Socioeconomic Characteristics of Tobacco Users among Undergraduate College Students in Bandung City, Indonesia

Nafisah Putri Wyangsari[1], Chitlada Areesantichai[1,2,3]

[1]College of Public Health Sciences, Chulalongkorn University, Bangkok, 10330, Thailand
[2]Center of Excellence for Health and Social Sciences and Addiction Research, Bangkok, Thailand, 10330
[3]Drug Dependence Research Center (DDRC), Bangkok, Thailand, 10330
Email address: nafisahputriw@gmail.com

Abstract—Introduction: Substance use remain the biggest public health threats due to health and socio-economy consequences affecting both individual and other people. One of the substances is tobacco products, which is the most frequently used substance among young people. Youth are a major human resource for country's development. Findings reported substance use among youth kept increasing over the period, putting youth in a greater risk of developing physical disease, disabilities, and even death. Socioeconomic status are predictors of health outcome and better understanding is required to plan better intervention and policy. Materials and Methods: A cross-sectional study was conducted on May – June 2022 in two universities in Bandung City, Indonesia. Through online questionnaire, sociodemographic data was collected as well as the screening of tobacco products use among college students. Chi-square and Fisher exact test in SPSS version 22 were used to analyze the association between socioeconomic status with tobacco use behavior. Results: 36.4% of college students were lifetime smokers, and 20.2% used tobacco in past month period. Most of the smokers were male respondents (60.6%) in lifetime period. Sex (p<0.000), religion (p<0.05), ethnicity (p<0.05), and type of university (p<0.05) were significantly associated with lifetime tobacco use. Sex (p<0.000) and religion (p<0.010) were also associated with tobacco use in the past month. Meanwhile, the economic characteristics such as monthly stipend or household income did not show any significant association with tobacco use in any period. Conclusion: Findings reveal that sociodemographic characteristics such as gender, culture, and belief might influence one's tobacco use. Universities should provide screening and counselling service for undergraduate students. Gender-based intervention and preventive strategies might be required. To plan better policies, socioeconomic status of the community should not be overlooked.

Keywords— College student, cigarette, tobacco, socioeconomic status.

I. INTRODUCTION

Substance use remains the biggest public health threats due to ranging negative consequences such as physical health, mental health, social, and economy affecting both individual and other people.[1] The most frequently used substance, tobacco products, have killed more than 8 million people annually in worldwide setting. More than 7 million of these deaths were the direct result of tobacco use, while approximately 1.2 million were non-smokers who were exposed to active smokers.[2] Indonesia still became one of the ASEAN countries with big prevalence of smokers, yet the tobacco control policies are weak.[2]

Socioeconomic status (SES) indicators, such as education background, income, and occupation, are commonly known as strong predictors of health behaviours and outcomes. SES also tend to be associated with health.[3] Tobacco use has been widely known as one of the major contributors to poverty due to the catastrophic expenditure for healthcare as well as extra household spending other than nutritious food.[2, 4] Several studies provided information how certain socioeconomic characteristics can influence population's tobacco use behaviors.[5, 6] Lower socioeconomic status was also detected among smokers compared to non-smokers.[7, 8] Majority of tobacco users worldwide live in either low- or middle-income countries, where the heaviest burden of tobacco-related disease and death occurred.[9] This highlights the need of identifying socioeconomic characteristics in a population.

Youth, starting from the age of 15-24 years old, are at the highest risk in developing substance use behaviour due to their cognitive and emotional development. They undergo transition from high school to the brand-new college life, and start to develop their own autonomy and identity-seeking process.[10] According to national survey in Indonesia, particularly in West Java, tobacco users aged 15-24 years old had increased in a decade, from 21.2% in 2007 to nearly 30% in 2018.[11, 12] The increase might be derived from population growth in the country.[9] If there is no tobacco intervention, DALY and tobacco-related deaths are estimated to rise in the next decades, leaving huge burden to the country.

