# TOBACCO CONTROL POLICIES IN VIETNAM: SMOKING BEHAVIORS AND STAKEHOLDER PERCEPTIONS

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To my beloved family

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## ABSTRACT

**Background**: Tobacco remains a significant public health concern in Vietnam, particularly among men, with over 15 million users. To address the burden of tobacco-related morbidity and mortality, the Vietnamese government enacted tobacco control policies aimed at reducing smoking prevalence. It has been 12 years since the tobacco control law was enacted; however, the smoking prevalence has decreased marginally. Therefore, a comprehensive analysis of the individual, social, and policy factors that shape smoking behaviors among Vietnamese men is needed.

**Objective**: This thesis aims to investigate tobacco control policies in Vietnam through a quantitative assessment of purchase and cessation behaviors and qualitative exploration to gain deeper insights into both smokers' experience with tobacco control policy and stakeholder perceptions of its implementation.

**Methods**: A mixed-methods approach was employed, using both quantitative and qualitative studies. Quantitative data were derived from two sources: (1) a cross-sectional survey conducted in 2015 with a nationally representative sample of Vietnamese adults (n=3983), and (2) a longitudinal study in 2018 with 1525 participants. We performed Latent Class Analysis to identify classes of smokers based on their cigarette purchase behaviors. Multinomial logistic regression was applied to examine factors associated with distinct purchasing

behaviors classes. Meanwhile, factors associated with cessation behavior were examined in multivariable logistic regression models. Qualitative data was collected in nine focus group discussions (FGDs) with current and former smokers and in twelve in-depth interviews with key stakeholders. An inductive content analysis with a manifest approach was used to analyze the FGD, while an abductive thematic analysis was applied to the in-depth interviews with stakeholders.

**Results**: The cross-sectional survey indicated that 44.4% of smokers are price-insensitive and smoked international brands; the remaining smokers fall into price-sensitive classes, particularly those from poorer economic backgrounds. The longitudinal study showed that 14.8% smokers successfully quit after one year, with lower daily cigarette consumption and multiple quit attempts associated with higher cessation rates. Intention to quit, expressed by 56.5% of persistent smokers, was influenced by health concerns, better tobacco-related knowledge, and tobacco control policies. The qualitative study among smokers identified that health warnings were somewhat effective in shifting attitudes but have limited impact on their behaviors. Stakeholders identified challenges in policy implementation, including ineffective enforcement and insufficient sanctions, particularly for violations of smoke-free areas regulations and tobacco sales to minors. Further, resource constraints and the tobacco industry interference limits policy effectiveness. In contrast, stakeholders recognized some facilitating factors, such as government commitment and support from various organizations to facilitate tobacco control efforts, especially Vietnam Tobacco Control Fund.

**Conclusion**: This thesis highlights the complex dynamics of individual, social, and policy-related factors in shaping smoking behaviors among Vietnamese men. While there are significant challenges, there is also potential for change. Future actions should consider the complexity of smoking behavior, enhancing policy enforcement and implementation, countering tobacco industry interference, and working to denormalize tobacco behavior in society, especially among men. These actions are essential to curbing the tobacco epidemic and reducing tobacco-related morbidity and mortality in Vietnam.

**Keywords**: tobacco use, smoking, cigarette purchase behavior, cessation, intention to quit, policy implementation, policy enforcement.

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# SAMMANFATTNING PÅ SVENSKA

**Bakgrund:** Tobak utgör ett betydande folkhälsoproblem i Vietnam, i synnerhet bland män, med över 15 miljoner användare. För att hantera den tobaksrelaterade sjukligheten och dödligheten har den vietnamesiska regeringen genomfört tobakspolicys med syftet att minska förekomsten av rökning. Det har nu gått 12 år sedan lagen om tobaksprevention trädde i kraft, men antalet rökare har endast minskat marginellt. Det finns därför ett behov av undersöka de personliga, sociala och policyrelaterade faktorer som påverkar rökbeteenden bland vietnamesiska män.

**Syfte:** Denna avhandling syftar till att undersöka åtgärder för tobaksbekämpning i Vietnam genom kvantitativ analys av beteenden kring både inköp av cigaretter och rökavvänjning, samt kvalitativ analys av rökares uppfattningar om tobaksrelaterade policyer och andra intressenters uppfattning av implementeringen av dessa.

**Metoder:** En blandad metod användes, vilken innehåller både kvantitativa och kvalitativa data. Den kvantitativa data som användes baserades på två källor: (1) en tvärsnittsstudie från 2015 med ett nationellt representativt urval av vietnamesiska vuxna (n = 8996) och (2) en longitudinell studie från 2018 med 1525 deltagare. En latent klassanalys (Latent class analysis) genomfördes för att identifiera underliggande klasser av rökare baserat på deras beteenden runt inköp av cigaretter. Multinomial logistisk regressionsanalys tillämpades för att undersöka faktorer relaterade till de olika klasserna av inköpsbeteenden. Multivariabel logistisk regressionsanalys tillämpades för att undersöka faktorer relaterade tobaksavvänjning. Kvalitativa data samlades in genom nio fokusgruppsdiskussioner (FGDs) med nuvarande och tidigare rökare samt genom tolv djupintervjuer med nyckelaktörer. En induktiv manifest innehållsanalys användes för att analysera FGD-data, medan abduktiv tematisk analys tillämpades på de genomförda djupintervjuerna.

**Resultat:** Tvärsnittsstudien indikerade att 44,4 % av rökarna var prisokänsliga samt föredrar internationella cigarettmärken, medan den resterande gruppen rökare är mer priskänsliga, i synnerhet de med ekonomiskt svagare bakgrund. Den longitudinella studien visade att andelen som lyckades sluta röka efter ett år var 14,8 %. En lägre daglig konsumtion av cigaretter samt flera tidigare försök att sluta hade ett samband med att sluta röka. Att ha en avsikt att sluta, vilket uttrycktes av 56,5 % av de som rökte ihållande, påverkades av hälsooro, ökad tobaksrelaterad kunskap och den de tobakspreventiva åtgärder som

genomförts. Den kvalitativa studien av rökare visade att hälsovarningar hade en viss påverkan på attityder, men en begränsad inverkan på deras rökvanor. De intervjuade nyckelpersonerna identifierade flera utmaningar med implementering av tobakspolicys, inklusive ineffektivt genomförande, otillräckliga sanktioner, i synnerhet för överträdelser i förhållande till rökfria zoner och tobaksförsäljning till minderåriga. Utöver detta verkade även begränsade resurser, samt tobaksindustrin agerande motverka effektiviteten av policys. Nyckelpersonerna identifierade även potentiella framgångsfaktorer, såsom regeringens engagemang och stöd från olika organisationer i underlättandet av åtgärder för tobaksprevention, särskilt Vietnam Tobacco Control Fund.

**Slutsats:** Denna avhandling belyser det komplexa samspelet mellan personliga, sociala och policyrelaterade faktorer för rökbeteenden bland vietnamesiska män. Även om det finns betydande utmaningar finns det också potential för förbättring. För att uppnå detta krävs att framtida insatser beaktar komplexiteten runt rökbeteenden, förbättrad implementering och tillsyn, motverkande av industrins inblandning samt arbete för att avnormalisera tobaksbruk i samhället, i synnerhet bland män. Dessa åtgärder är avgörande för att dämpa tobaksepidemin och därmed minska den tobaksrelaterade sjukligheten och dödligheten i Vietnam.

# LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals.

I. **Nguyen TNP**, Hunsberger M, Löve J, Duong TA, Phan TH, Luong NK, Hoang VM, Ng N. Patterns and determinants of tobacco purchase behaviors among male cigarette smokers in Vietnam: A Latent Class Analysis. *Tobacco Induced Diseases*. 2024;22(June):98

II. **Nguyen TNP**, Löve J, Hunsberger M, Tran TPT, Nguyen TL, Phan TH, Luong NK, Hoang VM, Ng N. Individual-, social- and policy- factors associated with smoking cessation among adult male cigarette smokers in Hanoi, Vietnam: a longitudinal study. *BMC Public Health* 23, 1883 (2023).

III. **Nguyen TNP**, Vu TT, Löve J, Ng N, Hoang VM, Hunsberger M. Tobacco control policies in Vietnam: A qualitative analysis of smokers' experiences. (Manuscript)

IV. **Nguyen TNP**, Hoang HLT, Vu TT, Löve J, Ng N, Hoang VM, Hunsberger M. Tobacco control policies in Vietnam: A qualitative study of stakeholders' views on facilitators, barriers and future actions. (Manuscript)

# ABBREVIATIONS

| | |
|---|---|
| aOR | Adjusted Odd Ratio |
| aRRR | Adjusted Relative Risk Ratio |
| CI | Confidence Interval |
| CFIR | Consolidated Framework for Implementation Research |
| CPD | Cigarettes Smoked per Day |
| EAs | Enumeration Areas |
| FCTC | Framework Convention on Tobacco Control |
| FGDs | Focus Group Discussions |
| GATS | Global Adults Tobacco Surveys |
| HSI | Heaviness Smoking Index |
| IDIs | In-Depth Interviews |
| ITC | The International Tobacco Control project |
| LCA | Latent Class Analysis |
| PCA | Principal Component Analysis |
| Ref | Reference group |
| Vinataba | Vietnam National Tobacco Corporation |
| VND | Vietnam Dong |
| VNTCF | Vietnam Tobacco Control Fund |
| WHO | World Health Organization |
| USD | United States Dollars |

# CONTENTS

# 1 INTRODUCTION

## 1.1 BURDEN OF TOBACCO USE IN VIETNAM

### 1.1.1 HEALTH-RELATED BURDEN OF SMOKING

Vietnam faces substantial tobacco-related health challenges with nearly a quarter of the population consuming tobacco products.[1] Based on the 2021 Global Burden of Disease study, tobacco use led to more than 103,000 deaths, with 84,500 attributed to active smoking, and a resulted 2,860,660 disability-adjusted life years in Vietnam.[2] Moreover, tobacco farming, while providing income for some Vietnamese families, had been associated with health risks for farmers due to exposure to nicotine through handling tobacco leaves.[3]

Additionally, the high prevalence of tobacco use among Vietnamese men creates significant secondhand smoke exposure risks for family members. Nearly half of women and children are exposed to tobacco smoke in their homes,[4,5] while about 25% women were exposed with this smoke at their workplaces.[4] Furthermore, a study revealed that 92.6% of pregnant Vietnamese women had been exposed to secondhand smoke at some point during their pregnancies.[6] This secondhand exposure contributed to roughly 19,000 deaths in 2019, with women accounting for 60% of the fatalities.[4] Given the significant prevalence of both active and passive smoking in Vietnam, tobacco use attributed for 18% of total deaths in 2019, remaining a critical public health concern for the government.[7]

### 1.1.2 ECONOMIC BURDEN OF SMOKING

Vietnam also bears a massive economic burden from tobacco use. In 2023, the Vietnam National Tobacco Corporation, known as Vinataba, contributed nearly 14 trillion Vietnam dong (VND) (equivalent to $568 million United States Dollars (USD)) to the national budget.[8] However, this revenue is significantly outweighed by both the smokers spending on cigarettes and the economic costs of smoking-related diseases. An average smoker must spend 2.63% of Vietnam's GDP per capita to purchase 100 packs of the most popular cigarette brand annually.[7] This translated to total spending of approximately 49 trillion VND (almost 2 billion USD) on cigarettes in 2020.[9] Moreover, the total smoking-attributed costs accounted to 153 trillion VND (equivalent to $6.21 billion USD) annually.[7] This figure includes both direct costs of healthcare expenditures and indirect costs, including productivity losses due to premature deaths and smoking-related illness.

Further, the indirect burden of tobacco use extends beyond health and economic impacts. Tobacco use contributes to poverty, with low-income households spending a disproportionate amount of their income on tobacco products. The Global Adult Tobacco Survey (GATS) 2015 in Vietnam found that smokers spent an average of 484,200 VND (approximately $22 USD) per month on cigarettes.[1] This expenditure on tobacco can divert resources from essential needs such as food, education, and healthcare. In 2018, tobacco spending pushed 305,090 Vietnamese people (0.31% of the population) into poverty and exacerbated inequality by affecting children and vulnerable groups (ethnic minorities, rural residents, and low-income populations).[10] Besides, Vietnam also faced significant environmental pollution from cigarette litter, with an estimated 18,041 tons of discarded cigarette butts, equivalent to the weight of 5,155 female African elephants.[7]

# 1.2 TOBACCO USE IN VIETNAM

## 1.2.1 SOCIAL CONTEXT

Smoking behavior in Vietnam is deeply embedded within a broader social context, influenced by multiple factors such as gender, age, or ethnicity. Consistent with other Southeast Asia nations, smoking remains deeply intertwined with masculine identity in Vietnam, reflecting enduring gender-based social norms.[11] Historical data from a 1997 national survey indicated that the notion of "women shouldn't smoke" was a prevalent reason cited by women for abstaining from smoking, highlighting the gender-specific social norms surrounding tobacco use.[12] Female smoking is predominantly associated with perceived "inappropriateness", while male smoking is viewed as normative and a symbolic marker distinguishing men from boys.[13,14] This gender disparity was confirmed in the most recent national tobacco survey, the GATS Vietnam in 2015, reporting that nearly half of Vietnamese males engaged in active smoking, compared to only about 1% of females.[1] Besides, the long-standing cultural norms have led to social acceptance of tobacco use among middle-aged men, this behavior among younger individuals often originates from emulating role models or a desire to project a "cool" image.[15] Further, as a home for 54 distinct ethnicities, the smoking prevalence in Vietnam varies among ethnic groups due to differences in languages, lifestyles, and social norms.[16] For example, Ba Na women have higher smoking rates (13.3%) than the national average (1.1%), while Dak Lak minorities practice communal smoking during nighttime fire gatherings.[16]

In addition, the introduction of manufactured cigarettes in Vietnam occurred during the late 19th century when the French colonized Vietnam. These cigarettes were marketed as luxury items and respectable gifts,[17] integrated into traditional gift-giving practices and social interactions in weddings, funerals, and other traditional events.[18,19] This was a practice even among governmental employees that was banned by decree in 1992.[19] Also, the cultural practice of gifting tobacco is particularly prevalent among men, facilitating the cultivation and strengthening of interpersonal bonds.[19] This practice creates social pressure that reinforces smoking behaviors and hinders tobacco control efforts. Therefore, the interplay of interpersonal factors and environmental influences significantly underscores the importance of conceptualizing smoking not merely as an individual lifestyle choice but as "an individual response to a social environment".[14]

## 1.2.2 TYPES OF TOBACCO

Vietnam's tobacco consumption patterns are deeply rooted in history and culture. They encompass both cigarettes and traditional tobacco products, such as betel quid with tobacco ("Nhai trầu thuốc") and bamboo waterpipe tobacco (hereafter called as waterpipe tobacco) ("Thuốc lào"). According to the GATS Vietnam 2015, over 15 million Vietnamese people, equivalent to 22.5% of the population, consume tobacco products.[1] Among these users, 17.9% were manufactured cigarette smokers, making cigarettes the most common tobacco product in Vietnam.[1]

Waterpipe tobacco, locally known as "Thuốc lào", has been presented in Vietnam since the 18th century, evolving into Vietnamese cultural and spiritual custom (Figure 1).[20] The GATS Vietnam in 2015 reported a waterpipe smoking prevalence among adult population of 13.7%, the highest rate in Asia.[1] The misperception of its relative safety might contribute to its popularity, with over 80.0% of waterpipe smokers believing it to be less harmful than manufactured cigarettes.[20] However, evidence showed that waterpipe tobacco typically contains about 9% nicotine, significantly higher than the 1-3% found in manufactured cigarettes, highlighting potential misconceptions about its health risks.[21,22]

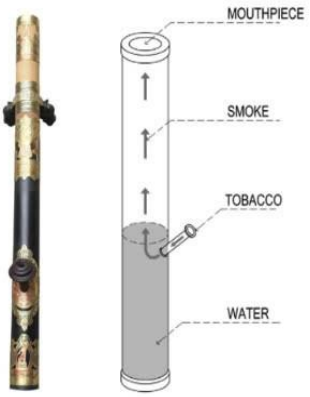

*Figure 1: Waterpipe tobacco of Vietnamese*[16]

The use of betel quid, a smokeless tobacco product, in Vietnam and Southeast Asians, has been documented through historical, linguistic, and ethnographic evidence to extend back more than two millennia (Figure 2).[23,24] Unlike other forms of tobacco use, betel chewing was particularly prevalent among women, often symbolizing a wife's fidelity.[25] A 2008 review study reported that about 6.7% of Vietnamese women aged 40-50 continued this practice, with 45.6% incorporating tobacco thread into their betel chew.[26] In fact, there is a Vietnamese proverb: "Betel quid is the beginning of the conversation", this tobacco product continue to hold an important place in Vietnamese society, especially in traditional ceremonies such as weddings, rituals and formal occasions.[24]

*Figure 2: Vietnamese betel quid (Source: VnExpress)*

## 1.2.3 ROLE OF THE TOBACCO INDUSTRY

In Vietnam, government-owned tobacco companies (Vinataba) dominate 80% of the cigarette market, with the remaining 20% comprising illicit cigarettes from cross-border trade.[27] Additionally, tobacco companies aggressively market their products, which include diverse brands, flavors, and price points, cater to various consumer demographics.[28] Despite tobacco control efforts, Vietnamese people still remain exposed to tobacco marketing activities, with point-of-sale exposure affecting nearly one in ten people.[1] Further, the average cost of a 20-cigarette pack in Vietnam was low at thirteen thousand VND ($0.52 USD),[29] making cigarettes more affordable and dominating the market.[30]

# 1.3 TOBACCO CONTROL POLICIES IN VIETNAM

## 1.3.1 THE POLICY-MAKING PROCESS

Despite the long-standing cultural traditions surrounding tobacco use in Vietnam, the recognition of its harmful effects, with no safe level of exposure, led to the emergence of tobacco control policies around the year 2000.[28] The development of these policies involved multiple ministries and government bodies, reflecting the complex nature of the issue (Figure 3). Key policy decision-makers include the Communist Party, which holds overall leadership in political and state administrative matters; the National Assembly, serving as the legislative body; the government and its affiliated bodies and ministries; and tobacco control advocates. Therein, three key ministries play pivotal roles in tobacco control policy: the Ministry of Trade and Industry (overseeing tobacco industries), the Ministry of Health, and the Ministry of Finance. This multi-ministerial involvement underscores the multifaceted nature of tobacco control in Vietnam.

