



# THE PERCEIVED EFFECTIVENESS OF ANTI-SMOKING POLICIES OF COLLEGE STUDENTS IN THE MENDIOLA CONSORTIUM

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## ABSTRACT

Nicotine consumption among young adults remains a persistent public health concern in the Philippines despite the implementation of national tobacco control measures such as excise taxes and graphic health warnings. Using a quantitative descriptive-correlational research design, the study surveyed 150 college students who are current or former users of nicotine products. The research analyzed the relationship between students' monthly allowance, perceptions of policy clarity, and perceptions of policy enforcement with their degree of nicotine consumption measured through weekly spending on nicotine products. Descriptive statistics and ordinal logistic regression were used to analyze the data. Results indicate that economic capacity is a stronger predictor of nicotine consumption than institutional policy perception within the university environment. The findings highlight the need for stronger campus enforcement mechanisms, enhanced policy communication, and integrated health promotion strategies to reduce nicotine consumption among college students.

**Keywords:** *Nicotine Consumption, Smoking Policies, Policy Perception, Mendiola Consortium, Policy Enforcement*

## INTRODUCTION

Youth nicotine consumption in the Philippines continues to be a pressing public health concern, particularly among young adults aged 18 to 24 who are in a critical

developmental stage where autonomy, peer influence, and financial independence expand rapidly. Despite national-level interventions such as the Expanded Graphic Health Warning Law and higher excise taxes under Republic Act No. 11346, nicotine use among young adults persists in more adaptive forms. The 2021 Global Adult Tobacco Survey (GATS) reports that the average age of smoking initiation in the Philippines is 20.9 years, indicating that many individuals begin or solidify nicotine use during their university years. During these years, many students deal with more stress, spend more time with friends, and encounter nicotine products more frequently, both inside and outside school.

The rise of electronic nicotine delivery systems further complicates the issue. These products are widely marketed as cleaner or less harmful alternatives, yet they often serve as entry points into long-term nicotine dependence. Their accessibility, flavored variants, and portrayal as lifestyle devices make them particularly appealing to young adults navigating academic and social pressures. Because these habits change depending on the environment, it makes sense to look more closely at what is happening in specific areas like Mendiola.

Manila provides a unique and relevant setting for such inquiry. As one of the most densely populated cities in the world with over 70,000 individuals per square kilometer, it exposes students to an environment where the availability and visibility of nicotine products are high (World Bank, 2022). The Philippine Statistics Authority (2022) reports that more than 42 percent of Manila's population is under 30, many of whom are enrolled in higher education institutions concentrated in university clusters such as the Mendiola Consortium. These urban conditions amplify exposure to tobacco retailers, convenience stores, informal vendors, and online sellers that often bypass age verification. While national and local regulations prohibit the sale of nicotine products near schools, enforcement varies significantly across different areas, contributing to persistent accessibility (SEATCA, 2019; DOH, 2020).

In many schools, anti-smoking rules help set expectations for students and become part of the campus culture, even if the level of enforcement differs from place to place. These policies typically encompass regulatory prohibitions, communication of rules, visible cues such as signage, and varying degrees of enforcement. For policies to be effective, they must be consistently implemented, clearly communicated, and supported by educational initiatives that influence student attitudes and perceived risks. However, institutional variation across campuses, including differences in monitoring, disciplinary procedures, and health promotion activities, may weaken their ability to shape behavior (Fong et al., 2006).

Equally important is the role of students' monthly allowance, which determines their purchasing power and access to nicotine products. For many college students, this allowance represents their primary source of discretionary income. With increased financial independence, students may allocate part of their allowance to cigarettes, vapes, or related products, especially when influenced by stress, social norms, and targeted marketing (Quimbo et al., 2020; Sangalang et al., 2021). Students with lower allowances may still consume nicotine but often resort to cheaper or illicit alternatives available

through informal markets (Simbulan, 2021). Thus, differences in economic capacity create differing pathways of access, frequency of use, and preferred product type.

The Mendiola Consortium, composed of San Beda University, Centro Escolar University, and La Consolacion College, offers a strategic environment for analyzing these dynamics. Situated in the heart of Manila, the consortium brings together students from diverse socio-economic backgrounds who share similar urban exposures yet experience varying institutional environments. Each member school implements its own anti-smoking measures, often with differing levels of clarity, communication, and enforcement. This institutional diversity, combined with the city's dense environment and high accessibility to nicotine products, presents an ideal setting for examining how economic and policy factors interact to influence student nicotine consumption.

Given this environment, the study investigated the extent to which students' monthly allowances and their perceptions of anti-smoking policy clarity and enforcement shape their nicotine consumption patterns. For this study, degree of consumption refers specifically to students' weekly nicotine spending, categorized into four ordered levels reflecting increasing financial commitment to nicotine products. This establishes a concrete and measurable behavioral indicator that can be compared against both economic resources and institutional policy perceptions. Understanding these relationships helps clarify how institutional and economic contexts work together to influence youth behavior and provides evidence-based guidance for policy improvements within academic institutions.

The study contributes to understanding how economic capacity and institutional policies interact to shape nicotine consumption among university students. Its findings are relevant to the following stakeholders:

**Educational Institutions.** The study provides evidence-based insights on the effectiveness of existing anti-smoking measures, helping administrators refine rules, improve communication, and strengthen enforcement mechanisms.

**Student Affairs and Health Advocacy Offices.** Findings can inform the development of targeted health campaigns, cessation programs, and student engagement initiatives aimed at reducing nicotine use.

**Local Government Units and Regulatory Agencies.** The results may guide LGUs, the DOH, and related agencies in coordinating enforcement efforts, improving monitoring systems, and addressing access points near campus.

**Students and the Academic Community.** By clarifying how institutional and economic factors influence nicotine use, the study helps students make informed health decisions and encourages their participation in campus policy discussions.

**Future Researchers.** The study offers empirical data and a localized analysis of nicotine consumption within an urban university setting, contributing to literature in behavioral economics and public health.

