fitted model

3. Strength and Limitations

The major strength of our study includes large sample size, the coverage of men and women smokers, the coverage of both rural and urban areas, and the nationally representative population. However, there are several limitations that need to be stated. Respondent's education categories were categorized into broad groups, which could have contributed to biased estimates in terms of the gradients observed. Wealth index is based on limited number of asset variables which might result in under representing socio-economic status. Some other variables like psychological variables could provide more predicting accuracy, but no such variable is available. The data was cross sectional (GATS 2017) data, if it was possible to get cohort data then the analysis may provide a better result.

4. Conclusion

Tobacco use is a major preventable risk factor for disease worldwide, and this study highlights the urgent need for Bangladesh to focus on effective methods for successful smoking cessation. The parameters of gender, wealth index, occupation, education level, and division area all have a significant impact on the successful of tobacco smoking. In order to improve smoking cessation, the analysis emphasizes the significance of individualized programs that target particular demographic groups and countries. Switching to smokeless tobacco and counseling by healthcare providers emerged as the most effective strategies to quit successfully of tobacco smoking. Female respondents, younger age groups, urban region, individuals with higher education levels, respondents from Dhaka division, and domestic workers/homemakers exhibit lower success rates.

Therefore, they should follow the most effective policies to cession successfully. While addressing the obstacles experienced by vulnerable populations, efforts should be focused on encouraging the use of successful strategies like counseling and smokeless tobacco alternatives and other quitting methods should also be focused and available in everywhere. To enhance smoking cessation success rates in Bangladesh, comprehensive tobacco control programs should incorporate social factors related to overall well-being. Future research can be expanded in several directions. Multistage modeling can be employed to enhance the analysis, and cohort data, can facilitate comprehensive trend analysis over time. Additionally, follow-up studies can be conducted to assess the long-term impact of interventions, providing valuable insights into the sustainability and effectiveness of smoking cessation efforts.

References

[1] Abdullah, Abu S., Pete Driezen, Anne C. K. Quah, Nigar Nargis, and Geoffrey T. Fong. 2015. "Predictors of Smoking Cessation Behavior among Bangladeshi Adults: Findings from ITC Bangladesh Survey." Tobacco Induced Diseases 13(1):1–10. doi: 10.1186/s12971-015-0050-y.

[2] Anon. n.d. "WHO Global Report on Trends in Prevalence of Tobacco Use 2000-2025 - World Health Organization - Google Books." Retrieved January 26, 2025 (https://books.google.com.bd/books?hl=en&lr=&id=4HUOEQAAQBAJ&oi=fnd&pg=PR5&dq=World+Health+Organization.+(2021).+WHO+global+report+on+trends+in+prevalence+of+tobacco+use+2000–2025+(4th+edition).+Geneva:+World+Health+Organization.&ots=HaYzMhSWc-&sig=grO3B0vQFWft8s6IHMac5-HCUcE&redir_esc=y#v=onepage&q&f=false).

[3] Barkat, Abul, Ashraf Uddin Chowdhury, Nigar Nargis, Mashfiqur Rahman, Md Shahnewaz Khan, Ananda Kumar Pk, Sharmina Bashir, and Frank J. Chaloupka. 2012. The Economics of Tobacco and Tobacco Taxation in Bangladesh.

[4] Begum, Munjila, and Papia Sultana. 2018. "Socioeconomic and Demographic Factors Patterning Smokeless Tobacco Use Behavior in Bangladesh: A Cross-Sectional Multilevel Analysis." Journal of Biometrics & Biostatistics 09(04). doi: 10.4172/2155-6180.1000411.

[5] for Disease Control, Centers. 2017. "GATS (Global Adult Tobacco Survey) Bangladesh 2017 Codebook."

[6] Hakim, Shariful, Muhammad Abdul Baker Chowdhury, and Md Jamal Uddin. 2017. "Correlates of Unsuccessful Smoking Cessation among Adults in Bangladesh." Preventive Medicine Reports 8:122–28. doi: 10.1016/J.PMEDR.2017.08.007.