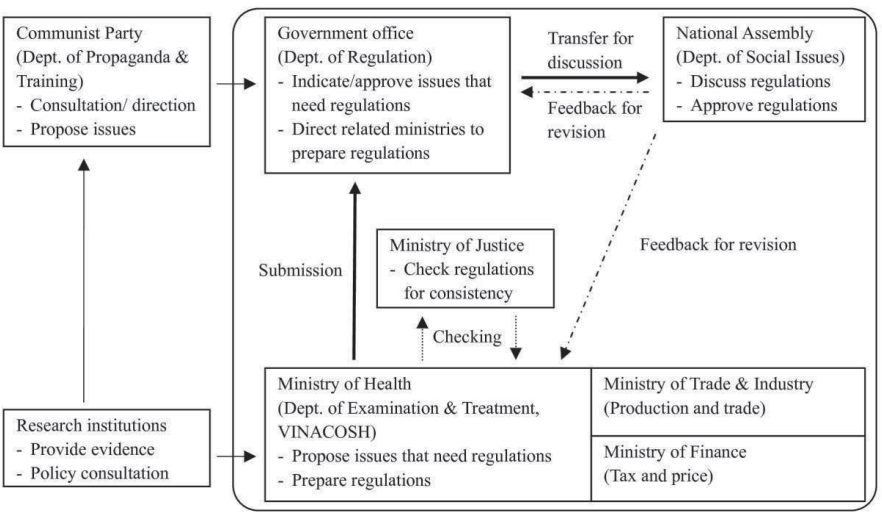


*Figure 3: Legislation process of tobacco control policy in Vietnam*[31]

This structure of the policy-making process in Vietnam presents unique challenges for tobacco control efforts. The tobacco industry is predominantly under government control, with some joint ventures established with multinational companies.[7,32] Therefore, it holds a privileged position as an

equal partner to the government.[33] This allows the industry to significantly influence tobacco policy, particularly in taxation matters, where its opinions are actively considered during decision-making processes.[33] It also creates a potential conflict of interest in tobacco control efforts, as the government must balance public health concerns with economic interests.

## 1.3.2 HISTORICAL DEVELOPMENT

The first tobacco control activities commenced in June 1989 under the Law on Protection of People's Health, followed by several unorganized single policies/regulations afterward. In 2000, Vietnam approved the first tobacco control legal framework, the National Tobacco Control Policy 2000-2010, through Resolution No. 12/2000/NQ-CP.[34] Since then, the government has intensified its efforts to control tobacco use, including signing the World Health Organization's Framework Convention on Tobacco Control (WHO FCTC) in 2003. This treaty was ratified in late 2004 and officially took effect in March 2005.[28]

In 2012, the National Assembly of Vietnam introduced the first Tobacco Control law namely Law on Prevention and Control of Tobacco Harms, which took effect in one year later.[35] This law covered all aspect of WHO MPOWER packages, including **M**onitor tobacco use; **P**rotect people from tobacco smoke; **O**ffer help to quit tobacco; **W**arn about the dangers of tobacco; **E**nforce bans on advertising and promotion; and **R**aise taxes on tobacco. Additionally, this law also established the Vietnam Tobacco Control Fund (VNTCF), which was previously known as VINACOSH. The VNTCF is financed by a compulsory contribution from tobacco industries of 1-2% of the factory price of cigarettes with the main purpose of generating and distributing financial support for tobacco control initiatives in Vietnam.[35] To date, VNTCF supports various tobacco control activities including communication campaigns, capacity building for tobacco control staff, tobacco cessation services at around 10 hospitals, and surveillance of tobacco use. So far, the government has launched three national tobacco control strategies in Vietnam, each with specific 3-year and 5-year targets for reducing tobacco smoking and detailed action plans.[36] The significant changes in tobacco control policies in Vietnam are described in Figure 4.

| Key tobacco control policies in Vietnam over time | | |
|---|---|---|
| (1) Law on Protection of People's Health, 1st tobacco law in Vietnam, was prohibited smoking in halls, cinemas, theaters<br><br>(2) National strategy on Tobacco harm prevention and control (2000-2010) approved<br><br>(3) Ratified WHO FCTC<br><br>(4) Required text-only warnings of 30%<br><br>(5) Excise tax increased to 65%<br><br>(6) Tobacco Control Law legislated | (7) Vietnam Tobacco Control Fund established<br><br>Pictorial health warnings implemented (50% front and back)<br><br>Point of sale advertising ban<br><br>National strategy on tobacco harm prevention and control till 2020 approved<br><br>(8) Revision of Law on excise tax passed, increased to 70% effective in 2016 | (9) Kiddie packs of less than 20 sticks/pack ban<br><br>(10) Excise tax increased to 75%<br><br>(11) Penalties increased for violations on smoke-free, tobacco advertisements and promotions, and sell/provide cigarette to adolescents<br><br>(12) National strategy on tobacco harm prevention and control till 2030 approved |

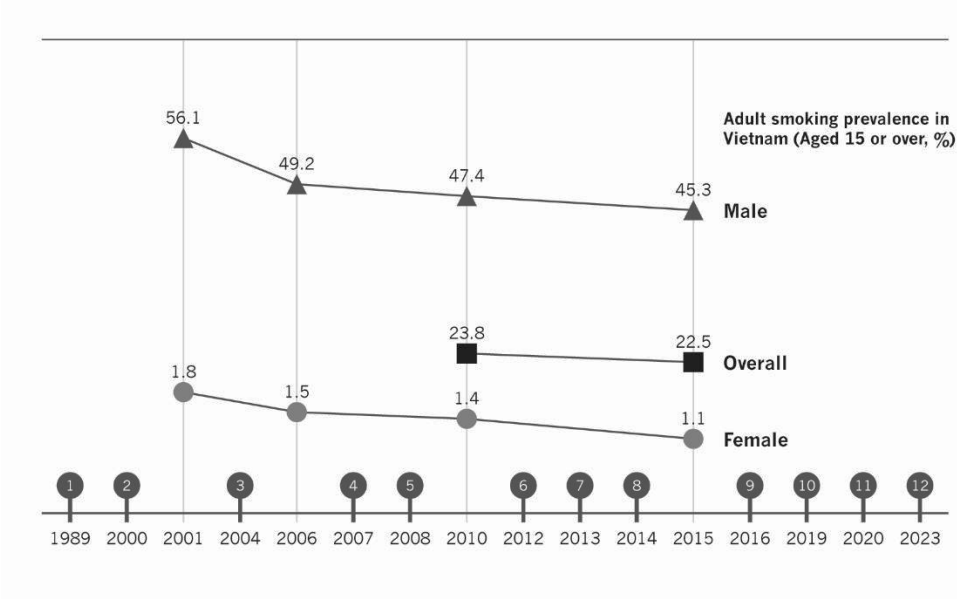


*Figure 4: Tobacco control policy milestones in Vietnam[32] with updates*

## 1.3.3 PROGRESS AND CHALLENGES

As a signatory to the WHO FCTC, the Vietnamese government has implemented various tobacco control policies aimed at reducing both tobacco demand and supply. Implementation of the MPOWER package's demand reduction strategies has shown notable progress, though challenges persist.

First, Vietnam actively participated in tobacco **monitoring** through two national representative GATS 2010, 2015 and three provincial-level adult tobacco survey (2020, 2022, and 2024). Therefore, the most recent population-based data is now nearly a decade old. Second, **smoke-free** law existed in most places such as government, healthcare, and educational facilities. However, compliance with this regulation remains notably low, with 5 out of 10,[30] indicating difficulties in enforcement and public adherence to this policy. Third, a toll-free **quit line service** has been established; however, their reach and effectiveness remain constrained.[37] A significant obstacle for those trying to quit smoking was the absence of well-rounded support systems, coupled with limited access to cessation medications and nicotine replacement therapies, which presents substantial challenges for individuals seeking to break their tobacco addiction.[1,37,38]

Further, a pictorial health **warning** covering 50% of the front and back of cigarette packs has been implemented in Vietnam since 2013, and lots of national education campaigns are aired annually.[30] Until now, there has been no update or plan to change this set of 9-year-old warning pictures. Besides, Vietnam has made substantial progress in **enforcing** tobacco advertising, achieving a rating of 7 out of 10 for its media advertising ban in 2023.[30] However, online advertising regulations are insufficient, leaving room for the digital promotion of tobacco products.[30] Additionally, the tobacco industry is still permitted to engage in corporate social responsibility activities, potentially allowing them to enhance their public image and influence.[30] Last but not least, the current cigarette **tax**, set at less than 40% of the retail price, has proven insufficient as a deterrent.[30] This relatively low tax rate has contributed to cigarettes becoming twice as affordable over an 11-year period, undermining efforts to reduce consumption through pricing strategies.[39] All of these constitute massive barriers to any efforts to reduce tobacco consumption and improve health outcomes.

# 1.4 THEORETICAL FRAMEWORK

## 1.4.1 HEALTH BEHAVIOR

Various theoretical frameworks can help explain smoking behavior, each providing a different perspective into the complex factors that influence smoking initiation, continuation, and cessation. Notably, cognitive-behavioral approaches, such as the **Transtheoretical Model** and the **Health Belief Model**, which focus on individual motivations, perceptions, and decision-making processes related to smoking, offer insights into the behavior. For instance, the **Transtheoretical Model** emphasizes stages beyond mere actions and focuses on cognitive aspects that shape an individual's intention to quit smoking.[40] The **Health Belief Model**, on the other hand, underscores the importance of perceived susceptibility to smoking-related illnesses, the perceived severity of these illnesses, and the perceived benefits and barriers to quitting.[40] GATS and the International Tobacco Control (ITC) surveys applied these theories in developing variables related to smokers' attitudes, beliefs, and quit intentions, further highlighting its significance.[41,42]

Meanwhile, **Social Practice Theory** offers a different perspective, considering smoking as a social practice embedded in everyday life. This approach, championed by Blue et al., examines how smoking is integrated into daily routines and social interactions, considering the material elements (e.g., cigarettes, lighters), competencies (e.g., knowing how to smoke), and meanings (e.g., stress relief, social bonding) associated with smoking.[43] This approach helps explain why smoking prevalence can vary significantly between different social and cultural groups. For example, Ng et al. examined how masculine norms in certain Asian cultures contribute to high smoking rates among men but low rates among women.[44] Thus, **Social Practice Theory** helps explain why smoking can be challenging to change, as tobacco use is often deeply ingrained in social and cultural practices.

In addition to individual behavior change models and Social Practice Theory, ecological models, which examine multi-level influences, are needed. For instance, Wilcox applied **an ecological model** to adolescent smoking, highlighting how factors at different levels (e.g., individual attitudes, peer influence, school policies, tobacco advertising) interact to influence smoking behavior.[45] Additionally, recognizing the complex nature of smoking behavior, some theories have attempted to integrate multiple theoretical perspectives like **PRIME theory or ITC framework**. The **ITC framework** grounded in

numerous health models and theories, provides a structured approach to evaluating the psychosocial and behavioral aspects affected by the implementation of tobacco control policies.[42] The detailed information on this framework that the ITC developed is shown in Figure 5. The **ITC framework** provides a comprehensive structure for evaluating the psychosocial and behavioral aspects affected by the implementation of tobacco control policies.

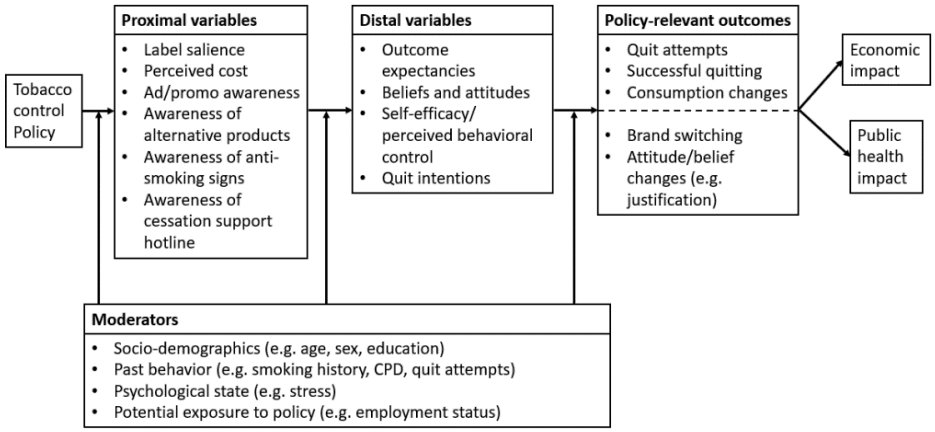


*Figure 5: Conceptual model adopted by the International Tobacco Control*[42]

## 1.4.2 POLICIES AND IMPLEMENTATION

While **political science theories** about policymaking are well-known in social policy research, they are often overlooked in public health, despite offering valuable insights for policy influence. These theories emphasize that policymaking is complex, involving multiple actors and decision-making levels, and requires targeted messaging to different audiences rather than generic recommendations.[46] As shown in Figure 3, the Vietnamese legislation process also demonstrates this complexity. Therefore, various theories indicate that substantial public health policy changes happen occasionally, requiring the convergence of multiple factors, especially political support.[46] Take **Kingdon's Multiple Streams Framework** as an example, it examines how problems, policies, and politics converge to create opportunities for policy change.[47] To illustrate application of this framework, Cairney utilized it to analyze how scientific evidence on the harms of secondhand smoke led to the adoption of smoke-free policies in the United Kingdom.[48] Additionally, some behavioral economics principles have been increasingly applied to tobacco control, particularly in designing effective pricing and taxation policies. For

instance, these principles have informed the implementation of minimum pricing laws for cigarettes.[49] Also, for shaping anti-tobacco messaging, some health communication theories, like the **Elaboration Likelihood Model** employed to design anti-smoking campaigns by considering how people process messages.[50]

While theoretical frameworks provide a valuable basis for the development and adoption of tobacco control policies, the success of these policies also depends on how these policies are implemented. One approach that can assist with putting policy into practice is the **Consolidated Framework for Implementation Research (CFIR)**, which provides a comprehensive overview of factors affecting implementation.[51] Through its five domains (innovation, inner setting, outer setting, individuals, and implementation process), the framework identifies facilitators and barriers at multiple levels, enabling targeted evidence-based solutions. This approach has been successfully applied to analyze the implementation of cessation services policies in various settings, including Vietnam.[52] Another common theoretical approach to implementation is the **RE-AIM Framework**, which focuses on the Reach, Effectiveness, Adoption, Implementation, and Maintenance of tobacco cessation programs.[53] D'Angelo applied this **RE-AIM framework** to evaluate the cessation treatment in the USA.[54]

In fact, policymakers and researchers often integrate insights from multiple frameworks to address the complex nature of tobacco use and its regulation. The application of these frameworks can also vary significantly based on cultural, political, and economic contexts in different countries or regions. For instance, the effectiveness of policy approaches may differ between high-income and low- and middle-income countries due to resource variations, cultural norms, and political systems.[55] These theoretical frameworks also help in translating research findings into effective policies and implementation to ensure that these policies/interventions are not only implemented but also assessed for their impact.