This study focuses on college students from San Beda University, Centro Escolar University, and La Consolacion College Manila who currently consume or previously consumed nicotine-based products such as cigarettes and vapes. It examines how monthly allowance and institutional anti-smoking policies influence their consumption patterns.

For the purpose of this study, nicotine consumption behavior refers to the students' self-reported frequency and intensity of nicotine use, measured through their preferred nicotine product, weekly spending on nicotine products, and categorized levels of use ranging from low, moderate, to high consumption. This operationalization is based on students' weekly expenditure brackets and product usage frequency, which serve as indicators of their degree of nicotine consumption.

The study does not analyze the medical or physiological health effects of nicotine use in detail. It also does not include a full administrative audit of campus policies. While factors such as family influence, stress, and peer pressure may affect smoking behavior, this research focuses exclusively on monthly allowance, policy clarity, and policy enforcement.

## **Research Questions**

Nicotine consumption among college students remains influenced by a combination of financial capacity, institutional environments, and urban exposure. While national sin taxes aim to reduce affordability, students with higher monthly allowances may remain relatively unaffected by price increases. At the same time, university anti-smoking policies differ in clarity, and enforcement, which may influence how students perceive and follow these rules.

Despite existing studies, limited research directly examines how monthly allowance and institutional policies jointly shape nicotine consumption within specific academic settings such as the Mendiola Consortium. This study addresses that gap by examining the following questions:

With the foregoing situation, the study addressed the following questions:

1. What is the demographic profile of college students within the Mendiola Consortium in terms of age, gender, year level, monthly allowance, smoking status, and degree of consumption?
2. What are the students' perceptions of anti-smoking policies in terms of:
  - a. Policy clarity and communication
  - b. Enforcement
3. To what extent do students' perceptions of policy clarity and enforcement influence their nicotine consumption behavior?

4. How does monthly allowance affect students' nicotine consumption?
5. Based on the findings, what policy recommendations can be proposed to improve the implementation and impact of anti-smoking policies within the Mendiola Consortium?

## METHODOLOGY

The proposed operational framework for the study is derived from the conceptual framework of Preciados & Carcajente (2017) and has been integrated into a structure of two distinct phases.

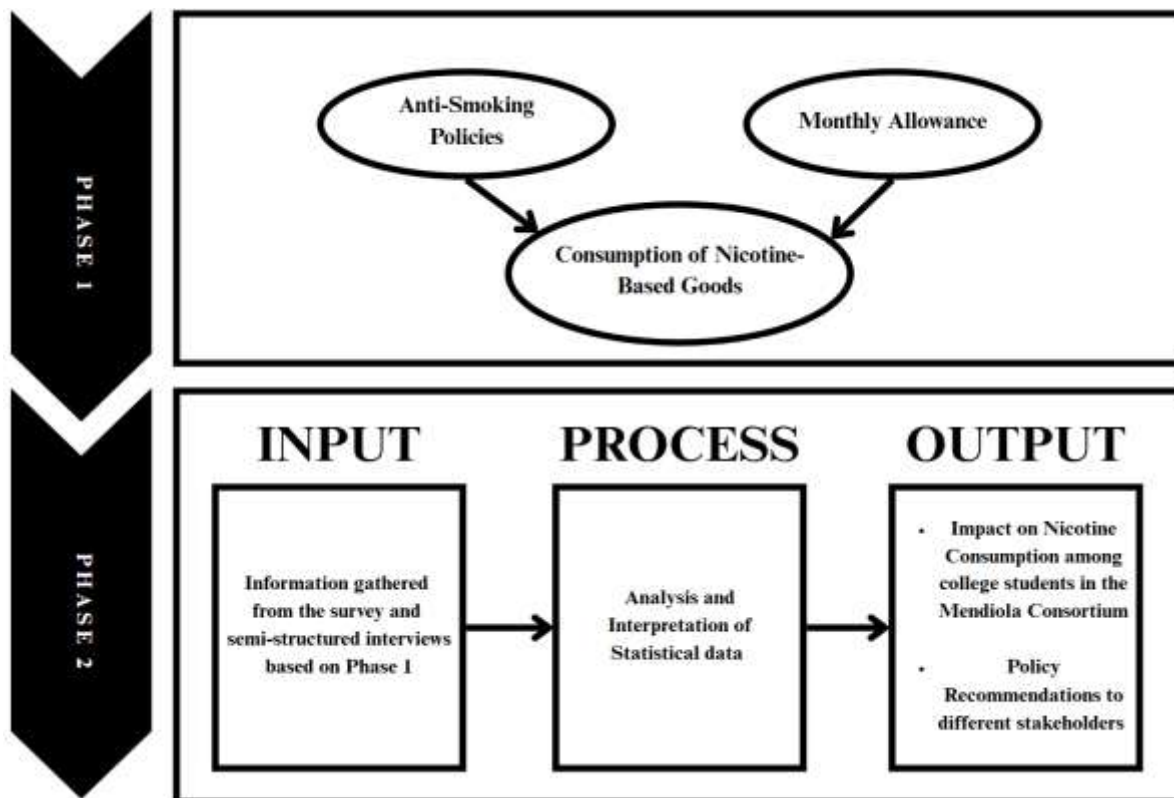


Figure 1  
Proposed Operational Framework

Phase 1 establishes the conceptual foundation by identifying two primary factors influencing the consumption of nicotine-based goods: university anti-smoking policies, and income. Anti-smoking policies, which are divided into "Policy Clarity" and "Policy Enforcement," include two essential elements of school laws on their enforcement and communication, such as campus smoking bans or health education that either directly or indirectly discourage nicotine use. Monthly allowance represents the students' economic capacity, which affects their purchasing power and, consequently, their access to nicotine

products, and are treated as is. These variables are theorized to directly influence the consumption patterns of nicotine among students.