Community action strategies, intervention, and tobacco policies must be implemented in a suitable way to the communities, especially among youth. Therefore, it is critical to identify the population's characteristics in a region. The trends and the characteristics of substance use among population can be changed overtime, especially during COVID-19 pandemic situation which induce more stressful situation.[13] Few studies had addressed the socioeconomic issues among adult tobacco users[5, 14, 15], but still limited information in Bandung city as the capital of West Java Province, especially among youth. This study aims to explore the sociodemographic characteristics of tobacco users among college students, as well as its association with tobacco use.

II. MATERIALS AND METHODS

A. Study Design and Sample Size

Design of this study was cross-sectional, which was conducted in two universities in Bandung city, West Java Province, Indonesia. This study used multi-stage sampling technique by choosing the potential university in Bandung. For the first stage, purposive sampling approach was used in choosing one public university and one private university. The public university was coded as University A and the private university as University B. For the next stage, this study used inclusion and exclusion criteria in choosing the respondents. Undergraduate college students from university A and B aged 18-24 years old and had access to the internet were eligible to participate in this study. The students who did not give their consent to participate in this study and did not give complete answers in the required field were excluded from this study. Cochran formula was used to calculate the sample size and the minimum sample was 344 respondents.

B. Measurement Tools and Data Collection

Data collection was carried out using self-reported questionnaires through online form. Socioeconomic characteristics data of respondents was obtained through 12 questions such as sex, religion, ethnicity, current residential setting, current living situation, monthly stipend, cumulative GPA, father's occupation, mother's occupation, household income, parents' marital status, and parental educational background.

As for the tobacco use screening, the questionnaire contained four period of time in screening respondents' history of tobacco use, which was lifetime period, past year period, past month period, and past week period. The questionnaire was validated by three experts and tested for reliability. Total Cronbach alpha for the questionnaire was 0.962, which exceeded the standard value of acceptable Cronbach's alpha. The data was collected on May – June 2022 using self-reported online questionnaire. Informed consent was displayed in the very first part of online form.

C. Data Analysis

The data were analyzed using IBM SPSS 22. To determine the frequency and percentage of variables, descriptive analysis was performed. Bivariate analysis was using either Chi-Square or Fisher exact test to determine the association between the socioeconomic characteristics with tobacco use of lifetime period and past month period. The variables were considered as significant if p-value <0.05.

D. Ethical Consideration

Ethical clearance for this study was obtained from Faculty of Medicine and Health, Muhammadiyah Jakarta University, Indonesia with number: No.075/PE/KE/FKK-UMJ/IV/2022.

III. RESULTS

A. Socioeconomic Characteristics

Total respondents of this study were 352 respondents from one public university and one private university. Majority of the respondents were female (62.5%) and over half

respondents were 21-24 years old (53.1%).

TABLE I. Socioeconomic characteristics.