## 1.4.3 THIS PHD STUDY'S FRAMEWORK

The integration of the ITC framework with the ecological perspective and implementation science, particularly the Consolidated Framework for Implementation Research, in this PhD project provides a comprehensive foundation for understanding how tobacco control policies work in Vietnam. This integrated framework, which consists of three interconnected layers: individual, community, and environment, ensures a thorough analysis of the complex dynamics of tobacco use and control in Vietnam (Figure 6).

The first individual layer, which incorporates most of the ITC framework constructs, provides a nuanced understanding of individual-level factors that influence smoking behavior. Together with the addiction mechanism, it captures how an individual's behavior changes in response to their knowledge, attitudes, and beliefs about tobacco use, aligning with the proximal and distal variables in the ITC framework.

The community layer, which examines the impact of social networks on smoking behavior, is of importance. It encompasses influences from family, peers, and the local community, bridging the gap between individual-level factors, broader societal influences, cultural and political environment. In the Vietnamese context, this layer is particularly crucial given the strong social and cultural associations of smoking, especially the role of smoking in social bonding, particularly among men.

The outermost layer includes policies, genders, and commercial related factors. Significantly, it extends beyond tobacco-specific policies to include other public health measures, such as alcohol-related policies, which may indirectly affect smoking behavior. The government's dual role as the final decision-maker and stakeholder in the tobacco industry through its ownership of Vinataba adds another level of complexity to this layer.

A vital feature of this framework is the use of dotted lines to symbolize their interconnected nature and mutual influence between layers. This design acknowledges the complex nature of tobacco use and control in Vietnam, where the boundaries between inner and outer settings were often blurred, as highlighted by earlier research.[52] By combining the strengths of the ITC framework, ecological perspectives, and implementation science, this approach aimed to capture the complex, interconnected nature of factors influencing tobacco use and control efforts in Vietnam.

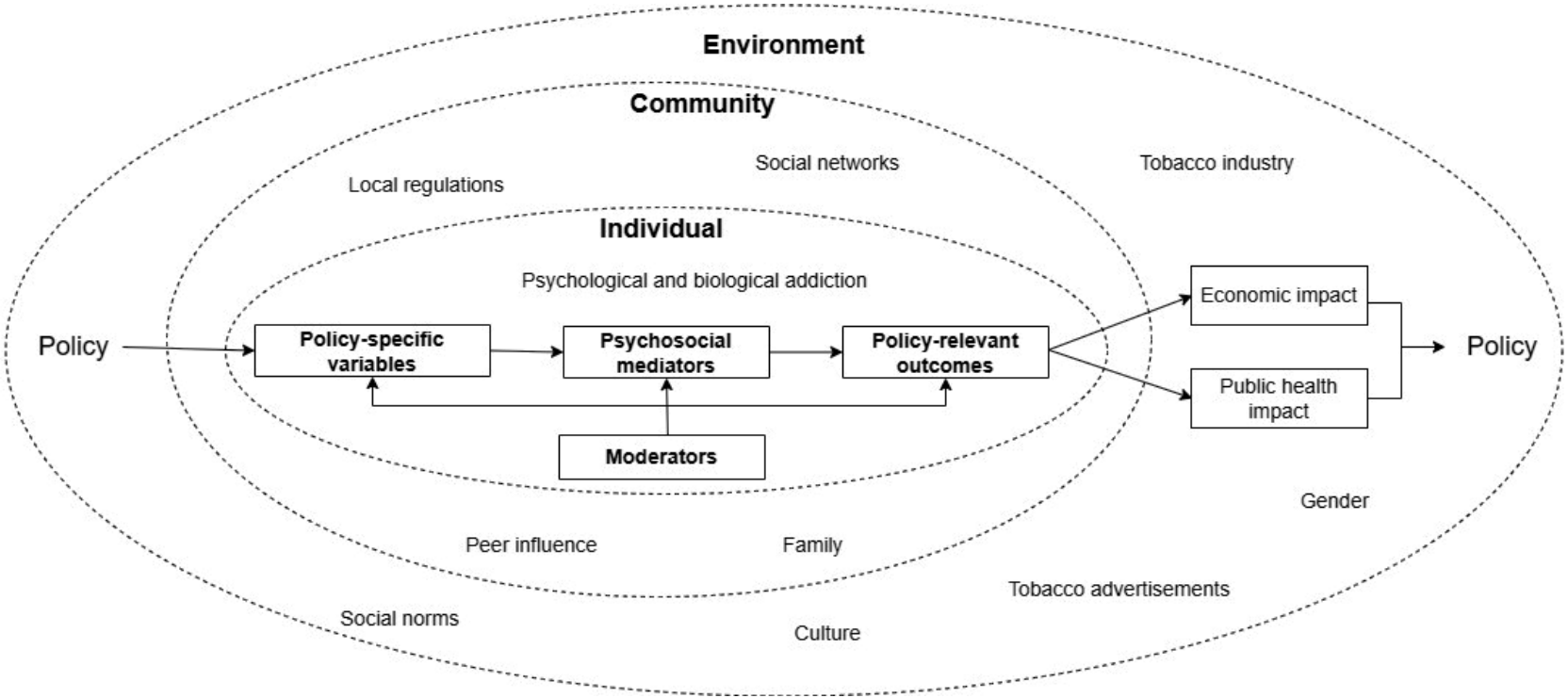


*Figure 6: The combined framework using in this PhD study*

# 2 AIMS

This thesis aims to evaluate the tobacco control policies in Vietnam by examining the pattern of cigarette purchase and cessation behaviors and exploring both smokers' experiences of tobacco control policies and stakeholders' viewpoints on these policies implementation.

The specific aims for each included paper were:

1. To identify cigarette purchase behavior among Vietnamese male smokers and associated demographic and consumption factors.
2. To examine individual-, social- and policy factors associated with smoking cessation among adult male smokers in Vietnam.
3. To explore the experiences of current and former cigarette smokers with existing tobacco control policies in Vietnam.
4. To explore stakeholders' views about facilitators and barriers to implementing tobacco control policies in Vietnam and suggest future actions.

# 3 METHODS

## 3.1 OVERVIEW OF STUDIES' APPROACH

This PhD project was designed as a mixed-method approach, using quantitative and qualitative studies (Table 1). The quantitative component utilized data from two population-based studies: the cross-sectional Global Adult Tobacco Survey (GATS) in Vietnam in 2015 and the longitudinal International Tobacco Control (ITC) study conducted in Hanoi (the capital of Vietnam) in 2018 and 2019. Meanwhile, the qualitative component consisted of two components collected through focus group discussions (FGDs) among smokers and in-depth interviews (IDIs) with relevant stakeholders.

*Table 1: An overview of different papers in this PhD project*

| | **Paper I** | **Paper II** | **Paper III** | **Paper IV** |
|---|---|---|---|---|
| Design | Cross-sectional study | Longitudinal study | Qualitative study | Qualitative study |
| Study sample | Vietnamese men aged 15 and above (n=3983) | Men smokers and quitters in Hanoi, Vietnam (n=1525) | Former and current men smokers in Hanoi, Vietnam (n=9 group discussions) | Vietnamese stakeholders include policymakers, government officers, and advocates (n=12) |
| Data | GATS in Vietnam in 2015 | ITC in Hanoi in 2018 and 2019 | Focus group discussions among smokers in 2023 | In-depth individual interviews with stakeholders in 2024 |
| Analyses | Latent class analysis and multinomial logistic regression | Multivariable logistic regression | Manifest content analysis | Abductive thematic analysis |
| Outcome | Cigarette purchase behaviors | Smoking cessation behaviors | Experience of tobacco control policies | Facilitator and barriers for tobacco control policy implementation and future actions |

## 3.2 STUDY DESIGN AND PARTICIPANTS

### 3.2.1 CROSS-SECTIONAL SURVEY USING GATS 2015 (PAPER I)

The Global Adults Tobacco Survey (GATS) is a nationally representative repeated cross-sectional study conducted among men and women aged 15 years and above using a cluster stratified sampling method. The probability proportionate to size method was utilized in selecting the primary sampling units - the enumeration areas (EAs). These EAs encompassed one or more neighboring blocks and were defined by the General Statistics Office of Vietnam as having similar populations, sociodemographic characteristics, economic status, and living conditions.

We utilized data from the GATS Vietnam 2015 (n=8996). The GATS inclusion criteria included all civilian, non-institutionalized men and women, aged 15 years or older, who lived in the included areas of the country. However, those who were 1) non-citizens visiting the country; 2) citizens in the military who indicated that their usual place of residence was either on or off a military base; or 3) citizens who were institutionalized - including people residing in hospitals, prisons, nursing homes, and other such institutions were excluded. The design and methodology of GATS Vietnam 2015 have been reported elsewhere.[1] Given the low prevalence of smoking among Vietnamese women (approximately 1%), we included only male participants in the PhD study, resulting in a final sample size of 3983.

### 3.2.2 LONGITUDINAL STUDY USING ITC 2018/19 (PAPER II)

The International Tobacco Control (ITC) project in Vietnam is the first longitudinal study to evaluate smoking and cessation behaviors and the impacts of individual, social, and tobacco control policies on these behaviors among adult male smokers. This ITC Vietnam project utilized the protocol of the ITC project, which has also been performed in 30 other nations. This study investigated a representative sample of adult male smokers in two districts of Hanoi, Vietnam (one representing an urban area and one representing a rural area) (n=1988). The participants were selected using a stratified multistage sampling design across two districts of Hanoi, where 34 urban and 30 rural primary sampling units were randomly selected, followed by random selection of households with smokers from each unit, and finally selecting one eligible

smoker in the household using the next-birthday method. In cases where the selected participant declined, another eligible smoker from the same household or the next household was invited to participate. Inclusion criteria were: (1) being male smokers, (2) having smoked more than 100 cigarettes and currently smoking at least once a week, (3) being 18 years or older, (4) residing in Hanoi, Vietnam, with no intentions of migrating to other areas within the next three years, (5) no history of mental health disorders, and (6) having the ability to read and comprehend all provided information and willingly consenting to participate in the study.

This PhD study utilized data from the baseline survey collected in 2018 and the follow-up survey collected after approximately one year in 2019. Of 1988 participants at baseline, 1586 individuals agreed to participate in the one-year follow-up study, yielding a response rate of 79.8%. After excluding 61 individuals who quit cigarette smoking but switched to other forms of tobacco, we attained a final sample of 1525 participants for this study.

### 3.2.3 QUALITATIVE STUDY USING FOCUS GROUP DISCUSSIONS (PAPER III)

The qualitative study employed focus group discussions (FGDs) involving both former and current smokers in Hanoi, Vietnam in 2023. Current smokers were defined as individuals who currently smoked cigarettes either daily or occasionally in the previous 30 days basis. Meanwhile, former smokers were those who quit smoking for at least 30 days but had been active smokers during the preceding five-year period.

Participant recruitment utilized local healthcare networks, initiating from the provincial preventive health center and extending to community health stations and village health workers. Inclusion criteria for FGDs participants encompassed (i) men, (ii) being former or current cigarette smoker, (iii) a minimum age of 18 years, and (iv) Vietnamese language fluency. To maximize the diversity of the study participants, fifty-one participants were purposively selected based on their smoking status, age, and occupation. A total of nine FGDs were conducted, comprising four to six participants. Each FGD included participants with different ages, smoking status and occupations, with geographic distribution as follows: two in a mountainous region, two in a rural area, and five in an urban area.

### 3.2.4 QUALITATIVE STUDY USING IN-DEPTH INTERVIEWS (PAPER IV)

This study engaged twelve key stakeholders in Vietnam's tobacco control landscape in 2024, comprising policymakers, government officials, and advocates. These participants were purposely selected based on their extensive experience in tobacco control initiatives within the country. The initial interview was conducted with a representative from the Vietnam Tobacco Control Fund, Ministry of Health. Subsequent participants were identified through a snowball sampling technique, utilizing recommendations and referrals from previously interviewed participants. The final sample included seven women and five men, coming from diverse geographical regions of Vietnam (North, Central, and South). This purposive sampling method was employed to garner rich, multifaceted data from various sectors and stages of tobacco control policy development, ensuring a comprehensive understanding of tobacco control policy implementation in Vietnam.

## 3.3 MATERIALS AND DATA COLLECTION

### 3.3.1 VARIABLES IN QUANTITATIVE STUDIES (PAPER I & II)

Given that the GATS questionnaire was developed from previous surveys, including the International Tobacco Control survey,[41] the key questions to measure smoking related behaviors (including purchase and cessation behaviors) were similar across both studies. These questions captured some aspects of individual and community layers in the PhD's theoretical framework. We summarized the key variables of these quantitative studies and presented them in Table 2.

*Table 2: Key variables in this PhD project*

| No | Variable name | Definitions | Purpose |
|---|---|---|---|
| **Smoking related behavior** | | | |
| 1 | Smoking status | The respondents were categorized as smokers or non-smokers by asking, "Do you currently smoke tobacco either on a daily basis, less than daily or not at all?" Smokers were those who currently consume any type of tobacco products daily or occasionally. Meanwhile, non-smokers included ex-smokers and never smokers. | To measure smoking prevalence |
| 2 | Daily cigarette smokers | We categorized cigarette smokers as "Yes" if they smoked cigarette daily and "No" if they smoked occasionally. | To assess the prevalence of daily cigarette smokers |
| 3 | Dual users | We categorized smokers into either single user if they smoked cigarette only or dual users (smoked more than one tobacco product). | To measure the prevalence of dual users |
| 4 | Heaviness smoking index | We calculated a six-point heaviness smoking index (HSI) by combining information about the cigarette smoked per day (CPD) (scored as 0: 1-10 CPD, 1: 11-20 CPD, 2: 21-30 CPD, 3: ≥31 CPD) and the time to the first cigarette after waking (scored as 3: less than/equal to 5 mins, 2: 6-30 mins, 1: 31-60 mins, and 0: ≥61 mins). | To measure the level of nicotine dependence |
| 5 | Heavy smoking status | Smokers were categorized as "Yes" to heavy smoking status if they smoked more than 20 cigarettes per day. | To assess the prevalence of heavy smoking status |

*Table 2: Key variables in this PhD project*

| No | Variable name | Definitions | Purpose |
|---|---|---|---|
| **Purchase related behavior** | | | |
| 6 | Quantity of cigarettes purchased | We asked smokers about their purchased quantity in the last recent time as buying a single cigarette, pack, or carton. | To identify the purchased quantity |
| 7 | Cigarette brand | Smokers were asked about the cigarette brand purchased in the last recent time if they bought either domestic or international cigarette brand. | To identify the cigarette brand |
| 8 | Cigarette price tier | Smokers' most recent cigarette purchase was classified as low (<10,000 VND/pack), medium (10,000 and 22,500 VND/pack) or high (>22,500 VND/pack). | To identify the cigarette price tier |
| 9 | Place of purchase | We defined the place of purchase based on smokers' response on the most recent location of their purchase in kiosk, street vendor or other locations. | To identify the popular purchase location |
| **Cessation related behavior** | | | |
| 10 | Cessation status | Participants who ever-smoked were grouped into either "quitters" if they quit tobacco smoking (both cigarette and other tobacco products) for at least 30 consecutive days prior to data collection or "persistent smokers" if they continued or did not quit for less than 30 consecutive days before data collection at one-year follow-up. | To measure smoking cessation prevalence |
| 11 | Intention to quit | Smokers were defined as having intention to quit smoking if they expressed their plan to quit smoking sometime in the future. | To measure intention to quit |
| 12 | Intention to quit by the Transtheoretical Model | We categorized smokers' intention to quit as those in the preparation (if they intended to quit within the next month), contemplation (if they intended to quit within the next six months), pre-contemplation stage (those who planned to quit in the future), and no intention to quit (if they did not intend to quit in the future). | To assess their status of the intention to quit in the health behavior change model. |

### 3.3.2 FGDS' AND INTERVIEWS' GUIDES IN QUALITATIVE STUDIES (PAPER III & IV)

The focus group discussions (FGDs) study (**Paper III**) explored former and current smokers' experiences of tobacco use and control policies in Vietnam, capturing all three layers of this PhD's theoretical framework. This followed a semi-structured format, commencing with warm-up questions about participants' tobacco use behaviors and cessation attempts. The discussions then progressed to an exploration of participants' experiences with current tobacco control policies in their daily lives. We employed probing techniques and posed follow-up questions to elicit deeper responses, such as: "How the rest of you experience this policy?", "Do you have similar experience like him?", to encourage participants sharing their thoughts and provide detailed examples or information about their experiences. We also utilized the findings of **Paper II** for probing and receiving smokers' reactions on how tobacco control policies impacted smoking cessation behavior. The FGDs concluded by smokers' sharing recommendations for future tobacco control actions aimed at reducing smoking prevalence in Vietnam.