[7] Islam, Fakir M. Amiru., and Joanne Williams. 2023. "Factors Associated with Smoking and Smokeless Tobacco Use, Intention to Quit, and the Number of Cigarettes Smoked among Adults with High Blood Pressure in a Rural District of Bangladesh." Applied Sciences (Switzerland) 13(9). doi: 10.3390/app13095355.

[8] Islam, Md Shariful, Mamunur Rashid, Monaemul Islam Sizear, Raafat Hassan, Mahbubur Rahman, Sarker Masud Parvez, Shuvon Chandra Hore, Rehnuma Haque, Farjana Jahan, Supta Chowdhury, Tarique Mohammad Nurul Huda, K. M. Saif-Ur-Rahman, and Arifuzzaman Khan. 2022. "Cigarette Smoking and Associated Factors among Men in Five South Asian Countries: A Pooled Analysis of Nationally Representative Surveys." PLoS ONE 17(11 November):1–16. doi: 10.1371/journal.pone.0277758.

[9] Jha, Prabhat, and Richard Peto. 2014. "Global Effects of Smoking, of Quitting, and of Taxing

Tobacco." New England Journal of Medicine 370(1):60–68. doi: 10.1056/nejmra1308383.

[10] Kabir, M. A., Kim Leng Goh, and M. M. H. Khan. 2013. "Tobacco Consumption and Illegal Drug Use Among Bangladeshi Males: Association and Determinants." American Journal of Men's Health 7(2):128–37. doi: 10.1177/1557988312462737.

[11] Kabir, M. A., Kim Leng Goh, and M. M. H. Khan. 2015. "Adolescent Tobacco Use and Its Determinants: Evidence from Global Youth Tobacco Survey, Bangladesh 2007." Asia-Pacific Journal of Public Health 27(2):NP1578–90. doi: 10.1177/1010539512472357.

[12] Kabir, Mohammad Alamgir, Kim Leng Goh, Sunny Mohammad Mostafa Kamal, and Md Mobarak Hossain Khan. 2013. "Tobacco Smoking and Its Association with Illicit Drug Use among Young Men Aged 15-24 Years Living in Urban Slums of Bangladesh." PLoS ONE 8(7). doi: 10.1371/JOURNAL.PONE.0068728.

[13] Khan, Assad Ullah, Anwar Shah, Muhammad Tariq Majeed, and Sareer Ahmad. 2024. "Predictors of Quitting Smoking Behavior: Evidence from Pakistan." Environmental Science and Pollution Research 31(21):30886–901. doi: 10.1007/s11356-024-32920-y.

[14] Md. Abdullah-Al-Maruf, Md. Abdullah-Al-Maruf, Md. Ruhid Hossain, A. H. M. Anisuzzaman, Alamgir Hossan, Abu Naser Md Abdul Kader, Jiban Chandra Das, and Noor Mohammed. 2024. "Prevalence of Tobacco Users (Smoking and Smokeless) among Rural Areas in Bangladesh." Saudi Journal of Medicine 9(04):79–85. doi: 10.36348/sjm.2024.v09i04.001.

[15] Sultana, Papia, Jahangir Alam, Jahanara Akter, and Tithi Rani Kundu. 2020. "Pattern of Quitting Methods Used to Promote Tobacco Cessation in Bangladesh and Its Correlates." Journal of Biometrics & Biostatistics 11(1):1–6.

[16] Sultana, Papia, Md Tahidur Rahman, Dulal Chandra Roy, Shamima Akter, Jenny Jung, Md Mizanur Rahman, and Jahanara Akter. 2018. "Tobacco Control Policies to Promote Awareness and Smoke-Free Environments in Residence and Workplace to Reduce Passive Tobacco Smoking in Bangladesh and Its Correlates." PLoS ONE 13(6):1–12. doi: 10.1371/journal.pone.0198942.