Variables	Sociodemographic Characteristics		
	Male (n=132) n (%)	Female (n=220) n (%)	Total (n=352) n (%)
Age			
18-20 years old	54 (40.9)	111 (50.4)	165 (46.9)
21-24 years old	78 (59.1)	109 (49.5)	187 (53.1)
Mean±SD (20.56±1.374)			
Academic year			
Year 1	18 (13.6)	39 (17.7)	57 (16.2)
Year 2	33 (25.0)	48 (21.9)	81 (23.0)
Year 3	28 (21.2)	54 (24.5)	82 (23.3)
Year 4	45 (34.1)	73 (33.2)	118 (33.5)
Year 5	8 (6.1)	6 (2.7)	14 (4.0)
Religion			
Islam	92 (69.7)	151 (68.6)	243 (69.0)
Christian	20 (15.2)	43 (19.5)	63 (17.9)
Catholic	12 (9.1)	21 (9.5)	33 (9.4)
Buddha	4 (3.0)	2 (0.9)	6 (1.7)
Hindu	1 (0.8)	2 (0.9)	3 (0.9)
No religion	3 (2.3)	1 (0.5)	4 (1.1)
Ethnicity			
Sundanese	54 (40.9)	86 (39.1)	140 (39.8)
Javanese	32 (24.2)	53 (24.1)	85 (24.1)
Others (i.e., Chinese, Minang, Batak)	46 (34.8)	81 (36.8)	127 (36.1)
Type of University			
Public university	86 (65.2)	109 (49.5)	195 (55.4)
Private university	46 (34.8)	111 (50.5)	157 (44.6)
Living Area			
Urban/City	104 (78.8)	168 (76.4)	272 (77.3)
Rural/Regency	28 (21.2)	52 (23.6)	80 (22.7)
Cumulative GPA			
<2.5	5 (3.8)	5 (2.3)	10 (2.8)
2.5-3.5	79 (59.8)	130 (59.1)	209 (58.8)
>3.5	48 (36.4)	85 (38.6)	133 (37.8)
Monthly stipend[a]			
<IDR 1.5 million	55 (41.7)	88 (40.7)	143 (41.1)
IDR 1.5-3 million	56 (42.4)	88 (40.7)	144 (41.4)
>IDR 3 million	21 (15.9)	40 (18.5)	61 (17.5)
Household income[b]			
<IDR3.7 million	21 (18.6)	32 (16.8)	53 (17.4)
IDR3.7-7.8 million	31 (27.4)	49 (25.7)	80 (26.3)
IDR>7.8 million	61 (54.0)	110 (57.6)	171 (56.3)
Current living situation			
Living alone (rent house)	13 (9.8)	14 (6.4)	27 (7.7)
Living alone (one room rent)	61 (46.2)	117 (53.2)	178 (50.6)
Living with adults	54 (40.9)	87 (39.5)	141 (40.1)
Others	4 (3.0)	2 (0.9)	6 (1.7)
Father educational background			
High school and lower	45 (34.1)	61 (27.7)	106 (30.1)
Higher than high school	87 (65.9)	159 (72.3)	246 (69.9)
Mother educational background			
High school and lower	48 (36.4)	66 (30.0)	114 (32.4)
Higher than high school	84 (63.6)	154 (70.0)	238 (67.6)
Father's occupation			
Not working	25 (18.9)	38 (17.3)	63 (17.9)
Public sector	27 (20.5)	41 (18.6)	68 (19.3)
Private sector	31 (23.5)	54 (24.5)	85 (24.1)
Self-employed	49 (37.1)	87 (39.5)	136 (38.6)
Mother's occupation			
Not working	76 (57.6)	112 (50.9)	188 (53.4)
Public sector	21 (15.9)	43 (19.5)	64 (18.2)
Private sector	17 (12.9)	30 (13.6)	47 (13.4)
Self-employed	18 (13.6)	35 (15.9)	53 (15.1)

[a]Missing data: 4 [b]Missing data: 48

The respondents were mostly in their fourth year (33.5%) and the least of them were fifth year (4.0%). Since Indonesia is

famous of the Muslim as their majority population, it was as expected that the respondents were predominated by Muslim (69.0%) and were followed by other religions such as Christian (17.9%), Catholic (9.4%), with the least is Hindu (0.9%). No religion respondents, such as agnostic or atheist were also found (1.1%). The native ethnic in Bandung is Sundanese, indeed with the finding with the most of the respondents were Sundanese (39.8%). Majority of the respondents came from public university (55.4%). More than three fourth of the respondents lived in urban settings (77.3%) and most of the respondents lived alone in one-room rent (50.6%) or in Indonesian language it is called "*kost*". Nearly 2% of respondents lived in other settings other than mentioned above, such as the student's dormitory.

In terms of academic, nearly 60% of the respondents had cumulative GPA in range 2.5-3.5, while 37.8% had high cumulative GPA. Nearly half of the respondents (41.4%) had IDR 1.5-3 million as their monthly stipends, and followed by <IDR 1.5 million (41.1%). Respondents' parents were mostly married (83.0%), and both father and mother had more than high school as their educational background, 69.9% and 67.6%, respectively. Most of the respondents' father worked as self-employed worker (38.6%), followed by private sector (24.1%), public sector (19.3%), and 17.9% of the respondents' father was unemployed/retired. More than half of the respondents' mother did not work (53.4%), while 18.2% worked in public sector, followed by self-employed (15.1%), and private sector (13.4%). IDR 3.7 million is Bandung city's regional minimum wage, and over half of respondents' parents had household income two times more than regional minimum wage (56.3%).