Meanwhile, the semi-structured interviews were conducted to explore stakeholders' perceptions of implementing tobacco control policies in Vietnam (**Paper IV**). The interview was initiated by prompting participants to list any tobacco control policies in Vietnam with which they were familiar, followed by identifying what they perceived as the most significant achievement(s) in tobacco control activities. Participants were then asked to explain facilitators and barriers (if any) to the implementation of each policy mentioned. Some key results of **Paper III** were also utilized to probe follow-up questions and their thoughts on how smokers' thoughts of tobacco control policies in Vietnam. Example of probes were "Some smokers shared that cigarette prices are affordable, what do you think?", "What is the reason(s)?". Finally, they were encouraged to suggest potential future actions to strengthen facilitators and mitigate barriers in the Vietnamese tobacco control landscape. This in-depth interview also captured three layers of this PhD's theoretical framework.

# 3.4 DATA ANALYSES

## 3.4.1 QUANTITATIVE ANALYSES (PAPER I & II)

For the quantitative studies of this PhD project, we utilized several statistical methods, including Principal Component Analysis (PCA), Latent Class Analysis (LCA), and logistic regression models.

- Principal component analysis (PCA) created a household economic group based on household asset variables (**Paper I** & **II**).[56] We utilized the first principal component to derive the wealth index, as it captured most of the variation among the variables included in the PCA. We conducted separate PCAs for urban and rural households, as relative wealth was not comparable between these locations.
- Latent class analysis (LCA) identified purchase behavior classes among cigarette smokers based on their response patterns to a set of related categorical variables.[57] We selected the best-fit model based on some statistical indices, including the likelihood ratio statistic G2, the Akaike information criterion, the Bayesian information criterion, and entropy (a measure of uncertainty). Subsequently, we assigned participants to cigarette purchase class based on their posterior probabilities (which indicate the probability of a participant being categorized in each class) (**Paper I**).
- Logistic regression models: We performed either a multivariable logistic regression model for binary variable outcomes (**Paper II**) or a multinomial logistic regression model for categorical variable outcomes (**Paper I**).

All descriptive and regression analyses were weighted and performed using Stata 17 and SAS 9.4 software. A p-value of $< 0.05$ was considered statistically significant.

## 3.4.2 QUALITATIVE ANALYSES (PAPER III & IV)

We employed an inductive content analysis method to aim for exploring a phenomenon. We applied a manifest approach described by Graneheim and Lundman in analyzing the FGDs (**Paper III**).[58] This method involves a data collection and analysis process conducted without predefined categories or theories, which contributes to the validity of our results. It offers flexibility, allowing the researcher to be guided by the data itself, thus facilitating the identification of emerging patterns, themes, and concepts. This bottom-up

approach enables an exploratory and open-ended investigation of how smokers experienced tobacco control policies in Vietnam. All recordings were transcribed and translated into English, then analyzed in the NVivo software version 2020.[59]

For the in-depth interviews (**Paper IV**), we applied an abductive thematic analysis,[60] which offers a flexible and reflective approach to deeply understand stakeholders' views on the implementation of tobacco control policies in Vietnam. The analysis of the first two interviews thus started with an inductive approach in which coding categories were derived directly from the text. To better interpret the data related to implementation, we then organized these categories using the Consolidated Framework for Implementation Research (CFIR) framework). This framework identified different domains related to implementation: (1) intervention characteristics (current tobacco control policies implemented in Vietnam); (2) outer setting; (3) inner setting; (4) individual characteristics; (5) implementation process; and (6) an extra section for action needed. We chose CFIR because it helped organize our findings that aligned with the study's aim on policy implementation. Through an abductive approach, we examined the differences between categories within each CFIR domain to identify potential themes for implementation facilitators and barriers. Three independent researchers coded a specific set of the interviews until all interviews were coded by two researchers. Coding by two independent people allowed for the identification of differences in coding. All coding differences were resolved through discussions within the coding team and among other co-authors. Qualitative analyses were made using NVivo 14 software.[59]

## 3.5 ETHICAL CONSIDERATIONS

This PhD study had been approved by the Institutional Review Board of Hanoi University of Public Health. Except for the GATS data, which is public domain, and no ethical approval is needed, the ethical approval numbers for the ITC project are No 419, 422/2018/YTCC-HD3 for the baseline study and No 474/2019/YTCC-HD3 for the follow-up study. Meanwhile, this number for the qualitative part of this project is No 407/2022/YTCC-HD3. Also, we obtained ethical approval for this PhD project from the Swedish Ethical Review Authority (Dnr: 2023-06698-01).

Prior to their participation in the study, all participants were provided with a full description of the study's objectives, the voluntary and confidentiality principle of this study, the procedure, and potential benefits for individuals and communities. Only those who agreed and signed the informed consent form were recruited into the study. During the data collection, all participants had the right to withdraw from the study at any stage. Any withdrawal would not affect their relationship with local health authorities or research team members. All information collected was anonymized to ensure confidentiality and was only used for research purposes within the framework of the approved research.

## 3.6 MY CONTRIBUTION IN THE RESEARCH PROCESS

I am a senior research associate at the Center for Population Health Sciences, Hanoi University of Public Health, Vietnam with a research interest in epidemiology of non-communicable diseases. I attained my bachelor's degree at Hanoi Medical University and my master's degree in public health at the National Cancer Center – Graduate School of Cancer Science and Policy, South Korea. My research focuses on the association between behavioral risk factors (including smoking, alcohol use, physical inactivity, and obesity) and chronic diseases and cancer outcomes. Since 2018, I have been the project manager in tobacco control projects with funding from the Vietnam Tobacco Control Fund-Ministry of Health, Bloomberg Philanthropies, the Canadian Institutes for Health Research, and the US National Institutes of Health.

For **Paper I** of this PhD project, I utilized secondary data from the GATS Vietnam 2015. Under the guidance of my supervisors, I developed the research concept, conducted data analysis, and authored the manuscript. As the project coordinator for the International Tobacco Control project in Vietnam (**Paper II**), I was integrally involved in all phases of its implementation. This comprehensive involvement gave me a thorough understanding of each stage, from proposal development, ethical approval, data collection and analysis to report/manuscript writing. I acted as a principal investigator for the qualitative studies of this PhD project (**Paper III & IV**). In this capacity, I was responsible for applying for the ethical approval, formulating the research protocol, conducting data collection and analysis, and drafting the manuscript, all under my supervisory guidance.

# 4 RESULTS

This section is organized around the three key layers of the PhD's theoretical framework: individual, social, and policy factors that influence smoking behavior. The first subsection presents individual factors, encompassing the role of individual-related factors in their decisions to smoke, purchase or quit smoking. The second subsection addresses social factors, exploring how friends, family, and society indirectly influence smoking behavior and compliance with tobacco control policies. The final subsection analyses how stakeholders experienced these policies (including smokers, policymakers, government officials, and advocates) and their implementation, and proposed future actions. Some findings presented are derived from additional analyses of our datasets and may not be included in the published papers or manuscripts.

## 4.1 INDIVIDUAL FACTORS RELATED TO SMOKING

This section covers the results of **Paper I & II** with additional analyses from GATS and ITC data sources. It includes smoking-related behavior, cigarette purchase behaviors and cessation behaviors (both actual and intention).

### 4.1.1 SMOKING BEHAVIORS AND ADDICTION

Of the 3,983 men who participated in the GATS study, 45.3% were classified as current smokers. Those who reported current smoking were older, had lower levels of education, and belonged to poorer household economic groups compared to their non-smoking counterparts (Figure 7). Cigarettes were the predominant form of tobacco use, with approximately 80% reporting cigarette consumption. Notably, two-thirds of these cigarette smokers engaged in daily use. Waterpipe smoking, while less prevalent, was still considerable, with 30.3% currently smoking (Table 1, **Paper I**).

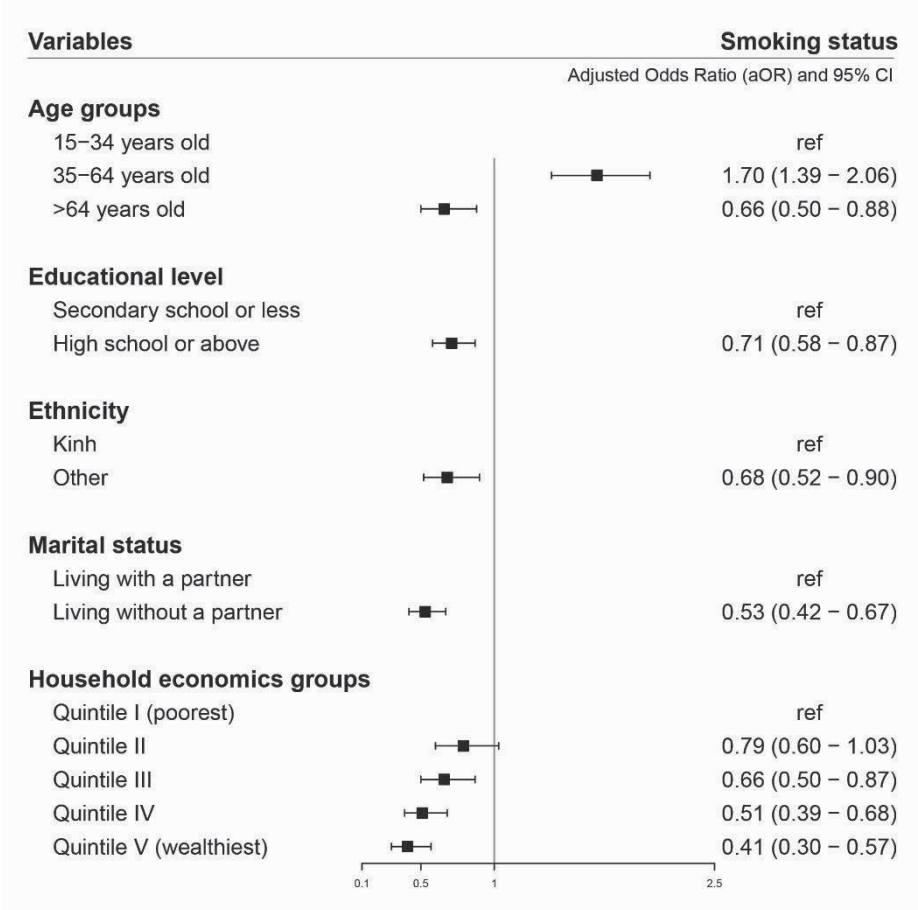


*Figure 7: Tobacco smoking status among men ≥ 15 years*

Regarding perceived nicotine addiction, cigarette smokers in the ITC surveys were more inclined to perceive themselves as "not at all" or "a little" addicted to cigarettes (27.8% and 17.2% at the follow-up, respectively). This aligned with the result of heaviness smoking index (HSI), indicating approximately half were categorized as having low addiction (Figure 8). However, over 10% of smokers classified themselves as heavily addicted to cigarettes, which was twice the proportion categorized as such by the HSI. Further, the duration between waking and having the first cigarette of the day is frequently utilized as a measure of dependence, with a shorter period indicative of a higher level of addiction. Specifically, 16.1% of smokers reported having their first cigarette within five minutes of waking, while 21.3% reported doing so within 30 minutes.

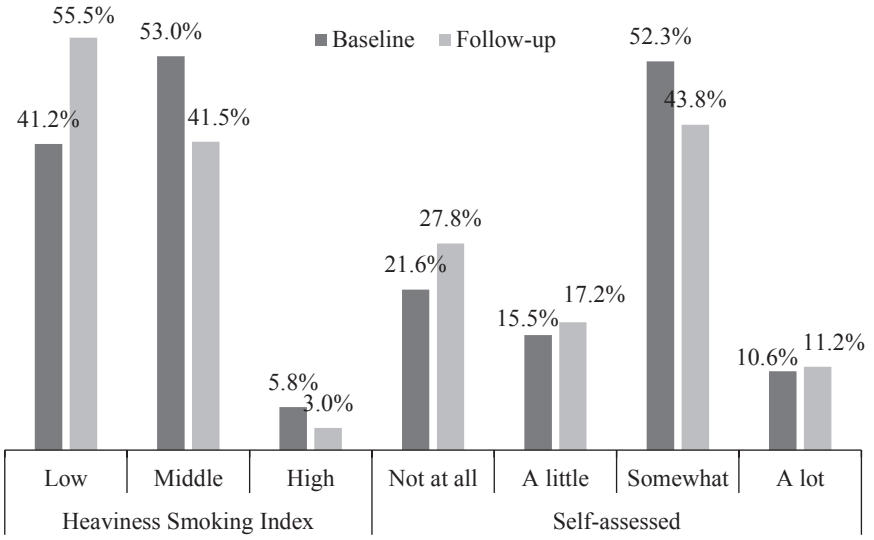


*Figure 8: Smoking addiction by heaviness smoking index and self-assessed over time*

## 4.1.2 CIGARETTE PURCHASE BEHAVIORS

The analysis of purchasing behaviors among cigarette smokers in GATS 2015 found that approximately 70.0% of smokers purchased cigarettes in packs, 63.5% preferred international brands, 40.5% selected low-price cigarettes, and 68.0% bought their cigarettes from kiosks (Table 1, **Paper I**).

Additionally, Thang Long remained the most predominant brand among cigarette smokers in Hanoi in both baseline and follow-up if ITC surveys. When inquired about the reasons for selecting their regular cigarette brand, the top three factors cited were similar at both survey rounds, including taste, price, and "feeling good" (Figure 9). Convenience stores/kiosks remained the primary location for purchasing cigarettes, with over 80.0% of smokers patronizing them. However, the prevalence of illegal cigarette use, as determined by the absence of authenticity labels/stamps on cigarette packs, was 3.7% in the follow-up survey. Meanwhile, the GATS 2015 dataset also found that nearly 20% of the most frequent cigarette brands purchased were illicitly imported into Vietnam.

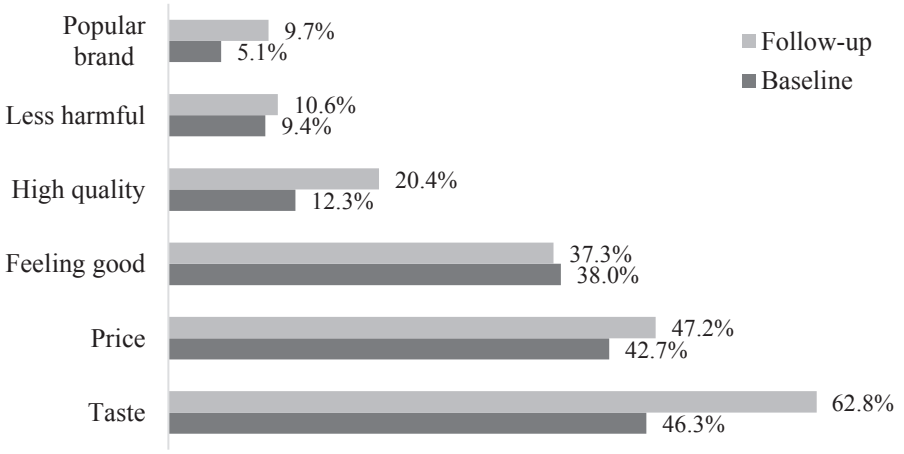


*Figure 9: Reasons for choosing cigarette brand over time*

For a deeper understanding of cigarette smokers' behavior, we employed the LCA analysis and identified four distinct latent classes of Vietnamese male cigarette smokers with patterns of purchase behavior (Table 2, **Paper I**):

- Class 1 – 44.4% of the respondents who were price-insensitive and purchased an international cigarette brand
- Class 2 – 27.6% of the respondents who were price-sensitive and purchased a domestic cigarette brand
- Class 3 – 18.6% of the respondents who were price-sensitive and purchased cigarettes in street vendors
- Class 4 – 9.4% of the respondents who were price-sensitive and purchased either a loose cigarette or cigarette carton.

Compared to Class 1, participants with higher education levels (aRRR = 1.75; 95% CI: 1.15 - 2.68) or those with minor ethnicities (aRRR = 3.10; 95% CI: 1.27 - 7.52) had a greater relative risk of belonging to Class 2. Those who were heavy smokers and had a longer period of smoking were more likely to belong to Class 3 and Class 4 compared to Class 1. Additionally, those of poorer household economic groups had a greater risk of belonging to Class 2, Class 3, and Class 4 versus Class 1 (Figure 10 and Table 4, **Paper I**).