Phase 2 operationalizes the study using the Input-Process-Output (IPO) model. Empirically, the IPO model has proven effective in studies dealing with behavioral and policy evaluation, particularly in public health and education research. For instance, in the study of Pajarillo (2019), the IPO model was utilized to examine the effectiveness of institutional anti-smoking campaigns among college students. The model facilitated the categorization of intervention strategies (inputs), implementation mechanisms (processes), and measurable behavioral changes (outputs), which mirrors this study's structural logic. The input consists of information gathered from surveys and semi-structured interviews conducted among students, guided by the conceptual insights from Phase 1. The process involves analyzing and interpreting the collected data using statistical methods to determine the relationships and effects of the identified variables. The output of the study has two main components: first, it provides an assessment of the impact of socio-economic and institutional factors on nicotine consumption among students within the Mendiola Consortium; second, it provides policy recommendations aimed at different stakeholders, including public health authorities and academic institutions, to guide future policies and actions.

### *Research Design and Strategy*

The study utilizes a quantitative descriptive–correlational research design. Quantitative approaches are appropriate when measuring relationships among variables in a structured manner (Creswell & Creswell, 2018), while a correlational framework allows for examining associations between multiple predictors and a behavioral outcome (Babbie, 2021). This design was chosen to determine how monthly allowance, policy clarity, and policy enforcement influence nicotine consumption behavior among college students in the Mendiola Consortium.

Given that nicotine consumption was measured through ordered weekly spending categories, the analysis required statistical techniques capable of handling ordinal outcomes. As recommended by Long and Freese (2014) and Wooldridge (2015), ordinal logistic regression (also called the proportional odds model) is the appropriate method for analyzing ordered categories where intervals between values cannot be assumed to be equal. For this reason, the descriptive–correlational design was integrated with an econometric model suited to the structure of the data.

To align the analytical approach with the structure of the dependent variable, the study employs an ordered logistic regression model. Weekly nicotine spending measured in four ordered categories, and the intervals between these categories cannot be assumed to be equal. As Long and Freese (2014) and Wooldridge (2015) emphasize, ordered logistic regression is most appropriate for ordinal outcomes of this nature because it preserves the ranking of categories without imposing linearity assumptions. This ensures that the analysis accurately reflects the gradations of nicotine consumption based on weekly spending.

### *Research Participants and Respondents*

The research consists of college students and key institutional stakeholders from the Mendiola Consortium. To specify, the Mendiola Consortium consists of the universities located within the university-belt of Mendiola, which are San Beda University, Centro Escolar University, and La Consolacion College Manila (formerly included College of the Holy Spirit Manila). These institutions were selected due to their proximity to one another, shared academic and socio-cultural environment, and accessibility to similar institutional policies regarding student health and behavior.

### *Sampling Design*

For the quantitative sampling design, this study adopts purposive quota sampling as its primary method for selecting participants. Purposive quota sampling enables the researcher to intentionally select individuals who possess specific characteristics that are essential to the objectives of the study (Palinkas et al., 2015). In this case, the participants are college students from institutions within the Mendiola Consortium who are either current or former users of nicotine-based products such as cigarettes and vapes. An even quota was set, making sure that an even distribution of college students from San Beda University, Centro Escolar University, and La Consolacion College serve as the respondents. To ensure ethical compliance, only students aged 18 years and above are included in the sample. The purposive quota selection allows the researcher to focus on those most affected by or familiar with the issue, enabling deeper insight into the intersection of economic behavior, institutional policy, and nicotine consumption.

The proposed sample size of 150 participants is based on both methodological and practical considerations. While purposive sampling is non-random, this sample size supports the study's quantitative objectives by enabling the use of descriptive statistics, cross-tabulations, and regression analysis (Creswell & Creswell, 2018). A sample of this size allows for meaningful subgroup comparisons (e.g., by institution, gender, or awareness level) and meets the threshold for exploratory models using Likert-scale survey items. From a logistical standpoint, targeting 150 respondents is feasible given the number of participating schools. Ultimately, purposive quota sampling combined with this sample size ensures that the study generates data-rich, contextually grounded, and analytically viable results while maintaining practical feasibility (Etikan et al., 2016; Creswell & Creswell, 2018).

### *Measurement and Instrumentation*

The research instrument for this study is a structured survey questionnaire designed to capture four primary components: demographic profile, socio-economic status, nicotine consumption behavior, and perceptions of university anti-smoking policies. Consistent with best practices in behavioral survey design (Presser et al., 2004), the survey incorporates both factual and perceptual measures to allow for comprehensive quantitative modeling.

The dependent variable, Weekly nicotine spending, is recorded in four categories: “Less than ₱100,” “₱100–₱299,” “₱300–₱599,” and “₱600 and above.” These categories are recoded numerically from 1 to 4, forming the study’s ordinal dependent variable. The predictors, policy clarity and policy enforcement are computed as composite mean scores derived from their respective Likert-scale items, each rated from 1 (strongly disagree) to 4 (strongly agree). The Likert scales follow an ascending order (1 to 4) because all items are to be positively worded; in such cases, higher numerical values should consistently represent stronger agreement or greater presence of the construct to preserve interpretive coherence and ensure that composite scores accurately reflect increasing levels of the underlying perception (Joshi et al., 2015). The internal consistency of the perception scales was evaluated using Cronbach’s alpha. According to Field (2013), a coefficient of 0.70 or higher indicates acceptable reliability for Likert-type constructs in social science research. This threshold ensures that the items within each scale measure a coherent underlying dimension rather than functioning independently. The pilot test showed that both the policy clarity and policy enforcement scales met this criterion, supporting their suitability for use in the final instrument and justifying the computation of composite mean scores for subsequent analysis. A Cronbach alpha test involving 30 respondents assess question clarity, flow, and comprehension. This enables the refinement of wording, sequencing, and scale instructions. The pretest ensured that respondents would interpret each item as intended, strengthening the overall validity of the instrument.