B. Tobacco Use Status

Table II displays tobacco products use status among respondents in four periods. There were 36.1% of the respondents who had tried tobacco products at least once in their lives, majority came from male (62.5%) among lifetime tobacco user. Over the period, it can be seen that the proportion of tobacco use status were gradually declining. 25.9% of the respondents consumed tobacco in the past year period, and around one fifth of the respondents were past month tobacco user.

TABLE II. Tobacco Use Status

Variables	Tobacco Use		
	Male (n=132) n (%)	Female (n=220) n (%)	Total (n=352) n (%)
Lifetime period			
No	52 (39.4)	172 (78.2)	224 (63.6)
Yes	80 (60.6)	48 (21.8)	128 (36.4)
Past year period			
No	74 (56.1)	187 (85.0)	261 (74.1)
Yes	58 (43.9)	33 (15.0)	91 (25.9)
Past month period			
No	83 (62.9)	198 (90.0)	281 (79.8)
Yes	49 (37.1)	22 (10.0)	71 (20.2)
Past week			
No	92 (69.7)	205 (93.2)	297 (84.4)
Yes	40 (30.3)	15 (6.8)	55 (15.6)

C. Association between Socioeconomic Characteristics and Tobacco Use in Lifetime Period

Table III shows the association between respondents' socioeconomic characteristics with lifetime tobacco use. It can be seen that sex, religion, ethnicity, and type of university had significant association with lifetime tobacco use. Male were found to be more likely to smoke in the lifetime period (OR: 5.513, 95%CI: 3.433-8.852). Students who attended public university were 1.58 times more likely to use tobacco. In terms of economic background, no significant association were found between both monthly stipend and household income with lifetime tobacco use. As well as current living situation and living area, they did not have a significant association with lifetime tobacco use (p>0.05).

TABLE III. Association between Socioeconomic Characteristics and Tobacco Use in Lifetime Period

Sociodemographic Characteristics	Lifetime Tobacco Use (n=128)		
	Non-user n (%)	User n (%)	p-value
Sex			**0.000****
Female	172 (78.2)	48 (21.8)	
Male	52 (39.4)	80 (60.6)	
Age			0.657
18-20 years old	107 (64.8)	58 (35.2)	
21-24 years old	117 (62.6)	70 (37.4)	
Religion			**0.011***
Other than Islam	80 (73.4)	29 (39.6)	
Islam	144 (59.3)	99 (88.4)	
Ethnicity			**0.040***
Other than Sundanese	144 (67.9)	68 (32.1)	
Sundanese	80 (57.1)	60 (36.4)	
Type of University			**0.043***
Private university	109 (69.4)	48 (30.6)	
Public university	115 (59.0)	80 (36.4)	
Living Area			0.279
Rural/Regency	55 (68.8)	25 (31.3)	
Urban/City	169 (62.1)	103 (37.9)	
Cumulative GPA			0.394
<3.0	39 (59.1)	27 (40.9)	
≥3.0	185 (64.7)	101 (35.3)	
Monthly stipend[a]			0.687
<IDR 1.5 million	93 (65.0)	50 (35.0)	
≥IDR 1.5 million	129 (62.9)	76 (37.1)	
Parents marital status			0.809
Married	185 (63.4)	107 (36.6)	
Divorced/Widowed	39 (65.0)	21 (35.0)	
Current living situation			0.307
Living alone	135 (65.9)	70 (34.1)	
Living with others	89 (60.5)	58 (39.5)	
Father educational background			0.709
High school and lower	69 (65.1)	37 (34.9)	
Higher than high school	155 (63.0)	91 (36.4)	
Mother educational background			0.897
High school and lower	72 (63.2)	42 (36.8)	
Higher than high school	152 (63.9)	86 (36.1)	
Father's occupation			0.259
Not working	44 (69.8)	19 (30.2)	
Working	180 (62.3)	109 (37.7)	
Mother's occupation			0.211
Not working	114 (60.5)	74 (39.4)	
Working	110 (67.1)	54 (32.9)	
Household income			0.293
<IDR3.7 million	37 (69.8)	16 (30.2)	
≥IDR3.7million	156 (62.2)	95 (37.8)	