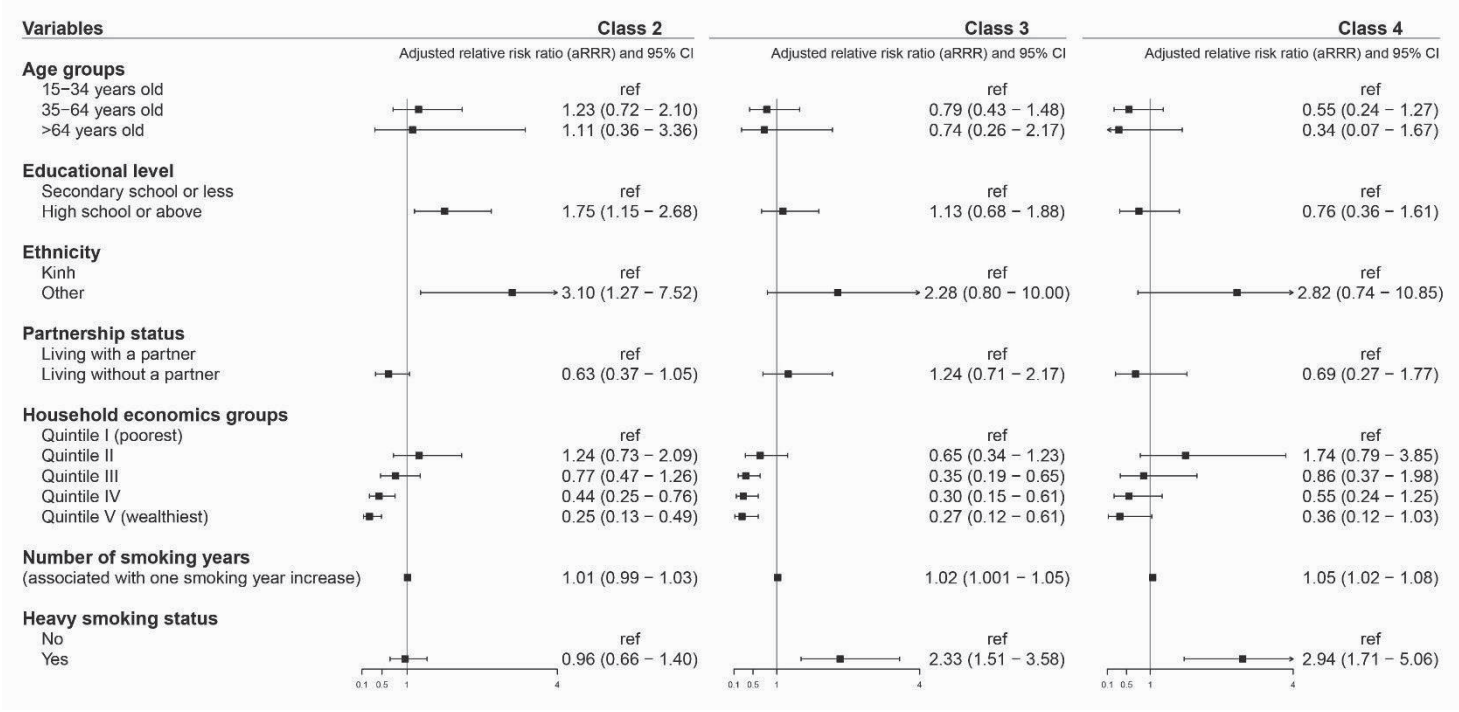


*Figure 10: Multinomial regression analysis examining purchase behavior classes among male cigarette smokers*

### 4.1.3 SMOKING CESSATION

After one year of follow-up from 2018 to 2019 in the ITC study, only 14.8% of participants were identified as quitters. Compared to persistent smokers, quitters were significantly older (49.18 years vs 45.58 years) and reported higher quality of life scores (mean visual analog scale score of 82.05 vs. 80.71, respectively). Additionally, quitters had consumed fewer cigarettes per day at baseline (mean of 11.01 vs. 13.90 CPD), exhibited lower HSI scores (mean of 1.66 vs. 2.09), and reported fewer smoking friends (mean of 3.25 vs. 3.59 friends) (Table 1 & 2, **Paper II**).

The multivariable logistic regression also found a significant inverse relationship between the number of cigarettes smoked daily and the likelihood of successful cessation (aOR = 0.97, 95% CI: 0.94 - 0.99). Moreover, individuals who had made multiple quit attempts previously were more likely to successfully quit smoking (aOR = 2.10, 95% CI: 1.15 - 3.82). Though it was not statistically significant, individuals who had better tobacco-related knowledge or more positive attitudes toward smoking were associated with smoking cessation (Figure 11 and Table 3, **Paper II**).

Of those who remained smoking in the follow-up survey, 56.5% had intention to quit. We also classified them by different stages of quit intention by applying the Transtheoretical Model and found that 11.3% were in contemplation, 12.1% were in pre-contemplation, and 33.1% were in the preparation stage.

Additionally, our logistic regression models found that their intention to quit smoking at any stage was positively associated with having been diagnosed with a chronic disease (aOR = 2.18, 95% CI: 1.20 - 3.96). Furthermore, this association was higher among those had more attempts to quit, higher levels of tobacco-related knowledge, greater self-efficacy to quit smoking, and increased concerns about future health outcomes (Figure 12 and Table 4, **Paper II**).

| Variables | Smoking cessation |
|---|---|
| | Adjusted Odds Ratio (aOR) and 95% CI |
| **Region type** | |
| Urban areas | ref |
| Rural areas | 1.04 (0.61 − 1.79) |
| **Age group** | |
| 18−39 | ref |
| >=40 | 1.02 (0.69 − 1.49) |
| **Marital status** | |
| Living without partner | ref |
| Living with partner | 1.15 (0.60 − 2.22) |
| **Education attainment** | |
| Secondary school completed or lower | ref |
| High school completed | 0.99 (0.60 − 1.66) |
| College/University or higher | 0.97 (0.52 − 1.80) |
| **Household wealth index** | |
| Quintile I (poorest) | 0.88 (0.48 − 1.60) |
| Quintile II | 1.55 (0.78 − 3.06) |
| Quintile III | 1.32 (0.71 − 2.45) |
| Quintile IV | 0.80 (0.37 − 1.72) |
| Quintile V (richest) | ref |
| **Tobacco smoke type** | |
| Cigarette smoking only | 1.48 (0.84 − 2.62) |
| Dual use | ref |
| **Smoking duration** | |
| <=5 years | 1.20 (0.59 − 2.44) |
| >5−10 years | 0.46 (0.20 − 1.02) |
| >10 years | ref |
| **Cigarette smoked per day** | |
| (associated with one cigarette smoked increase in a day) | 0.97 (0.94 − 0.99) |
| **Self−assessed health status** | |
| Fair | ref |
| Worst/Poor | 1.02 (0.52 − 1.99) |
| Good/Excellent | 0.88 (0.55 − 1.41) |
| **Number of smokers among 5 closet friends** | |
| (associated with one smoker friend more) | 0.95 (0.85 − 1.07) |

| Variables | Smoking cessation (cont) |
|---|---|
| | Adjusted Odds Ratio (aOR) and 95% CI |
| **Tobacco−related knowledge** | |
| Quartile I (lowest) | ref |
| Quartile II | 0.70 (0.36 − 1.39) |
| Quartile III | 1.50 (0.75 − 3.00) |
| Quartile IV (highest) | 1.40 (0.74 − 2.65) |
| **Self−efficacy to quit smoking** | |
| Not at all | ref |
| Somewhat | 0.89 (0.47 − 1.69) |
| A lot | 1.16 (0.68 − 2.00) |
| **Health benefits of quitting** | |
| Not at all | ref |
| A lot | 1.43 (0.79 − 2.80) |
| **Worried about future health** | |
| Not at all | ref |
| Somewhat | 1.61 (0.85 − 3.02) |
| A lot | 1.49 (0.84 − 2.64) |
| **Opinion of smoking** | |
| Good | ref |
| Bad | 0.75 (0.35 − 1.60) |
| **Intention to quit** | |
| No | ref |
| Yes | 1.14 (0.67 − 1.93) |
| **Number of quit attempts during the previous year** | |
| Not tried to quit | ref |
| Once | 1.44 (0.74 − 2.81) |
| 2−5 times | 2.10 (1.15 − 3.82) |
| 6 times or more | 1.10 (0.45 − 2.67) |
| **Health warning labels** | |
| No | ref |
| Yes | 0.94 (0.62 − 1.44) |
| **Anti−smoking advertising** | |
| No | ref |
| Yes | 0.73 (0.29 − 1.81) |

*Figure 11: Individual factors associated with smoking cessation*

| Variables | Intention to quit<br>Adjusted Odds Ratio (aOR) and 95% CI |
|---|---|
| **Region type** | |
| Urban areas | ref |
| Rural areas | 2.59 (1.73 – 3.88) |
| **Age group** | |
| 18–39 | ref |
| >=40 | 0.87 (0.51 – 1.49) |
| **Marital status** | |
| Living without partner | ref |
| Living with partner | 0.86 (0.41 – 1.79) |
| **Education attainment** | |
| Secondary school completed or lower | ref |
| High school completed | 1.32 (0.65 – 2.67) |
| College/University or higher | 1.00 (0.54 – 1.86) |
| **Household wealth index** | |
| Quintile I (poorest) | 1.22 (0.60 – 2.48) |
| Quintile II | 1.56 (0.74 – 3.29) |
| Quintile III | 1.40 (0.60 – 3.25) |
| Quintile IV | 0.94 (0.37 – 2.37) |
| Quintile V (richest) | ref |
| **Tobacco smoke type** | |
| Cigarette smoking only | 1.00 (0.69 – 1.45) |
| Dual use | ref |
| **Smoking duration** | |
| <=5 years | 2.98 (0.92 – 9.68) |
| >5–10 years | 1.43 (0.74 – 2.76) |
| >10 years | ref |
| **Cigarette smoked per day** | |
| (associated with one cigarette smoked increase in a day) | 1.00 (0.97 – 1.02) |
| **Self–assessed health status** | |
| Fair | ref |
| Worst/Poor | 0.32 (0.12 – 0.88) |
| Good/Excellent | 0.75 (0.43 – 1.31) |

| Variables | Intention to quit<br>Adjusted Odds Ratio (aOR) and 95% CI |
|---|---|
| **Quality of life (VAS scale)** | |
| (associated with one point increase in VAS scale) | 0.99 (0.97 – 1.00) |
| **Ever been diagnosed with any chronic disease** | |
| No | ref |
| Yes | 2.18 (1.20 – 3.96) |
| **Alcohol consumption** | |
| No | ref |
| Yes | 1.64 (0.86 – 3.12) |
| **Number of smokers among 5 closet friends** | |
| (associated with one smoker friend more) | 0.98 (0.82 – 1.16) |
| **The number of friends/acquaintances who quit smoking successfully.** | |
| No | ref |
| One person | 0.92 (0.5 – 1.7) |
| 2 or more people | 1.24 (0.81 – 1.9) |
| **Smokers in the families** | |
| No | 1.32 (0.75 – 2.33) |
| Yes | ref |
| **Number of quit attempts during the previous year** | |
| Not tried to quit | ref |
| Once | 3.60 (1.74 – 7.46) |
| 2–5 times | 6.24 (3.24 – 12.04) |
| 6 times or more | 5.45 (1.41 – 21.09) |
| **Tobacco–related knowledge** | |
| Quartile I (lowest) | ref |
| Quartile II | 1.70 (0.95 – 3.16) |
| Quartile III | 2.16 (1.04 – 4.46) |
| Quartile IV (highest) | 2.27 (1.04 – 4.93) |

| Variables | Intention to quit (cont)<br>Adjusted Odds Ratio (aOR) and 95% CI |
|---|---|
| **Self–efficacy to quit smoking** | |
| Not at all | ref |
| Somewhat | 3.73 (2.05 – 6.78) |
| A lot | 3.82 (2.14 – 6.80) |
| **Health benefits of quitting** | |
| Not at all | ref |
| A lot | 1.23 (0.70 – 2.18) |
| **Worried about future health** | |
| Not at all | ref |
| Somewhat | 2.08 (1.25 – 3.45) |
| A lot | 3.04 (1.66 – 5.56) |
| **Opinion of smoking** | |
| Good | ref |
| Bad | 1.53 (0.76 – 3.09) |
| **Smoke–free policies** | |
| No | ref |
| Yes | 1.23 (0.65 – 2.34) |
| **Cessation support program** | |
| No | ref |
| Yes | 1.04 (0.58 – 1.88) |
| **Health warning labels** | |
| No | ref |
| Yes | 2.65 (1.26 – 5.58) |
| **Anti–smoking advertising** | |
| No | ref |
| Yes | 1.86 (0.69 – 4.99) |
| **Tobacco taxation** | |
| No | ref |
| Yes | 2.39 (1.26 – 4.55) |

*Figure 12: Individual factors associated with the intention to quit smoking*

## 4.2 SOCIAL FACTORS RELATED TO SMOKING BEHAVIORS

This section includes the **Paper II and III** results with additional analyses from ITC data and FGDs. It involves results related to pressure from their peers and society.

### 4.2.1 PEER PRESSURE

The qualitative analysis revealed that participants cited peer influence as a significant factor across different stages of tobacco use. Regarding smoking initiation, participants mentioned the desire to fit in with social circles as a primary reason. An urban smoker, aged 36, underscored this experience:

*"The first day I smoked was when I went to my high school friend's brother's wedding. After drinking alcohol, my friend put a cigarette out to smoke and invited me to try."*
*(Urban smoker, 36 years old)*

In terms of smoking relapse, former smokers and those who had attempted to quit reported that social situations, where smoking was prevalent and required for social interactions, acted as significant triggers for relapse. A smoker participant stated:

*"I've tried quitting many times, but my boss was suspicious when he did not see cigarettes in my pocket. He said, "We don't regret our priceless lives, why's regret about two pieces of lungs". Then he lit cigarettes for me, and I relapsed."*
*(Rural smoker, 28 years old)*

Conversely, peer influence was also reported as a substantial factor in cessation attempts. Quantitative data from the ITC follow-up survey indicated that approximately one-third of participants who had quit attempts reported receiving support to quit from friends or family. Also, there was a positive trend, even not statistically significant, between intention to quit smoking among persistent smokers and both the number of successfully quit friends and the absence of smokers in their family (Table 4, **Paper II**). This finding was corroborated by qualitative data from the FGDs, where participants described positive peer influence on their decision to quit. One participant shared his cessation approach:

*"In my group of friends, we decided to quit smoking by setting a fine if smoking more than three cigarettes a day. By that, we reduced smoking and encouraged each other to quit."*
*(Urban smoker, 24 years old)*

## 4.2.2 SOCIAL FACTORS

Qualitative analysis of FGDs also revealed the deep-rooted nature of smoking in social and cultural norms. Our smoker participants described smoking as a social lubricant, facilitating connections and strengthening relationships. One participant noted:

> *"My friend and I have nothing similar except for smoking. Just because of smoking, I can make friends with a new person and strengthen bond with my boss"*
> *(Urban smoker, 26 years old)*

Offering cigarettes emerged as a cultural ritual of hospitality and connection, as exemplified by another respondent: "*It's common for people to offer each other cigarettes."* Smoking was also reported as integral to various cultural ceremonies and rituals. As one participant explained:

> *"During the wedding procession and reception, it is customary to have alcohol and cigarettes. Is it considered improper if they are missing."*
> *(Rural smoker, 53 years old)*

Further, smoker participants also confirmed that smoking is a symbol of masculinity as they often started smoking in their teenage years. Meanwhile, women smoking is unacceptable, as: "*Women are born for caring and to be family financial keeper. They're not allowed to burn money so they should not smoke*." Also, male participants acknowledged the complex societal challenge in which traditional customs clash with public health policies.

> *"Why do men smoke as early as 7th grade? Because a man's dignity requires having a cigarette, or if you're too poor, you'd have a waterpipe. It's our traditional custom for years. This is a society issue that our law hasn't been resolved yet."*
>
> *(Urban smoker, 42 years old)*

Additionally, the co-use of tobacco with alcohol or caffeine was frequently mentioned, with one participant stating, "*If drinking without smoking, it feels like something is missing.*" However, participants also noted a gradual shift in the social norm. During the discussions, they highlighted changes in the acceptability of smoking at social gatherings, with one noting:

> *"Previously when we met, we took out a cigarette to offer each other. But not now. If anyone offers a cigarette, they might even get scolded."*
> *(Mountainous smoker, 42 years old)*

## 4.3 POLICY AND SMOKING BEHAVIOR

This section includes the outcome from experience of tobacco control policies, stakeholders' viewpoints on these policies implementation, and perception on actions needed. It consists of results from **Paper II, III and IV** and some additional analyses from FGDs and IDIs.

### 4.3.1 TOBACCO CONTROL OUTCOMES

The longitudinal data analysis showed that smokers' perceptions of tobacco control policies did not significantly predict actual smoking cessation (Table 3, **Paper II**). However, persistent smokers who perceived that health warning labels and tobacco taxation had a positive impact on their smoking were more likely to express intentions to quit (aOR = 2.65; 95% CI: 1.26 - 5.58 and aOR = 2.39; 95% CI: 1.26 - 4.55, respectively) (Table 4, **Paper II**).