### *Research Procedures for Data Collection*

The following presents the procedure of how the research collected its data:

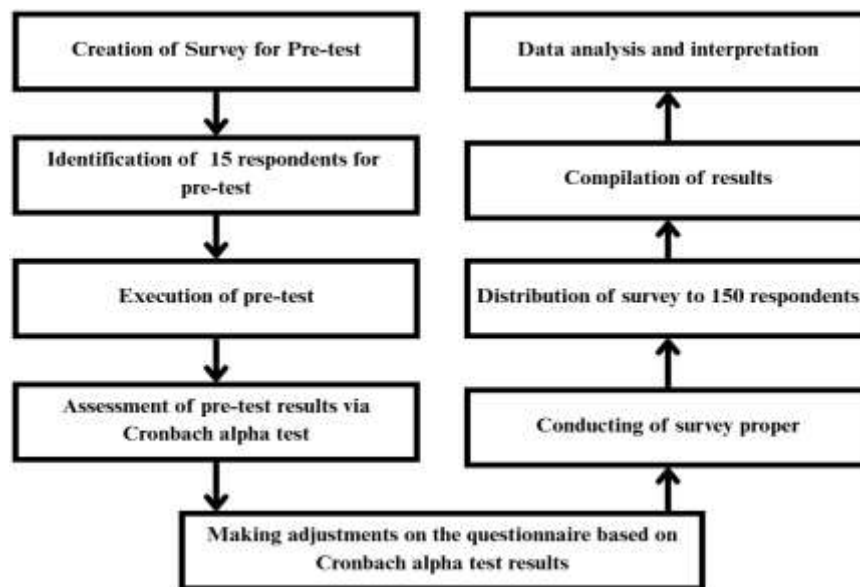


Figure 2.  
**Research Procedures for Data Collection**

Data analysis was conducted in several stages, beginning with descriptive statistics to summarize demographic characteristics, socio-economic status, and patterns of nicotine use. Measures of central tendency and distribution were computed for all major variables, including the composite perception indices. These descriptive findings provide the contextual foundation for the regression analysis presented in the results section.

To examine the relationships among the predictor variables, monthly allowance, policy clarity, and policy enforcement, and the ordinal dependent variable representing weekly nicotine spending, the study utilized ordered logistic regression. As noted by Long and Freese (2014), this model is ideal for ordinal outcomes due to its assumption of a latent continuous variable underlying the ordered categories. Furthermore, it preserves the ordinal structure of the dependent variable without imposing the unrealistic assumption of equal intervals required by OLS regression.

The econometric specification of the model is expressed as:

Equation 1

$$\log\left(\frac{P(Y \leq j)}{P(Y > j)}\right) = \alpha_j - \beta_1 X_1 - \beta_2 X_2 - \beta_3 X_3 \quad j = 1, 2, 3$$

Where

- $Y_j$  = Nicotine Consumption (Weekly Spending on Nicotine-based Products)
- $X_1$  = log-transformed Monthly Allowance
- $X_2$  = Policy Clarity Score
- $X_3$  = Policy Enforcement Score
- $j$  = the index of each cumulative threshold in the ordinal logit model.

This structure draws from the approach used by DeCicca et al. (2002), who used OLS to analyze the impact of tax policy and personal perceptions on youth smoking behavior. Likert-scale variables are treated as approximately interval-level data (Wooldridge, 2016), allowing their use as regressors in a linear model.

Although vape and cigarette products are taxed at different rates under Philippine law, this study treats nicotine consumption as a unified behavior, defined by combined weekly expenditure. Perceptions of sin tax effectiveness are thus interpreted broadly, referring to the perceived deterrent effect of taxation on nicotine use in general. This decision is grounded in both theoretical and behavioral considerations: students often substitute or combine nicotine products based on availability and price sensitivity, and typically respond to the overall environment of nicotine regulation rather than discrete tax instruments. Separating these categories could introduce confusion, reduce statistical power, and detract from the study's goal of assessing the general impact of policy awareness and perception on nicotine behavior among youth. This approach follows public health literature, which often treats regulation and cost-based deterrence as generalizable across forms of consumption (Chaloupka & Warner, 2000).

Before estimating the model, diagnostic tests are conducted to ensure statistical robustness. Multicollinearity was assessed using the Variance Inflation Factor, with values below conventional thresholds indicating acceptable independence among predictors. Model fit was evaluated through the likelihood-ratio test, comparing the full model against a null model with no predictors. Additional comparisons to multinomial logistic regression using metrics such as AIC and BIC help confirm the suitability of the ordered logit framework.

## RESULTS

**Table 1**  
**Cronbach Alpha Test**

	Test Result
The Perceived Effectiveness of Anti-Smoking Policies of College Students in the Mendiola Consortium	0.721

**Table 2**  
Demographic Profile of Respondents

Age	Total Frequency (n=150)	% of Total
19	8	5.33%
20	9	6%
21	46	30.67%
22	47	31.33%
23	18	12%
24	10	6.67%
25	7	4.67%
28	5	3.33%
Gender		
Female	72	48
Male	78	52

**Table 3**  
**Socio-economic Profile of Respondents**

Estimated Monthly Allowance	Total Frequency (n=150)	% of Total
Below ₱3,000	2	1.33%
₱3,000 - ₱4,999	26	17.33%
₱5,000-₱7,999	39	26%
₱8,000-₱9,999	24	16%
₱10,000-₱14,999	13	8.67%
₱15,000-₱19,999	20	13.33%

₱20,000 and above	26	17.33%
<b>Weekly Spending on Nicotine-Based Products</b>		
Less than ₱100	25	16.67%
₱100 - ₱299	23	15.33%
₱300 - ₱599	63	42%
₱600+	39	26%
<b>Consumed Nicotine Based Products</b>		
Vape	98	65.33%
Cigarette	21	14%
Vape and Cigarette	31	20.67%
<b>Year Level</b>		
1 <sup>st</sup> Year	0	0%
2 <sup>nd</sup> Year	8	5.33%
3 <sup>rd</sup> Year	34	22.67%
4 <sup>th</sup> Year	108	72%
<b>College/ University</b>		
Centro Escolar University	51	34%
La Consolacion College	48	32%
San Beda University	51	34%