*p<0.05 **p<0.01 [a]missing data = 4 [b]missing data = 48 were not included in analysis

D. Association between Socioeconomic Characteristics and Tobacco Use in Past Month Period

From Table IV, it is reported that sex, religion, type of university, living area, and father educational background had a significant association with past month tobacco use. Alike with the lifetime tobacco use, being male is also more likely to use tobacco in the past one month (OR: 5.313, 95%CI: 3.021-9.344). Living in the city had 2.329 times higher odds of using tobacco in past month period than living in rural. Similar with lifetime tobacco use, economical background such as monthly stipend and household income were not significantly associated with past month tobacco use.

TABLE IV. Association between Socioeconomic Characteristics and Tobacco Use in Past Month Period

Sociodemographic Characteristics	Past Month Tobacco Use (n=71)		
	Non-user n (%)	User n (%)	p-value
Sex			**0.000****
Female	198 (90.0)	22 (10.0)	
Male	83 (62.9)	49 (37.1)	
Age			0.544
18-20 years old	134 (81.2)	31 (18.8)	
21-24 years old	147 (78.6)	40 (21.4)	
Religion			**0.010***
Other than Islam	96 (88.1)	13 (11.9)	
Islam	185 (76.1)	58 (23.9)	
Ethnicity			0.307
Other than Sundanese	173 (81.6)	39 (18.4)	
Sundanese	108 (77.1)	32 (22.9)	
Type of University			**0.040***
Private university	133 (84.7)	24 (15.3)	
Public university	148 (75.9)	47 (24.1)	
Living Area			**0.024***
Rural/Regency	71 (88.8)	9 (11.3)	
Urban/City	210 (77.2)	62 (22.8)	
Cumulative GPA			0.815
<3.0	52 (78.8)	14 (21.2)	
≥3.0	229 (80.1)	57 (19.9)	
Monthly stipend[a]			0.751
<IDR 1.5 million	115 (80.4)	28 (19.6)	
≥IDR 1.5 million	162 (79.0)	43 (21.0)	
Parents marital status			0.306
Married	236 (80.8)	56 (19.2)	
Divorced/Widowed	45 (75.0)	15 (25.0)	
Current living situation			0.150
Living alone	169 (82.4)	36 (17.6)	
Living with others	112 (76.2)	35 (23.8)	
Father educational background			**0.033***
High school and lower	92 (86.8)	14 (13.2)	
Higher than high school	189 (76.8)	57 (23.2)	
Mother educational background			0.571
High school and lower	93 (81.6)	21 (18.40)	
Higher than high school	188 (79.0)	50 (21.0)	
Father's occupation			0.199
Not working	54 (85.7)	9 (14.3)	
Working	227 (78.5)	62 (58.3)	
Mother's occupation			0.412
Not working	147 (78.2)	41 (21.8)	
Working	134 (81.7)	30 (18.3)	
Household income[b]			0.090
<IDR3.7 million	47 (88.7)	6 (11.3)	
≥IDR3.7million	197 (78.5)	54 (21.5)	

*p<0.05 **p<0.01 [a]missing data = 4 [b]missing data = 48 were not included in analysis

IV. DISCUSSION

The respondents of this study were predominated by female (62.5%) and aged 21-24 years old (53.1%). Findings revealed that 36.4% and 20.2% of college students were lifetime tobacco users and past month tobacco users, respectively. Despite the domination by female, the majority of lifetime tobacco users were male (62.5%). This is in line with other study,[16] where the tobacco users were predominated by male (94.4%). Study in low and middle economy countries also reported the number of male tobacco users exceeded female tobacco users.[17, 18] In this study, it was found that sex or gender was also strongly associated to tobacco use both in lifetime and past month period. This finding is in line with a lot of previous studies.[19] This might be due to beliefs and norms in Indonesia about masculinity construction through using tobacco. Even though it is more common now for female to smoke cigarettes, Indonesian culture in general were still against female smoking, especially in rural settings.[20]