These findings align with the FGDs results (**Paper III**), where both former and current smokers concurred that current tobacco control policies had success in altering their attitudes but had not changed their smoking behaviors. For example, there was a consensus among smokers that cigarettes in Vietnam are cheap, especially in comparison to other essential items like rice or petroleum. A smoker noted:

*"Cigarettes only increased by one or two thousand dong while alcohol and other foods are doubled."*
*(Former smoker, 68 years old)*

This low cigarette tax was also noted by stakeholders in the in-depth interviews (**Paper IV**), with one advocate stating, "*Tobacco taxes in Vietnam are the lowest compared to other countries in the region*." The affordability of cigarettes was also cited as a reason for smokers to continue smoking and barrier to their quit efforts.

Furthermore, smoker participants acknowledged the impact of health warning pictures and public health communications on themselves, those around them, and society regarding the dangers of tobacco use (**Paper III**). However, they also underscored that the effectiveness of health warnings in changing their behavior decreased over time, particularly as they became desensitized to these warnings. One smoker shared:

*"When the cigarette packaging changed, I reduced my consumption but only for a short period. After getting used to it, I didn't care anymore"*
*(Current smoker, 34 years old)*

## 4.3.2 FACILITATORS AND BARRIERS FOR POLICY IMPLEMENTATION

Our findings on the facilitators and barriers to tobacco control implementation in Vietnam are summarized in Figure 13, structured according to the five Consolidated Framework for Implementation Research (CFIR) domains: intervention characteristics, inner setting, outer setting, individual factors, and implementation process. In each domain, we only kept the constructs that is relevant to our in-depth interviews data.

### 4.3.2.1 FACILITATORS

Key facilitators of tobacco control policies implementation in Vietnam included comprehensive legislation, strong government commitment, support from national and international organizations, and increased public awareness. The design of the tobacco control law and national strategies was described as well-structured, covering all aspects of the MPOWER package. One policymaker noted, "*The legal framework in Vietnam is almost comprehensive. From the law to decrees and up to now, we recently issued the National Strategy for Tobacco Harm Prevention until 2030.*"

Also, the existing political system with government commitment was highlighted as a significant facilitating factor, with the unified party leadership enabling easier enactment of laws.

> *"Notably, there was Mr. T, who strongly supported the tobacco control policy. When he was the Vice-Chairman of the Social Affairs Committee – National Assembly, he strongly supported for this tobacco control law, thus it was well-protected by this committee."*
> *(Advocate#1)*

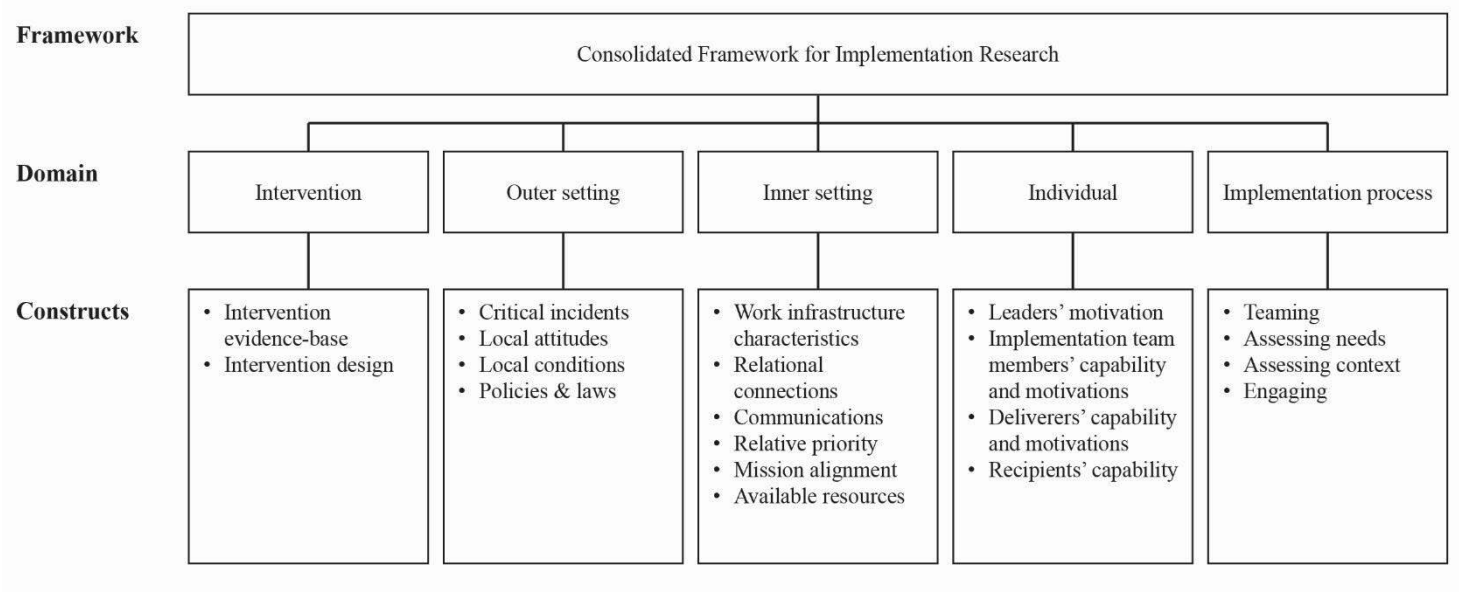


*Figure 13: Selected CFIR's domain and constructs relevant to* ***Paper IV***

The government and National Assembly support were stated in the stakeholder interviews as crucial as they are the final decision-makers in Vietnam. Our stakeholders also underscored the support from national and international organizations, particularly the Vietnam Tobacco Control Fund (VNTCF), as a critical resource in successfully implementing tobacco control measures. The government officials' participants noted that the VNTCF's financial support enabled the implementation and enforcement of the tobacco control policies across provinces and ministries. Moreover, as "*Communication is one of nine VNTCF's mission"*, our stakeholders described the role of educational and communication campaigns in improving public awareness about tobacco's harms and the existence of tobacco control law, leading to improved compliance rates. Additionally, stakeholder participants highlighted the importance of increased public knowledge to a shift in social attitudes, with smoking becoming less socially acceptable and even stigmatized in public places. An advocate shared:

*"Overall, the social utility of cigarette packs has been lowered. Previously, they were often used as gifts, but since the warning images were introduced, there has been a change in perception. The social attitude toward cigarettes and smoking has decreased significantly." (Advocate#6)*

#### 4.3.2.2 BARRIERS

Significant barriers to tobacco control implementation in Vietnam included tobacco industry interference, inadequate resources for tobacco control activities, and lack of enforcement and sanctions. The tobacco industry's tactics, including lobbying and exploiting regulation loopholes, pose significant challenges. A policymaker shared:

*"Well, the industry said if taxes are raised too high, people will switch to using contraband cigarettes. That means they will lose revenue, and the government tax revenue will reduce. They're quite good at delivering that message and now, many people think the same way." (Policymaker#3)*

Also, the government owns the tobacco industry, thus, the conflicts of interest were acknowledged by our participants of both smokers in FGDs and other stakeholders in the IDIs. One participant noted:

*"Industry interests can have an impact on the government, especially when those industries are managed by the government. Sometimes, they even become part of the government." (Advocate#1)*

Besides, resource constraints, including a lack of legal cessation aids, storage space for confiscated items, and funds for inspections, further impeding effective tobacco control, were stated by our stakeholders in the interviews. They also highlighted existing challenges in the complexity of organizing interdisciplinary inspection teams and the limited availability of smoking cessation services, primarily confined to central-level hospitals. As one stakeholder explained:

*"Not everyone who wants to quit smoking will go to a central-level hospital for cessation counseling."*
*(Advocate#2)*

Additionally, participants in the IDIs mentioned insufficient enforcement of policies as another significant barrier. Our stakeholders highlighted the nonenforcement of smoke-free environments and selling cigarettes to minors.

*"Of course, it's not effective. They know smoking is against the law, but they still smoke because they've never seen anyone being fined."*
*(Government official#2)*

Additionally, public tolerance of smoking, especially given the high prevalence among men, hinders policy implementation in society.

*"It's difficult to get people to remind others when they violate the law. I find that Vietnamese people are often too courteous and hesitant to speak up, especially when dealing with men. Our culture is not as assertive as other nations."*
*(Advocate#5)*

### 4.3.3 STAKEHOLDERS' PERCEPTIONS ON ACTIONS NEEDED

Our stakeholders in the IDIs proposed several actions to enhance tobacco control implementation in Vietnam, which could be categorized into five main areas: (i) revising the legal framework, (ii) fostering multi-ministerial collaborations and public mobilization, (iii) ensuring resources for implementation, (iv) enhancing enforcement and penalties, and (v) countering tobacco industry interference. Similarly, the former and current smokers in the FGDs also suggested these actions to enhance their compliance and reduce tobacco smoking prevalence in Vietnam.

One of the suggested actions was to update the tobacco control legislation to address existing gaps. Our stakeholders cited areas for improvement in the current tobacco control policies, including extending smoke-free places to cover additional areas, providing smoking cessation aid, increasing pictorial warning coverage, managing the tobacco market, and significantly increasing tobacco taxation. As one advocate emphasized:

> *"All current policies need to be reviewed and strengthened. One of the policies that needs to be implemented soon is to increase taxes rapidly and consistently."*
> *(Advocate#5)*

Smokers in the FGDs shared the consistent suggestions when stating that:

> *"Raising tobacco price is the most effective. If the price of cigarettes increases, the smoking rate will decrease. We will reduce smoking from one pack per day to one pack per week. The number of smokers may reduce but the government budget is kept the same because the price increases 10 times."*
> *(Urban smoker, 40 years old)*

Additionally, stakeholders in the interviews stressed the need for new regulations to control emerging tobacco products, especially those gaining popularity among youth. Meanwhile, smokers who are addicted to tobacco emphasized that the tobacco control law should cover all tobacco products to prevent switching products if the law is stricter.

> *"If we only ban cigarettes, I will smoke waterpipe instead. There may be no-smoking signs prohibiting smoking cigarettes, but I can still smoke waterpipes. So, the law should cover other tobacco products too."*
> *(Rural smoker, 53 years old)*

Besides, participants of both FGDs and IDIs emphasized that effective tobacco control requires participation from the entire society and all government ministries.

> *"If one department says, "We must ban it!" and another says, "No, you cannot do that!" for instance, it makes things more difficult. It requires the whole community to have a consistent understanding and participation."*
> *(Policymaker#3)*

Communication was also identified as essential for improving knowledge and altering social norms and behaviors: "*We need to raise public awareness so that people fear the impact on their spouses and children*." Participants noted that communications were important not only for increasing public knowledge but also for mobilizing community involvement in tobacco control activities. In addition, our stakeholders also emphasized a need to allocate more personnel to ensure adequate staffing for tobacco control implementation and enforcement. Further, other resources should be directed toward other tobacco control initiatives such as:

*"We need to domestically produce and legally import cessation medication support."*
*(Government official#2).*

Besides, both stakeholders and smokers stressed the need for stricter enforcement and harsher penalties for violations of tobacco control laws.

*"If any store or distributor is found selling to underage individuals, they should face severe penalties."*
*(Urban smokers, 30 years old)*

Finally, our stakeholders suggested to counter tobacco industry interference, included developing and enacting Article 5.3 of the FCTC, gradually reducing tobacco production, demonopolizing the tobacco industry, and finding alternative crops for tobacco farmers. A significant recommendation was the privatization of the tobacco industry to eliminate government involvement and associated conflicts of interest, as one advocate stated:

*"Ideally, the tobacco industry should be completely privatized, and the government should not be involved in that matter."*
*(Advocate#2)*

# 5 DISCUSSION

Smoking is shaped by and integrated into what people normally do in their daily context, making it both a habitual behavior and a social practice that evolves with changes in policy and environmental conditions as shown in this PhD theoretical framework. This multifaceted nature of smoking behavior necessitates comprehensive policy responses addressing various dimensions - from individual-level interventions to population-wide measures, educational initiatives, and policy controls. Vietnam has enacted numerous tobacco control policies aligned with international frameworks and had some implementing facilitators, significant implementation challenges have emerged, including enforcement difficulties, resource constraints, and tobacco industry interference. This discussion section presents these three critical aspects: (i) the complex dynamics of smoking behavior, (ii) policy focus, and (iii) implementation facilitators and barriers while synthesizing the study's strengths and limitations to inform public health and policy recommendations for strengthening Vietnam's tobacco control efforts.

## 5.1 COMPLEX DYNAMICS OF SMOKING BEHAVIORS

Smoking represents a dynamic behavior deeply embedded in people's everyday routines and social interactions. This behavior is not merely about nicotine consumption but rather impacted by various aspects of daily life, including work breaks, social gatherings, after-meal rituals, as well as availability and implementation of relevant policies.[43] The patterns of this smoking behavior varied between different nations, reflecting different stages of the tobacco epidemic globally.[30] Vietnam, in the peak and early decline stage, experiences a high rate of smoking. Of the Vietnamese men population, over 45% were tobacco smokers, which is comparable with other findings in Southeast Asian countries,[61] but higher than the global average of 36.1%.[62] This dynamic nature is evident in how smoking behaviors fluctuate throughout a smoker's life, in societies, and across different nations.

**Biological mechanism**

Biological addiction involves multiple mechanisms in the brain that create and maintain nicotine dependence. When a person smokes, nicotine quickly reaches the brain. It binds to receptors, triggering the release of dopamine to

create pleasurable feelings, which reinforce smoking behavior. Consistent smoking leads to tolerance and withdrawal symptoms when attempting to quit.[63] which are typically obtained through analysis of smokers' breath or their biological samples (such as hair, saliva, or nails). However, we measured addiction using self-reported questions of the number of cigarettes smoked daily and the first cigarette smoked in a day. We found a significant proportion of smokers having their first cigarette within 30 minutes of waking, which also underscored a high level of nicotine dependence. This finding is consistent with previous research showing that time to the first cigarette is a predictor of cessation success and can be used to tailor treatment approaches.[64,65] Also, smokers in the FGDs, who self-assessed as heavily addicted, noted that the current cessation support did not work for them, and it was difficult for them to obey the tobacco control policies like smoke-free places.

**Individual propensity to smoking**

While nicotine addiction creates the biological basis for continued smoking, individual characteristics also significantly shape how this smoking behavior manifests in their daily life. We observed the highest smoking prevalence among the middle-aged men in Vietnam, a consistent pattern which was also found in many low- and middle-income countries where tobacco control efforts are still at early stage.[61,62] This age distribution of smoking prevalence was also consistent with the tobacco epidemic model proposed in previous research,[66,67] which described the evolution of tobacco use in populations over time. A possible explanation could be that this age group smoked long enough period and that they were more addicted to nicotine.[68] Another explanation is that they have yet to experience any related health conditions and therefore, were less motivated to quit smoking when compared to the elder group.[69] Further, middle-aged smokers are confronting more smoking-related cues from their surroundings than other age groups, like social interaction, pressures of life and work, and peer pressure/impact.[68] Additionally, this PhD's qualitative results found depression and stress were primary reasons for smoking initiation or relapse, aligned with the previous studies of mental health and tobacco use.[70] The strong connection between smoking and stress management occurs because nicotine interacts with the brain's stress systems, explaining why stressful situations often trigger smoking urges and relapse.[71]

This PhD project also found a relationship between age and smoking cessation, with cessation rates increasing with age. This association remained significant even after adjusting for potential confounders. This positive association is supported by previous studies conducted globally.[69,72,73] These findings may be explained by our longitudinal study data and previous research that found older smokers suffered more adverse health outcomes and tobacco-related chronic diseases than younger participants.[74,75] As a result, older people may have more motivation to quit smoking. Furthermore, the positive association between quit intentions and chronic disease diagnosis emphasizes the potential of healthcare settings as critical points for cessation interventions.