**Table 4**  
**Descriptive Statistics of Demographic Profile by Institution**

<b>Institution</b>	Centro Escolar University (n=51)	La Consolacion College (n=48)	San Beda University (n=51)
<b>Age</b>	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)
19	1.96%	6.25%	7.84%
20	3.92%	10.42%	3.92%
21	25.49%	33.33%	33.33%
22	33.33%	33.33%	27.45%
23	17.65%	10.42%	7.84%
24	11.76%	0.00%	7.84%
25	3.92%	4.17%	5.88%
28	1.96%	2.08%	5.88%
<b>Gender</b>			
Male	41.18%	56.25%	58.82%
Female	58.82%	43.75%	41.18%

**Table 5**  
**Descriptive Statistics of Socio-economic Profile by Institution**

<b>Institution</b>	<b>Centro Escolar University (n=51)</b>	<b>La Consolacion College (n=48)</b>	<b>San Beda University (n=51)</b>
<b>Estimated Monthly Allowance</b>	<i>f</i> (%)	<i>f</i> (%)	<i>f</i> (%)
Below ₱3,000	0.00%	0.00%	3.92%
₱3,000 - ₱4,999	17.65%	16.67%	17.65%
₱5,000-₱7,999	13.73%	35.42%	29.41%
₱8,000-₱9,999	15.69%	20.83%	11.76%
₱10,000-₱14,999	13.73%	6.25%	5.88%
₱15,000-₱19,999	15.69%	8.33%	15.69%
₱20,000 and above	23.53%	12.50%	15.69%
<b>Weekly Spending on Nicotine-Based Products</b>			
Less than ₱100	7.65%	16.67%	15.69%
₱100 - ₱299	13.73%	12.50%	19.61%
₱300 - ₱599	47.06%	43.75%	35.29%
₱600+	21.57%	27.08%	29.41%
<b>Year Level</b>			
2 <sup>nd</sup> Year	1.96%	2.08%	11.76%
3 <sup>rd</sup> Year	15.69%	39.58%	13.73%
4 <sup>th</sup> Year	82.35%	58.33%	74.51%

**Table 6**  
**Descriptive Statistics for Respondents' Perception of Policy Clarity**

<b>Statement No.</b>	<b>Statement</b>	<b>SA (4)</b>	<b>A (3)</b>	<b>D (2)</b>	<b>SD (1)</b>	<b>Mean</b>	<b>Verbal Form</b>
1	I am aware that my school implements a campus-wide anti-smoking policy.	76	53	18	3	3.35	AGREE
2	The school clearly communicates the rules and coverage of the anti-smoking policy.	62	55	24	9	3.13	AGREE
3	Information about anti-smoking policies is easily accessible (e.g., posted online or on bulletin boards).	46	66	28	10	2.99	AGREE
4	The school conducts campaigns, seminars, or	41	62	30	17	2.85	AGREE

	announcements about anti-smoking regulations.						
5	The objectives and purpose of the school's anti-smoking policy are clearly explained to students.	29	74	38	9	2.82	AGREE
6	I feel that the school takes enough effort to raise awareness about its anti-smoking policy.	38	72	26	14	2.89	AGREE

Note. SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree; Descriptive Statistics by author (2026)

**Table 7**  
**Descriptive Statistics for Respondents' Perception of Policy Enforcement**

Statement No.	Statement	SA (4)	A (3)	D (2)	SD (1)	Mean	Verbal Form
1	The school enforces its anti-smoking policy consistently across all students.	46	60	35	9	2.95	AGREE
2	I often see students smoking on campus.	49	50	37	14	2.89	AGREE
3	Penalties for violations are clear and fairly implemented.	21	82	34	13	2.74	AGREE
4	I have witnessed or heard of students being penalized for violating anti-smoking rules.	27	62	38	23	2.62	AGREE
5	Most students comply with the school's anti-smoking policy.	31	61	36	22	2.67	AGREE
6	I believe the school's enforcement discourages students from smoking or vaping on campus.	31	61	51	7	2.77	AGREE

Note. SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree; Descriptive Statistics by author (2026)

**Table 8**  
**Descriptive Statistics of Supplementary Variables**

Statement No.	Statement	SA (4)	A (3)	D (2)	SD (1)	Mean	Verbal Form
1	The school's anti-smoking policy has influenced me to reduce my nicotine use.	33	34	46	37	2.42	DISAGREE

2	I smoke or vape less frequently within or near campus because of the school's policy.	42	37	48	23	2.65	AGREE
3	I am more conscious of my smoking/vaping habits due to awareness of the anti-smoking rules.	39	26	50	35	2.46	DISAGREE
4	My nicotine consumption tends to increase when I have a higher allowance or extra money.	39	45	39	27	2.64	AGREE
5	I would continue using nicotine products even if campus enforcement became stricter.	25	61	38	26	2.57	AGREE
6	The school's anti-smoking policy has made me more aware of the health risks of nicotine use.	38	61	38	13	2.82	AGREE

Note. SA = Strongly Agree, A = Agree, D = Disagree, SD = Strongly Disagree; Descriptive Statistics by author (2026)

**Table 9**  
**Ordinal Logistic Regression Results**

Variable	Coefficient	Std. Error	z-value	p-value	
log_Allowance	0.8233	0.2232	3.6887	0.000225	***
Policy Clarity	-0.4890	0.3238	-1.5102	0.131	
Policy Enforcement	-0.2011	0.4271	-0.4707	0.638	

**Table 10**  
**Multinomial Logit (AIC/BIC Comparison)**

Model	AIC	BIC
Ordered logit	383.39	401.45

**Table 11**  
**Summary of Hypothesis Testing Decisions**

Null Hypothesis ( $H_{01}$ )	p-value	Result
There is no significant relationship between the monthly allowance of students and their level of nicotine consumption within the Mendiola Consortium.	0.000225	Reject
There is no significant relationship between students' perception of anti-smoking policy clarity.	0.131	Accept
There is no significant relationship between students' perception of anti-smoking policy enforcement.	0.638	Accept

## DISCUSSION

The first empirical result concerns the reliability test for the perception scales used in the study. The Cronbach Alpha value of 0.721 indicates acceptable internal consistency for the items measuring perceived clarity and enforcement of anti-smoking policies. Cronbach Alpha values above the 0.70 threshold are generally deemed reliable in social science research, as they reflect coherent measurement of a single construct. This means the Likert-scale items employed in the study were interpreted consistently by respondents and reliably captured their perceptions of institutional anti-smoking policies. This aligns with Field's (2018) guidelines for reliability testing and Presser et al.'s (2004) assertion that pretested survey questions typically achieve reliability scores above the minimum acceptable level.