Association between sociodemographic characteristics with tobacco use was assessed. Current living area, urban or rural settings, was not significantly associated with tobacco use in lifetime period. One study in America indicated that there were no significant differences in rural or urban living settings with tobacco use, despite the fact that tobacco use was more likely to be endorsed in rural minorities.[21] In contrary with lifetime tobacco use, current living area was associated to the past month tobacco use. Other South-east Asian study reported that Philippines urban residents and rural residents in Thailand were more likely to use tobacco than other countries. Urban setting is also reported to have more dense outdoor tobacco advertisements (OTA) than rural area. Study in other city in Indonesia outlined that youth smoking was more likely to happen in high density of OTA within the city.[22] Bandung had a regional law regarding tobacco use, specifically about expanding smoke-free places. Even though several places of Bandung city are protected from OTA, some places were still not protected by this law.[23] Further research about tobacco retailer and OTA density within the city may be required.

Parental characteristics such as parental educational background and occupation did not show any significant association with tobacco use. In line with other study, there were no significant differences between the parental education level and parents' occupation with cigarette smoking status.[24] Parents' educational background did not influence the tobacco use decision. Meanwhile, another study revealed higher education of mothers and family status did play role as protective factors of their children's tobacco use.[25] This might be due to transition of adolescents to adulthood. They can have their own individualism, freedom, and self-choice which were expressed as factors related to one's behaviors.[26]

Parental marital status was also not significantly associated with tobacco use in both periods. Contrary with other study, divorce or parental separation had significant association with tobacco use. Higher odd ratios of tobacco smoking were found in male who had experience of parental divorce.[27] Education, financial status, and parental education were also correlated

with current cigarette use. This study also found that people with lower stipend were strongly correlated with lifetime and current tobacco use.[28]

Religion and ethnicity showed significant association with both lifetime and current tobacco use. It is shown in several studies that religion,[29] and race/ethnicity had significant differences in tobacco use, especially in dual tobacco use.[30] Certain ethnic was also found to be more likely to use tobacco products than another ethnicity. African Americans/Blacks were found using more e-cigarettes than Whites and Hispanics.[31] Sundanese is the native ethnic group living in West Java province. Indeed, Sundanese was the most frequent ethnic groups to use tobacco products in this study. Harmonious with findings in Malaysia, which the biggest number of tobacco users were coming from Malays, the biggest Malaysian ethnic groups in the country.[32]

However, other study found that smoking and religion was not significantly associated.[33] Moreover, the association between smoking and Islam religion contributed to attenuation of insignificancy in ethnic and socioeconomic factors. Other study also found that there was no difference in racial/ethnics groups and smoking.[34] Indonesia is one of the countries which had various ethnicities, therefore it underlined the need of acknowledging cultural belief of certain ethnicity in substance use, especially tobacco use.

Regarding economic characteristics, both monthly stipend and household income had no significant association with tobacco use in lifetime and past month. This study showed more respondents with lower monthly stipend but higher number of the respondents with high household income. Contrary in other study, respondents with lower socioeconomic status (SES) were significantly most likely to use tobacco, which highlighted the inequities in substance use.[35] Meanwhile, other study reported that income had no significant influence to smoking onset.[36] Socioeconomic characteristics have always been varied in many studies; some studies found that lower SES was mostly associated with substance use.[18, 37] However, the characteristics could be different in specific population. Even though not all the socioeconomic factors were associated with both lifetime and past month tobacco use, these factors should not be ignored when developing tobacco policies or prevention strategies. Therefore, it is essential to assess sociodemographic characteristics among certain population, in order to develop suitable policies for the community.

V. CONCLUSIONS

Several socioeconomic characteristics of the respondents were associated with lifetime and past month tobacco use. Gender-based intervention, cultural and religious approach in preventing tobacco use might be required in this community. Research or surveys with a wider range to determine the substance use status and pattern among college students are recommended. Future research about environmental influences on tobacco use, such as role of tobacco retailer and should be assessed.

VI. LIMITATION

This study might not describe the generalization of Bandung undergraduate college students, due to not all students in Bandung participated in this study. Students in other universities might have different income backgrounds, monthly stipend, and other sociodemographic characteristics.

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