Additionally, smokers who had better tobacco-related knowledge, higher perceived ability to successfully quit, and greater concern for future health showed higher odds of intention to quit and successful smoking cessation. These findings were consistent with previous research,[72,76,77] and demonstrates that smokers' knowledge, attitudes and beliefs about smoking's perceived benefits and harms, facilitate or impede their cessation attempts. However, these attitudinal and belief systems are often deeply rooted in cultural and social contexts, making them particularly resistant to change through conventional health education approaches alone.[78] Our findings again confirmed the social practice theory for understanding how these individual factors operate within broader social and environmental contexts.[43]

**Social context related to smoking**

This PhD project also examined how individual smoking behaviors are shaped and expressed through social interactions, cultural norms, and social rituals. Peer pressure emerged as a crucial factor in smoking initiation, continuation, cessation, or relapse, particularly in social settings such as weddings or gatherings in Vietnam. Our findings of significant barriers or the inspirational effect of friends, family members, or acquaintances (who keep smoking or quit smoking, respectively) on intentions to quit and cessation are consistent with previous studies from Jordanian,[79] Sri Lankan,[80] Hong Kong,[81] and Saudi Arabian smokers.[82] A possible reason could be due to the impact of idealized family members/friends who also smoke or quit smoking or gain recognition from their peers.[81,82] Also, friend/family disapproval, one of the most frequent reasons for quitting or trying to quit in this study and previous national surveys, also hinder the social practice of tobacco use in Vietnam.[1,83]

The deep integration of smoking into social and cultural norms in Vietnam presents a significant challenge for tobacco control efforts. One of our smoker participants shared that his relapse experience was due to pressure from his boss, which underscores the influence of workplace stressor on smoking behaviors. This suggested that social context of the workplace also should be considered when planning interventions, as found in a previous systematic review,[84] could be crucial in supporting cessation efforts. Additionally, the high prevalence of smoking among Vietnamese men, coupled with the strong social and cultural factors identified, aligns with patterns observed in previous studies linking to cultural notions of masculinity in Vietnam and other neighboring nations.[13,19,44] Further, the social practice of co-use to tobacco and alcohol during their gatherings, frequently mentioned by our men participants, aligns with global trends as shown in a recent systematic review by Adams.[85] Tailoring interventions to address these gendered aspects of smoking and co-use of tobacco and alcohol could enhance their effectiveness in the Vietnamese context.

Furthermore, in many Asian countries like Vietnam, smoking plays a crucial role in business interactions and social bonding. For example, in China and Japan, offering cigarettes remains an important business etiquette practice despite growing awareness of health risks. The concept of "gift cigarettes" in China represents a unique social phenomenon that perpetuates smoking behaviors through cultural practices.[86,87] However, this practice has gradually changed, as mentioned by our participants, and mirrors trends observed in other countries further along in their tobacco control efforts in the denormalization of tobacco globally.[88,89] It, therefore, underscores the vital role of social factors on the change of individual smoking initiation, maintenance, relapse, and cessation attempts. These also suggest that Vietnam may be at a crucial stage in its tobacco control progress, where shifting social norms could accelerate cessation efforts.

**Tobacco control policies landscape**

While social environments significantly influence smoking behaviors, these social contexts exist within and are shaped by broader policy environments. Some countries have implemented comprehensive measures like Singapore with strict regulations, including standardized packaging and high taxation, achieving one of the lowest smoking rates in Asia (13%).[30] In contrast, Indonesia's limited regulations and low tobacco taxes contribute to high smoking rates.[30] However, the effectiveness of these policies depends on how

well they address multilevel factors of smoking behavior, including the commercial environment that promotes tobacco use.[90,91] Policy implementation in the context of Vietnam is discussed in detail below.

**Tobacco control industry influences**

Understanding the tobacco industry's influence remains crucial when examining tobacco control efforts. Despite regulations, in Southeast Asia and Vietnam, transnational tobacco companies have aggressively targeted emerging markets through sophisticated marketing strategies, including social media campaigns and youth-oriented promotions. Indonesia, for instance, remains one of the few countries not to have ratified the WHO FCTC, allowing extensive tobacco advertising and promotion.[30,92] In Vietnam, our findings confirmed the predominance of manufactured cigarettes, followed by waterpipe tobacco and other tobacco products. This dominance of manufactured cigarettes is particularly worrisome given the government-owned tobacco companies influence in Vietnam. In this PhD project, our participants perceived the tobacco industries' influence via their lobbying for policy development and implementation, which is discussed in section 5.3. Further, waterpipe tobacco is still not subject to any tobacco control policies in Vietnam, and its taxation is still hard to measure because much of it is home-produced.[35,93] Therefore, this specific type of tobacco product seems more approachable with affordable prices for those with poorer economic groups. The findings of this PhD project again confirmed the complexity of smoking behavior as it is shaped by and integrated into what people usually do in their daily lives, making it both a habitual behavior and a social practice that evolves with changing life circumstances and environmental conditions.[43,94]

## 5.2 POLICY FOCUS AND RELEVANCE

Vietnam's tobacco control efforts started in the early 2000s, marked by the signing of the WHO FCTC in 2003 and the launch of the Law on Prevention and Control of Tobacco Harms in 2012. This legislative framework encompasses various control measures of the MPOWER package (Table 3) and represents a significant achievement in our public health efforts.

*Table 3: Process of WHO FCTC and MPOWER package implementation in Vietnam*[30,35,36]

| **MPOWER package** | **FCTC Articles** | **Progress of WHO FCTC implementation** |
|---|---|---|
| Monitor use and policies | Article 20 | Comprehensive tobacco surveillance data - including smoking rates, exposure to secondhand smoke, quit attempts, and media coverage - has been continuously tracked through multiple national and provincial surveys: GATS in 2010 and 2015, GYTS in 2007, 2014, and 2021, and provincial-level GATS in 2020, 2022, and 2024. |
| Protect people from tobacco smoke | Article 8 | Ban smoking indoors in healthcare facilities, educational facilities except universities, universities, government facilities, indoor offices and workplaces, restaurants. It's a requirement to display no smoking signs in smoke-free places. |
| Offering help to quit | Article 14 | Treatment of tobacco dependence: NRT and/or some cessation services (at least one of which is cost-covered).<br>Provide the telephone-based Quitline services at two central-level hospitals in the North and South of Vietnam. |
| Warn of dangers | Article 11 | Pictorial health warnings of 50% front and back |
| | Article 12 | Public awareness and communication efforts have operated at multiple levels: nationally through annual World No Tobacco Day events attended by leading health experts and policymakers; locally through community-based activities supported by both national and international partners. |
| Enforce tobacco advertising, promotion and sponsorship bans | Article 13 | Ban on direct advertising and promotion. Tobacco sponsorship was also banned, with the exception of sponsorship for philanthropies purposes and these are not allowed to be published in mass media. |
| | Article 16 | Less than 20-stick pack ban, ban on selling/provide cigarettes for people under 18. |
| Raise taxes on tobacco | Article 6 | Excise tax of 75%, equivalent with 36.7% retail price |
| | Article 5.3 | No code of conduct |
| | Article 26 | Vietnam Tobacco Control Fund (VNTCF) with total budget: US $16.2 million for 2020 |

When compared to neighboring nations like Thailand and Singapore, Vietnam's tobacco control efforts appear to be more moderate. Thailand, for instance, has more stringent measures, including larger pictorial health warnings covering 85% of cigarette packaging and higher tobacco taxes of 81.3%.[30] Similarly, Singapore maintains some of the region's strictest regulations, featuring standardized packaging, comprehensive advertising bans, and progressive policies such as raising the minimum legal age to 21.[30] In contrast, Vietnam's current policies, while progressive, demonstrate room for improvement with moderate taxation rates of less than 40% of retail price and smaller pictorial health warnings covering 50% of packaging.[30]

Therefore, when assessing the perceived impact of current tobacco control policies in Vietnam in the longitudinal study, all policies presented a positive association with quitting behaviors, though only two policies (smoke-free and health warning labels) showed statistically significant results. However, they still showed an association with quit intentions among persistent smokers. This could be indicative of the complex nature of smoking behavior and cessation. Similar findings have been observed in Malaysia where smokers reported high awareness of anti-smoking messages but did not directly translate to quit attempts.[95] This suggests that while policies may influence attitudes and intentions, it is crucial to consider additional factors, especially cultural contexts, that are associated with the actual cessation process. Future research could explore these mediating factors to enhance the effectiveness of tobacco control policies in Vietnam.

Additionally, we did not find any significant association between other tobacco control policies with smoking cessation behaviors. This is also repeated in the qualitative findings on the limited success of current policies in altering smoking behaviors, particularly regarding tobacco taxation. The affordability of cigarettes in Vietnam, as noted by our participants, has been a significant contributor to retaining Vietnam's status as one of the top countries with the highest smoking prevalence among men globally.[1] This is also aligned with our findings of price-sensitive cigarette purchase classes (Classes 2, 3, and 4), indicating that raising tobacco tax could be effective for a significant portion of smokers, especially for those with lower incomes.[96] In fact, cigarette prices in Vietnam are extremely low for both national and international brands (a minimum price of 2,500 VND (equivalent to $0.11 USD) and 3,500 VND (equivalent to $0.15 USD), respectively, as the government requirement). This low price stands as a massive barrier to tobacco control policies, which aim to reduce smoking prevalence by promoting smoking cessation and motivating quitting.

## 5.3 IMPLEMENTATION FACILITATORS AND BARRIERS

Regarding facilitators and barriers to implementing current tobacco control policies in Vietnam, our stakeholders highlighted the role of Vietnam Tobacco Control Fund (VNCTF) as a crucial facilitator. Dedicated funding mechanisms like the VNTCF have proven effective in other Asia contexts like Thailand with the Thai Health Promotion Foundation.[97] The VNTCF's role in supporting educational and communication campaigns is particularly noteworthy, as it addresses the critical need for public awareness and attitude change. This aligns with evidence suggesting that sustained, well-funded tobacco control programs are associated with reduced smoking prevalence and cigarette consumption.[98] Additionally, the strong government commitment and support from various organizations mirrored successful tobacco control initiatives in other countries, also mentioned in this study.[90,99,100] Vietnam's similar comprehensive strategy positions for potential long-term success in reducing smoking rates as the government strategies to reduce smoking prevalence to less than 36% among men in 2030.[36]

However, stakeholders identified some barriers in implementation, particularly tobacco industry interference and conflicts between health and economic interests, present significant challenges. These issues are not unique to Vietnam and have been observed globally. For instance, in Indonesia, where the tobacco industry has strong economic and political influence, similar conflicts have hindered effective tobacco control policy implementation.[101] Similarly, other Southeast Asian nations also reported a high interference of tobacco industries in their tobacco control efforts with different but crucial exposure of their tactics to slow down or limit tobacco control efforts.[33] Therefore, there is a need for stronger measures to counteract industry interference, possibly through the full implementation of Article 5.3 of the WHO FCTC, which aims to protect public health policies from the tobacco industry interests.

The stakeholders' perceptions of future tobacco control actions in Vietnam emphasized the critical importance of multi-sectoral collaboration, not only three key ministries (Ministry of Health, Ministry of Finance and Ministry of Trade and Industry) already involved in policy development and implementation (Figure 3); and also the Ministry of Information and Communications, which oversee communication and media campaigns; and the Ministry of Public Security, which handles enforcement and penalties. This

collaborative approach, alongside public mobilization efforts, is needed for behavioral change at both societal and individual levels. The involvement of these ministries is recommended because of the dual challenge of balancing economic interests with public health priorities in tobacco control efforts. Countries like Uruguay have demonstrated the effectiveness of this approach, where solid political leadership combined with broad societal support led to comprehensive tobacco control measures and significant reductions in smoking prevalence.[102] Additionally, our stakeholder participant suggested to privatize the tobacco industry to eliminate government involvement is a complex and contentious issue. While it could potentially reduce conflicts of interest within the government, it also risks removing a level of control over the industry. Experiences from other countries have shown mixed results. For example, when Japan privatized its tobacco industry, it led to more aggressive marketing tactics and opposition to tobacco control measures.[103] Therefore, any move towards privatization must be accompanied by robust regulatory frameworks to protect public health interests.

# 5.4 METHODOLOGICAL CONSIDERATIONS

## 5.4.1 STRENGTHS

This PhD project employed a mixed-methods approach, where quantitative findings from GATS and ITC studies were utilized to probe for the qualitative studies. It offers a comprehensive and nuanced understanding of tobacco control patterns and implementation challenges in Vietnam. By using both quantitative and qualitative data, we captured the current tobacco smoking behavior and how smokers experienced tobacco control policies, coupled with other stakeholders' views on the implementation of these policies. The triangulation of data from multiple sources, including a cross-sectional survey, longitudinal study, focus group discussions, and in-depth interviews, enhanced the reliability and validity of these findings.

Additionally, we utilized a nationally representative sample of Vietnamese adults to ensure a high level of generalizability. This large-scale survey with a high response rate provided a solid foundation for understanding smoking and cigarette purchasing patterns across diverse demographic groups within the country. Meanwhile, a one-year follow-up study is another key strength. It was the first longitudinal study in Vietnam examining how different individual-, social-, and policy-related factors influenced smokers' cessation behavior over time. It is crucial to understand the dynamics of smoking behaviors and factors that influence successful quitting and intention to quit.

In terms of qualitative analysis, using the inductive content analysis with a manifest approach for the FGDs ensured a systematic approach for interpreting participant experience of tobacco control policies in Vietnam. We involved current and former smokers to gain rich insights into different groups of smoking behavior and their experiences with existing tobacco control policies, complementing the broader quantitative data. Moreover, the abductive thematic analysis applied to the stakeholder interviews, combining both inductive and deductive approaches guided by the Consolidated Framework for Implementation Research, provided a theoretical framework for understanding tobacco control policy implementation in Vietnam from the stakeholders' perspective. Developing a comprehensive codebook with different domains, including outer and inner settings, provided valuable context to understand this complex landscape of tobacco use and control policies in Vietnam.

Furthermore, using the Latent Class Analysis to identify distinct cigarette purchaser classes is particularly noteworthy, as it allowed for a more nuanced understanding of purchasing behaviors beyond simple unidimensional categories. The application of multinomial logistic regression to examine factors associated with different purchasing behaviors and cessation outcomes further strengthened the analytical aspect of this PhD study. Also, the use of NVivo software for qualitative analysis and coding by two independent researchers of all FGDs and interviews improved the reliability and consistency in data interpretation. This approach minimized individual researcher bias and increased the credibility of the qualitative studies.

### 5.4.2 LIMITATIONS

Despite these above strengths, this PhD study has several limitations. While this PhD study design allows for examining multilevel factors, it may not fully capture the complex interplay between these elements. Several potentially confounding factors could not be controlled due to lack of data, including employment status, nicotine dependence level, peer smoking, workplace policies, and local enforcement levels. We further only included male participants, which limit the representative of this PhD project. Moreover, the nature of a cross-sectional study design limited the ability to establish any possible causal relationships, particularly in understanding how policy changes directly impact individual behavior over time. The longitudinal study partially mitigates this limitation, but the one-year follow-up period, while valuable, may be insufficient to capture long-term changes in smoking behavior or the impact of tobacco control policies. Smoking cessation is often a long-term process with multiple attempts, and the effectiveness of policies may take

several years to manifest fully. A longer follow-up period, perhaps 3-5 years, could provide more robust evidence of sustained behavior change and policy impact. Also, the sample size of 1,525 participants was considerably small to detect effects or changes in population subgroups. There are also concerns with the potential attrition bias of those who participated in the follow-up may significantly differ from those who did not (younger aged and lived in urban areas). This limitation may have implications for the generalizability and applicability of the study's findings.

Additionally, this PhD project relied on self-reported data, thus, it may lead to potential biases. Recall bias may affect the accuracy of reported smoking behaviors, especially when participants are asked about their past smoking habits or quit attempts in the last 12 months. While social desirability bias is another concern, particularly when discussing attitudes towards tobacco control policies or reporting on compliance with smoke-free regulations. Participants might underreport their smoking or overstate their intention to quit to present themselves more positively.

Finally, while the study incorporates stakeholder perspectives through in-depth interviews, our participants may not capture the full range of views and experiences among those involved in tobacco control policy implementation. A larger and more diverse sample of stakeholders, especially decision-makers from the National Assembly or representatives from the tobacco industry, could provide a more comprehensive viewpoint of the facilitators and barriers to policy implementation across different sectors and levels of government.

Despite these limitations, this study’s overall methodological approach provides a comprehensive picture of the complex landscape of tobacco use and control policies in Vietnam. The use of both quantitative and qualitative methods, along with the inclusion of individual, social, and policy-level perspectives, not only enhances our understanding but also provides a solid foundation for guiding tobacco control efforts in the future.

## 5.5 PUBLIC HEALTH AND POLICY IMPLICATIONS

The findings of this PhD project help inform future public health interventions and policy development in Vietnam. Vietnam's tobacco control efforts require strengthened the legislation framework. A starting point could be raising tobacco taxation as a key policy mechanism. The current tax mechanism of the valorem excise structure is dated and should be revised to a mixed scheme of both excise and specific rate to maintain the effectiveness of this tax policy. This additional tax revenue could be allocated to tobacco control programs and help minimize brand-switching and tax avoidance strategies that often occur in the ad valorem tax system.[104] Another point could be to mandate larger health warning pictures with a higher coverage of cigarette package. Also, the health warning images should be more frequently changed to enhance their impact.

The government should also strengthen existing tobacco control policies by improving enforcement and more stringent penalties for violations, sustaining human and financial resources, and developing better monitoring and reporting systems. For example, policymakers should focus on enforcing smoke-free environments and restricting cigarette sales to minors, implementing higher fines for both smokers and sellers who violate these regulations. The successful implementation and enforcement of these initiatives depends on sustained political commitment and strong coordination among implementing agencies.