Following the reliability test, the demographic profile of respondents is presented. The majority of participants fall within the age bracket of 21 to 22, accounting for 62% of the sample. This age distribution aligns with the findings of the World Health Organization (2021), which indicate that nicotine experimentation peaks during early adulthood when individuals experience heightened independence, reduced parental oversight, and increased exposure to peer influence. This age group also corresponds to the period in which coping mechanisms and habitual behaviors solidify, making them particularly relevant to studies involving nicotine consumption. Gender distribution among respondents is nearly equal, with 52% male and 48% female. While global and Philippine studies have traditionally shown that males consume more nicotine, recent trends, including the growing popularity of vaping, suggest that nicotine use is becoming more gender-neutral in younger populations. A balanced gender sample thus strengthens the representativeness of the study.

The socio-economic profile of respondents further clarifies the context of nicotine consumption within the Mendiola Consortium. A majority of respondents receive a monthly allowance ranging from ₱5,000 to ₱20,000 and above. This level of financial support generates considerable disposable income, which, according to Consumer Choice Theory, increases an individual's ability to purchase discretionary goods such as nicotine products. Empirical studies by Quimbo et al. (2020), Sangalang et al. (2021),

and White et al. (2018) similarly emphasize that higher allowances correlate with higher frequency and diversity of nicotine use among young adults. This economic capacity directly affects both the quantity and type of nicotine consumed, which is further supported by the weekly spending patterns observed. Nearly half of the respondents spend ₱300 to ₱599 per week on nicotine products, suggesting regular and sustained consumption typical of users exhibiting moderate to high levels of dependence. Rational Addiction Theory (Becker & Murphy, 1988) explains that once consumption becomes habitual, price increases, such as those imposed by sin taxes, have only a limited deterrent effect, particularly among individuals with sufficient financial resources.

The type of nicotine product consumed also reflects broader regional trends. The majority of respondents (65.33%) use vapes, followed by those who consume both vapes and cigarettes. This pattern is consistent with Southeast Asian data showing a shift from traditional cigarettes to electronic nicotine delivery systems due to lower perceived harm, greater accessibility, variety of flavors, and lower cost per use. The Global Youth Tobacco Survey and Hu et al. (2018) attribute the rise of vaping to its appeal among younger consumers, who view it as more socially acceptable compared to traditional smoking. This emerging preference for vapes has important implications for regulatory action, as ENDS products often fall outside the full scope of traditional tobacco control mechanisms.

The demographic profile per institution reveals that the majority of respondents across the Mendiola Consortium are aged 21 and 22, accounting for approximately 58.82% in CEU, 66.66% in La Consolacion College, and 60.78% in SBU. There is a distinct institutional variation in gender distribution. Centro Escolar University is predominantly female (58.82%), whereas La Consolacion College (56.25%) and San Beda University (58.82%) are predominantly male.

This socio-economic Profile by Institution highlights the diverse financial capacities within the consortium. CEU students exhibit the highest financial capacity, with 23.53% belonging to the highest allowance bracket (₱20,000 and above). Conversely, La Consolacion College shows a strong middle-income concentration, with 35.42% receiving between ₱5,000 and ₱7,999. Spending patterns are relatively consistent across the three schools, with the ₱300 - ₱599 bracket being the most frequent choice (reaching 47.06% in CEU). San Beda University has the highest percentage of heavy spenders (29.41% at ₱600+). The sample is heavily weighted toward 4th-year students, particularly in CEU (82.35%) and SBU (74.51%).

The respondents' perceptions of policy clarity are summarized where the mean scores, which range from 2.82 to 3.35, reveal a consistent but moderate level of agreement regarding institutional communication of anti-smoking policies. Students generally acknowledge the existence of campus-wide anti-smoking rules, but the moderate level of agreement suggests that communication efforts are insufficiently pervasive or compelling. The Health Belief Model posits that individuals require not only awareness but also a clear perception of benefits, severity, and susceptibility before modifying behavior. The results indicate that, although policies are communicated, they may not be internalized by students at a meaningful level. This gap between awareness and behavioral change is

consistent with Park et al. (2014), who found that students exposed to policy information without accompanying cues to action often fail to adjust their consumption behavior.

The assessment of policy enforcement shown reveals a similar pattern. Mean values range from 2.62 to 2.95, suggesting that enforcement is present but not consistently perceived as strict or effective. Students report frequently seeing peers smoke or vape on campus, indicating gaps in monitoring and sanctions. This suggests that the school rules might exist mostly 'on paper' without being strongly enforced, wherein institutions implement policies in principle but fail to enforce them adequately in practice. Institutional Theory explains that policies require consistent monitoring and sanctions to achieve legitimacy. Without these, students may regard the rules as nominal rather than authoritative. Prior work by Simbulan (2021) observed similar inconsistencies in university environments, especially in urban zones with high commercial access to nicotine products, such as Mendiola.

The supplementary variables further illuminate the interplay between institutional policies and nicotine consumption. While students moderately agree that they tend to smoke or vape less near campus due to policy presence, they disagree that the policy has led them to reduce their overall usage. This shows that students mainly adjust their behavior only in places where they might get caught but do not exhibit fundamental changes in consumption behavior. Rational Addiction Theory accounts for this, which proposes that addicted people consider long-term costs but continue to engage in behavior when immediate utility outweighs perceived future harm. Students also agree that increased allowance leads to increased consumption, which directly supports the empirical findings in the regression analysis.

The ordinal logistic regression results provide deeper insight into the direction and magnitude of the relationships. The coefficient for log-transformed monthly allowance is positive and statistically significant, indicating that increases in allowance are associated with higher odds of falling into a higher consumption category. This variable exhibits a strong effect size and a p-value well below 0.001, demonstrating that financial capacity is a robust predictor of nicotine consumption. In contrast, the coefficients for policy clarity and enforcement are negative but statistically insignificant. Although the negative coefficients imply a theoretical tendency for better policies to reduce consumption, the lack of statistical significance indicates that, in practice, these policies have not meaningfully influenced behavior within the sample. The insignificance aligns with the descriptive data, which show that while students acknowledge policy presence, they do not perceive it as compelling enough to alter habits formed around autonomy, peer environments, and disposable income.

The multinomial logit compares the AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) values of the ordered logit model and the multinomial logit model, and the results show that the ordered logit model provides a more efficient and parsimonious fit. AIC and BIC are model selection criteria that balance goodness-of-fit with model complexity. When comparing models on the same data, the model with the lower AIC or BIC is preferred, as it achieves better fit with fewer parameters. BIC

penalizes complexity more heavily than AIC, so it generally favors simpler. The ordered logit model has lower AIC (383.39) and BIC (401.45) values compared to the multinomial logit model, which has higher scores on both criteria. Since lower AIC and BIC values indicate a better balance of model accuracy and simplicity, this confirms that the ordered logit model is the most appropriate statistical approach for analyzing nicotine consumption levels in the Mendiola Consortium. This makes theoretical sense because consumption categories in the study are ordinal in nature, meaning they follow a ranked structure rather than independent categories. The comparison strengthens the validity of the study's methodology by showing that the chosen model is not only statistically sound but also maximizes predictive efficiency with fewer parameters. Overall, the results reinforces confidence in the regression results by demonstrating that the selected analytical framework is both the most economical and the best-fitting option for the data.

The hypothesis tests further clarify the relationships among variables. Monthly allowance significantly influences nicotine consumption, leading to the rejection of the null hypothesis. In contrast, both policy clarity and policy enforcement show no significant relationship with nicotine consumption, which validates the acceptance of the corresponding null hypotheses. The significance level used was 0.05, and only the monthly allowance variable exhibited a p-value below this threshold. This finding reveals that, within the Mendiola Consortium, economic capacity exerts the strongest influence on nicotine-related behavior, whereas institutional policy mechanisms do not significantly contribute to changes in consumption.

## Conclusions

The results of the study reveal a coherent pattern in which monthly allowance emerges as the most influential factor affecting nicotine consumption among students, while policy clarity and enforcement remain weak predictors of behavior. Descriptive data show that a large proportion of respondents receive moderate to high monthly allowances, which directly translates into greater spending on nicotine products, particularly vapes. The regression analysis confirms this trend by identifying monthly allowance as the only statistically significant predictor of consumption. In contrast, although students generally acknowledge the existence of anti-smoking policies and indicate moderate agreement that these are communicated and enforced, such awareness does not lead to significant reductions in nicotine use. This reflects a disconnect between institutional policy efforts and actual student behavior. The demographic characteristics of the respondents further support the findings, as most students belong to the age group associated with higher experimentation, autonomy, and peer influence. The strong preference for vaping mirrors broader national and regional trends that point to the popularity of electronic nicotine devices among young adults, driven by perceived lower harm, greater accessibility, and a wider range of flavors. Additional results also show that students tend to adjust their nicotine use only when they are near campus but continue their typical consumption outside these boundaries. Taken together, the findings indicate that nicotine consumption in the Mendiola Consortium is shaped primarily by financial capacity and personal motivations rather than by institutional efforts to regulate behavior.

The results of this study are consistent with several local and international studies that highlight the growing influence of disposable income on nicotine consumption among youth. Similar to the findings of Quimbo et al. (2020) and White et al. (2018), this study confirms that higher allowances increase the likelihood of purchasing nicotine products, supporting the idea that financial capacity directly shapes consumption patterns. The dominance of vaping among respondents also aligns with the Global Youth Tobacco Survey and research by Hu et al. (2018), both of which document the rapid rise of electronic nicotine products among young adults due to flavored variants, lower cost per use, and strong peer influence. Furthermore, the weak influence of policy clarity and enforcement echoes Simbulan's (2021) observations that university anti-smoking policies often function symbolically, with inconsistent monitoring and limited sanctions that fail to modify behavior. Prior literature has also emphasized that awareness of policies does not necessarily translate into reduced consumption unless accompanied by strong institutional cues, which mirrors the insignificant results for policy variables in this study. Collectively, the alignment with previous studies reinforces the validity of the findings and situates the Mendiola Consortium within broader national and regional trends in youth nicotine use.

Based on the integration of empirical results and theoretical frameworks, three overarching conclusions are drawn.

First, the study concludes that financial capacity is the most decisive factor influencing nicotine consumption among Mendiola students. The strong statistical significance of monthly allowance aligns with a broad body of literature indicating that youth consumption of addictive goods increases when financial constraints are loosened (Quimbo et al., 2020; Sangalang et al., 2021). The Income Effect suggests that individuals with higher allowances can more easily absorb the cost of nicotine products, especially vapes, which are widely accessible around the consortium. Rational Addiction Theory further explains that once nicotine habits are established, individuals continue consuming even as prices rise, provided they have the income to support the behavior. Thus, allowance serves as the primary enabling condition for nicotine use.

Second, The study suggests that school rules don't strongly affect how much students actually use nicotine, they mostly just change where they use it. Although respondents are aware of campus rules and agree that enforcement exists, their behaviors suggest that policies function more as boundary markers than behavioral interventions. Students adjust where they smoke, not whether they smoke. The moderate agreement scores for both clarity and enforcement highlight shortcomings in communication strategies and monitoring efforts. Institutional Theory suggests that without consistent sanctions and credible authority, institutional rules lose their regulatory power.

Third, vaping has become deeply normalized among students in the Mendiola area. The dominance of ENDS products reflects broader regional trends and reinforces the idea that institutional policies have not adapted to the evolving nicotine landscape. As Foulds et al. (2006) and Serra (2023) emphasize, the modern appeal and perceived lower harm of vapes often make them exempt from traditional anti-smoking stigma. The

normalization of vaping, combined with students' financial ability and the dense retail environment of Mendiola, creates a consumption ecosystem where policies have difficulty penetrating personal routines and social practices.

## **Recommendations**

The findings point to the need for a multifaceted and evidence-grounded intervention strategy that recognizes the interplay between students' financial capacity, institutional structures, and behavioral motivations. Drawing from the study's theoretical framework and global best practices, the following recommendations are proposed.

### *Recommendations for Educational Institutions*

The persistence of nicotine consumption despite policy presence suggests that current campus regulations function more symbolically than effectively. Institutional Theory argues that rules influence behavior only when institutions consistently implement coercive, normative, and mimetic pressures (DiMaggio & Powell, 1983; Scott, 2001). Therefore, institutions must strengthen the credibility of their policies.

**Strengthen Monitoring and Enforcement in Hotspots.** Studies show that students are more likely to comply with anti-smoking rules when enforcement is visible, consistent, and predictable (Graham & McNeill, 2015; Wackowski et al., 2016). Universities such as those in Korea achieved measurable declines in smoking behavior once monitoring was intensified around campus boundaries (Lee et al., 2020). This supports the recommendation to increase campus patrol presence, especially in known hotspots within the Mendiola area.

**Standardize Sanctions Across the Consortium.** Inconsistent enforcement creates "policy leakage," weakening student deterrence. International campus tobacco-free initiatives, particularly those under the International Tobacco Control (ITC) Project, emphasize uniformity of sanctions to maintain policy legitimacy (Fong et al., 2006). A consortium-wide standardized sanction system increases institutional cohesion and prompts normative compliance.

**Create Anonymous Reporting Mechanisms.** Anonymous reporting systems align with the Health Belief Model's (HBM) "cue to action" principle, enabling students to participate in enforcement without social cost (Carpenter, 2010). U.S. universities implementing digital reporting tools have observed improved compliance because students feel involved in maintaining smoke-free spaces.

**Improve Messaging Through Behaviorally Informed Signage and Digital Communication.** Behaviorally informed interventions, such as loss-framed communications, visible cues, and simple rule reminders, have successfully reduced on-site smoking on Mexican and Uruguayan campuses (Thrasher et al. 2012). Using signage derived from behavioral economics strengthens perceived susceptibility and benefits (HBM), improving policy clarity.

**Provide Student-Centered Cessation Pathways.** Research consistently shows that quit support (counseling, nicotine replacement therapy, peer groups) enhances policy effectiveness (Ickes et al., 2013; Trinidad et al., 2019). Rational Addiction Theory explains that addicted individuals require alternative long-term utility sources to replace nicotine-driven satisfaction (Becker & Murphy, 1988). Integrating counseling and peer support addresses both physiological dependence and social reinforcement.

### *Recommendations for Local Government Units (LGUs) and Regulatory Agencies*

The urban context of the Mendiola Consortium plays a crucial role in shaping student nicotine access. The World Health Organization (2021) highlights that areas with high retailer density exhibit higher youth smoking and vaping prevalence.

**Intensify Monitoring of Vape Shops and Informal Retailers.** Evidence from Southeast Asia shows that illicit and informal markets thrive when enforcement is weak, contributing to stable youth consumption despite tax increases (Hu et al., 2018; DOH, 2020). LGU enforcement crackdowns in Singapore and Thailand significantly reduced youth access to flavored and disposable vapes. Manila LGUs must adopt similar monitoring models to address enforcement gaps.

**Strictly Implement Retail Licensing Requirements.** Studies in Latin America demonstrate that licensing systems, when strictly applied, decrease retailer density near schools (Chelwa et al., 2019). Enforcing licensing rules around Mendiola addresses environmental accessibility outlined in Institutional Theory.

**Coordinate With BIR and DOH on Excise Tax Enforcement.** Weak excise tax enforcement consistently leads to price distortions and product shifting (Quimbo et al., 2016; Department of Finance, 2023). Income Effect theory shows that if cheap vapes remain widely available, youth consumption persists. Strengthened inter-agency collaboration ensures taxation policies effectively deter youth use.

**Recommendations for the Academic Community.** Peer influence is a dominant factor in youth nicotine behavior (Sangalang et al., 2021). Students interpret health messages more credibly when delivered by peers with shared experiences.

**Develop Peer-Led Health Communication Programs.** Peer-led education has been successfully applied in Turkey, the U.S., and the Philippines, showing increased receptiveness to cessation messaging (Nichter et al., 2011). This reinforces HBM's emphasis on perceived norms and cues to action.

**Conduct Financial Awareness Workshops on Nicotine Spending.** Economic studies show students underestimate cumulative spending on nicotine (Smith et al., 2019). When made aware, consumption declines temporarily because of increased perceived cost (Krugman & Wells, 2018). Workshops operationalize Consumer Choice Theory by altering perceived opportunity costs.

### *Recommendations for Future Researchers*

Explore Additional Predictors (Peer Dynamics, Stress, Marketing Exposure). The current findings support further investigation into variables commonly highlighted in international youth smoking research (Cohen et al., 2016; Foulds et al., 2006). These variables would deepen understanding of Rational Addiction pathways.

Use Qualitative Methods to Capture Motivations and Attitudes. Qualitative approaches such as interviews and focus groups enrich quantitative findings by revealing nuanced rationalizations (Palinkas et al., 2015; Guest et al., 2006). This responds to Institutional Theory's emphasis on subjective interpretation of rules.

Consider Time-Series Studies. Longitudinal tracking aligns with behavioral economics research on addiction progression (Grossman, 2004). Monitoring change over time improves causal inference.

Disaggregate Cigarette, Vape, and HTP Consumption in Future Models. International evidence shows that policy sensitivity varies across product types (Gallagher et al., 2020; Hu et al., 2018). Disaggregated modeling enhances policy specificity.

### **Compliance with Ethical Standards**

The study adheres with ethical research practices, the data used in the study conform to the Philippine Data Privacy Act of 2013 (RA 10173), which establishes guidelines for the collection, handling, and dissemination of data. The study complies with national data sharing regulations. The structured methodological approach ensures the transparency, accountability, and integrity of data analysis throughout the research process.

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