Further, policies counteracting tobacco industry interference are needed. This may include more strict regulations on tobacco industry activities, increased transparency in government-industry interactions, and public awareness campaigns about industry tactics. Policymakers should also work towards better alignment of economic policies with public health goals, addressing the conflicts between health and economic interests highlighted in the study

In addition to improving policy, strengthening enforcement and countering industry, the government should implement comprehensive programs that support those who currently smoke to quit smoking. For example, scaling up evidence-based cessation services within the primary healthcare system and establishing a national Quitline with comprehensive coverage. Additionally, capacity-building programs for healthcare providers in tobacco dependence treatment and the availability of pharmacotherapy for smoking cessation are essential for expanding cessation support.

# 6 CONCLUSION

This PhD project has demonstrated that tobacco use in Vietnam represents a complex interplay between individual habits, social practices, and broader environmental and policy factors. The high smoking prevalence among men underscores the significant public health challenge faced by Vietnam. Further, this project's findings identified four distinct cigarette purchase behavior classes that underscore the heterogeneity among men smokers in Vietnam. Therefore, future approaches should address both price-sensitive and price-insensitive population groups to curb the tobacco pandemic.

The low quit rate after one year indicated a need for more effective and comprehensive cessation services. Besides, over half of the persistent smokers expressed their intention to quit, indicating a growing readiness for behavioral change among Vietnamese smokers. However, the gap between attitudinal change and behavioral modification suggests the need for more targeted interventions. These interventions could include providing cessation services at commune-level healthcare facilities or making pharmacotherapy for smoking cessation available for those who expressed high quit intentions, had lower daily cigarette consumption, and had multiple quit attempts.

While Vietnam has made significant efforts to establish comprehensive tobacco control policies aligned with the WHO FCTC, there are still room for improvements. Examples of these improvements could include raising the tobacco tax, updating pictorial health warnings, increasing the size of the warning labels, and expanding smoke-free places. Meanwhile, the implementation of these policies also faces substantial challenges. Primary challenges include low enforcement capacity, financial and human resource constraints, which hinder the sustainable implementation of tobacco control measures, particularly for enforcing smoke-free areas, prohibiting cigarette sales to minors, and limiting point-of-sales advertisements. The tobacco industry's interference presents another significant challenge, with strategies to undermine control efforts through marketing, lobbying, and exploitation of policy loopholes. Coordination challenges between national and local authorities and across different sectors further complicate implementation efforts. These challenges are compounded by social and cultural factors that normalize smoking behavior as a symbol of masculinity in cultural rituals and events.

This research's findings contribute to theoretical understanding of smoking behavior among Vietnamese men and practical tobacco control policy development. On the theoretical level, this PhD project reinforces the importance of viewing smoking as an integrated social practice rather than merely an individual behavior. On the practical level, this PhD provide evidence-based insights for strengthening tobacco control policies and their implementation in Vietnam. Moving forward, successful tobacco control will require sustained political commitment, enhanced implementation capacity, and unitization of innovative approaches that address both the individual, social and policy dimensions of tobacco use. These efforts must be supported by continued research, robust monitoring and evaluation systems, and strong partnerships across government, civil society, and international organizations to effectively reduce the health and financial burden of tobacco use in Vietnam.

# 7 FUTURE PERSPECTIVES

Based on this PhD project's findings, future research in Vietnam's tobacco control policies could strengthen the evidence base for effective policy development and implementation. There is a need for more longitudinal studies that track tobacco use behaviors, cessation, and policy impacts over extended periods, especially before and after any new tobacco control policies are implemented. These studies should employ the mixed-methods approach to capture quantitative trends and provide deeper insights into the complex behavioral and social determinants of tobacco use.

Implementation research still represents another crucial area for future investigation. Studies could evaluate the enforcement of tobacco control policies, including the potential role of digital technologies in monitoring and compliance with these policies. Particular attention should be paid to examining how evidence-based interventions can be effectively adapted and scaled within Vietnam's unique socio-cultural and administrative context. This research should further include cost-effectiveness analyses of different intervention strategies and assessment of enforcement mechanisms. Additionally, future research should address emerging challenges in the tobacco control landscape. This includes studies examining the tobacco industry's evolving marketing strategies and counter-measures' effectiveness, particularly in digital environments.

At the same time, developing and evaluating targeted interventions for specific smoker groups, particularly the price-insensitive population groups, is needed to identify effective strategies beyond pricing interventions. Studies should examine how tobacco cessation services can be effectively incorporated into primary healthcare delivery, including assessment of capacity-building needs and resource allocation strategies. Moreover, in-depth qualitative research on the gap between attitudinal changes and behavioral modifications could provide valuable insights into the barriers preventing smokers from translating their quit intentions into action. Interventions through behavioral economics approaches or novel cessation support methods, especially those leveraging mobile health technologies and social media platforms could be potentially useful.

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# REFERENCES


1. Viet Nam Steering Committee on Smoking and Health, World Health Organization, Ha Noi Medical University, et al. *Global Adult Tobacco Survey (GATS) Vietnam 2015*.; 2015.
2. Institute for Health Metrics and Evaluation (IHME). Global Burden of Disease (GBD) Study 2021. GBD Compare Data Visualization. Accessed October 26, 2024. http://vizhub.healthdata.org/gbd-compare
3. Van Minh H, Giang KB, Bich NN, Huong NT. Tobacco farming in rural Vietnam: questionable economic gain but evident health risks. *BMC Public Health*. 2009;9(1):24. doi:10.1186/1471-2458-9-24
4. World Health Organization. Women and Tobacco in Viet Nam: The Hidden Threat. Accessed October 25, 2024. https://www.who.int/vietnam/about/head-of-who-office/women-and-tobacco-in-viet-nam-the-hidden-threat
5. Lam NT, Nga PTQ, Minh HV, et al. Trends in Second-Hand Tobacco Smoke Exposure Levels at Home among Viet Nam School Children Aged 13-15 and Associated Factors. *Asian Pac J Cancer Prev APJCP*. 2016;17(S1):43-47. doi:10.7314/apjcp.2016.17.s1.43
6. Ngo CQ, Phan PT, Vu GV, et al. Prevalence and Sources of Second-Hand Smoking Exposure among Non-Smoking Pregnant Women in an Urban Setting of Vietnam. *Int J Environ Res Public Health*. 2019;16(24):5022. doi:10.3390/ijerph16245022
7. American Cancer Society, Vital Strategies. The Tobacco Atlats: Vietnam. Tobacco Atlas. Accessed October 23, 2024. https://tobaccoatlas.org/country/viet-nam/
8. Web portal Commission for the managenment of state capital at enterprises. Vietnam National Tobacco Corporation pays almost 14 trillion VND in tax revenue. 2023. Accessed October 4, 2024. https://cmsc.gov.vn/xem-chi-tiet/-/asset_publisher/WqvULR6gmpvh/Content/tong-cong-ty-thuoc-la-viet-nam-nop-ngan-sach-gan-14-nghin-ty-ong?3097891
9. Viet Nam Steering Committee on Smoking and Health, Ministry of Health, Hanoi University of Public Health. *The Provincial-Level Global Adult Tobacco Survey (PGATS 2020)*.; 2020.
10. Nguyen AN, Nguyen N, Bui TH. *The Impoverishing Effect of Tobacco Use in Viet Nam*. Depocen; 2021. Accessed October 27, 2024. https://tobacconomics.org/files/research/730/dpc-rp-poverty-final.pdf

11. Morrow M, Barraclough S. Gender equity and tobacco control: bringing masculinity into focus. *Glob Health Promot*. 2010;17(1_suppl):21-28. doi:10.1177/1757975909358349
12. Le Ngoc Trong, Tran Thu Thuy, Dao Ngoc Phong, et al. *Vietnam National Prevalence of Smoking Survey*. Ministry of Health, Vietnam Committee on Smoking and Health.; 1999.
13. Morrow M, Ngoc DH, Hoang TT, Trinh TH. Smoking and young women in Vietnam: the influence of normative gender roles. *Soc Sci Med*. 2002;55(4):681-690. doi:10.1016/S0277-9536(01)00310-0
14. Kodriati N, Pursell L, Hayati EN. A scoping review of men, masculinities, and smoking behavior: The importance of settings. *Glob Health Action*. 2018;11(sup3):1589763. doi:10.1080/16549716.2019.1589763
15. Cecilia B, Josefine T. *"Vietnamese People Would Rather Stop Eating than Stop Smoking" - A Qualitative Interview Study about Smoking in Relation to Health in Northern Vietnam.* Högskolan Kristianstad; 2022.
16. Tran TPT, Hoang Thi NA, Khuong QL, et al. Tobacco and Alcohol Use Among Ethnic Minorities in Vietnam. *Asia Pac J Public Health*. 2020;32(8):387-397. doi:10.1177/1010539520956444
17. Gately I. *Tobacco: A Cultural History of How an Exotic Plant Seduced Civilization*. Open Road + Grove/Atlantic; 2007.
18. Burgess DJ, Mock J, Schillo BA, et al. Culture, acculturation and smoking use in Hmong, Khmer, Laotians, and Vietnamese communities in Minnesota. *BMC Public Health*. 2014;14(1):791. doi:10.1186/1471-2458-14-791
19. Morrow M, Barraclough S. Tobacco control and gender in south-east Asia. Part II: Singapore and Vietnam. *Health Promot Int*. 2003;18(4):373-380. doi:10.1093/heapro/dag403
20. Tran TPT, Park J, Nguyen TNP, Hoang VM, Lim MK. Association between perceived harm of tobacco and intention to quit: a cross-sectional analysis of the Vietnam Global Adult Tobacco Survey. *BMC Public Health*. 2022;22:909. doi:10.1186/s12889-022-13348-w
21. Vinmec International hospital. What is pipe tobacco made of and is it harmful? Accessed October 27, 2023. https://www.vinmec.com/en/news/health-news/what-is-pipe-tobacco-made-of-and-is-it-harmful/
22. Montazeri Z, Nyiraneza C, El-Katerji H, Little J. Waterpipe smoking and cancer: systematic review and meta-analysis. *Tob Control*. 2017;26(1):92-97. doi:10.1136/tobaccocontrol-2015-052758

23. Reid A. From Betel-Chewing to Tobacco-Smoking in Indonesia. *J Asian Stud*. 1985;44(3):529-547. doi:10.2307/2056266
24. Hien N. Betel-Chewing in Vietnam. Its Past and Current Importance. *Anthr Int Rev Anthropol Linguist*. 2006;101:499-518. doi:10.5771/0257-9774-2006-2-499
25. The voice of Vietnam. Vietnamese people's betel chewing custom and its existence in today's modern society. October 8, 2013. Accessed October 27, 2024. https://vovworld.vn/en-US/content/MTI3Nzg1.vov
26. Reichart PA, Nguyen XH. Betel quid chewing, oral cancer and other oral mucosal diseases in Vietnam: a review. *J Oral Pathol Med*. 2008;37(9):511-514. doi:10.1111/j.1600-0714.2008.00669.x
27. Nguyen MT, Dao ST, Nguyen NQ, Bowling M, Ross H, So AD. Illicit Cigarette Consumption and Government Revenue Loss in Vietnam: Evidence from a Primary Data Approach. *Int J Environ Res Public Health*. 2019;16(11):1960. doi:10.3390/ijerph16111960
28. Minh HV, Ngan TT, Mai VQ, et al. Tobacco Control Policies in Vietnam: Review on MPOWER Implementation Progress and Challenges. *Asian Pac J Cancer Prev APJCP*. 2016;17(S1):1-9. doi:10.7314/apjcp.2016.17.s1.1
29. Tran TPT, Nguyen TML, Nguyen TNP, et al. Association between current cigarette prices and cessation behaviors among male adult smokers: findings from 2018 to 2020 ITC Vietnam surveys. *BMC Public Health*. 2024;24(1):2278. doi:10.1186/s12889-024-19689-y
30. World Health Organization. *WHO Report on the Global Tobacco Epidemic 2023: Protect People from Tobacco Smoke*.; 2023. Accessed October 24, 2024. https://www.who.int/publications-detail-redirect/9789240077164
31. Higashi H, Khuong TA, Ngo AD, Hill PS. The development of Tobacco Harm Prevention Law in Vietnam: stakeholder tensions over tobacco control legislation in a state owned industry. *Subst Abuse Treat Prev Policy*. 2011;6(1):24. doi:10.1186/1747-597X-6-24
32. Tan Y, Dorotheo U. *The Tobacco Control Atlas: ASEAN Region (Fifth Edition)*.; 2021. Accessed October 1, 2024. https://aseantobaccocontrolatlas.org/
33. Reyes IN. *ASEAN Tobacco Industry Interference Index 2023: Implementation of Article 5.3 of the WHO Framework Convention on Tobacco Control*.; 2023.
34. The Vietnam Government. Government resolution on 'National Tobacco Control Policy' 2000–2010. Published online 2000.

35. The Vietnam Government. Law on Prevention and Control of Tobacco Harms. Published online 2012. https://thuvienphapluat.vn/van-ban/EN/The-thao-Y-te/Law-No-09-2012-QH13-on-tobacco-harm-prevention/150246/tieng-anh.aspx
36. The Vietnam Government. The Vietnam National Strategy on Prevention and Control of Tobacco's Harmful Effects by 2030. Published online 2023.
37. Huang WC, Pham NY, Nguyen TA, et al. Smoking behaviour among adult patients presenting to health facilities in four provinces of Vietnam. *BMC Public Health*. 2021;21(1):845. doi:10.1186/s12889-021-10880-z
38. Shelley D, Tseng TY, Pham H, et al. Factors influencing tobacco use treatment patterns among Vietnamese health care providers working in community health centers. *BMC Public Health*. 2014;14:68. doi:10.1186/1471-2458-14-68
39. Alan FT, Icaza G, Fernanda M. *The Welfare and Distributional Effects of Increasing Taxes on Tobacco in Vietnam*. WBG Global Tobacco Control Program Washington, D.C. : World Bank Group.; 2019.
40. Karen G, Barbara KR, K V. *Health Behavior: Theory, Research, and Practice, 5th Edition | Wiley*.
41. Global Adult Tobacco Survey Collaborative Group. *Tobacco Questions for Surveys: A Subset of Key Questions from the Global Adult Tobacco Survey (GATS)*. GA: Centers for Disease Control and Prevention; 2011.
42. Fong GT, Cummings KM, Borland R, et al. The conceptual framework of the International Tobacco Control (ITC) Policy Evaluation Project. *Tob Control*. 2006;15 Suppl 3:iii3-11. doi:10.1136/tc.2005.015438
43. Blue S, Shove E, Carmona C, Kelly MP. Theories of practice and public health: understanding (un)healthy practices. *Crit Public Health*. 2016;26(1):36-50. doi:10.1080/09581596.2014.980396
44. Ng N, Weinehall L, Ohman A. "If I don't smoke, I'm not a real man'--Indonesian teenage boys" views about smoking. *Health Educ Res*. 2007;22(6):794-804. doi:10.1093/her/cyl104
45. Wilcox P. An ecological approach to understanding youth smoking trajectories: problems and prospects. *Addict Abingdon Engl*. 2003;98 Suppl 1:57-77. doi:10.1046/j.1360-0443.98.s1.5.x
46. Smith KE, Katikireddi SV. A glossary of theories for understanding policymaking. *J Epidemiol Community Health*. 2013;67(2):198-202. doi:10.1136/jech-2012-200990
47. Kingdon JW. *Agendas, Alternatives, and Public Policies*. Vol 5. Boston: Little, Brown; 1985.

48. Cairney P. The Role of Ideas in Policy Transfer: The Case of UK Smoking Bans since Devolution. *J Eur Public Policy*. 2009;16:471-488. doi:10.1080/13501760802684718
49. Golden SD, Smith MH, Feighery EC, Roeseler A, Rogers T, Ribisl KM. Beyond excise taxes: a systematic review of literature on non-tax policy approaches to raising tobacco product prices. *Tob Control*. 2016;25(4):377-385. doi:10.1136/tobaccocontrol-2015-052294
50. Flynn BS, Worden JK, Bunn JY, Connolly SW, Dorwaldt AL. Evaluation of smoking prevention television messages based on the elaboration likelihood model. *Health Educ Res*. 2011;26(6):976. doi:10.1093/her/cyr082
51. Damschroder LJ, Reardon CM, Widerquist MAO, Lowery J. The updated Consolidated Framework for Implementation Research based on user feedback. *Implement Sci*. 2022;17(1):75. doi:10.1186/s13012-022-01245-0
52. VanDevanter N, Kumar P, Nguyen N, et al. Application of the Consolidated Framework for Implementation Research to assess factors that may influence implementation of tobacco use treatment guidelines in the Viet Nam public health care delivery system. *Implement Sci IS*. 2017;12:27. doi:10.1186/s13012-017-0558-z
53. Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: the RE-AIM framework. *Am J Public Health*. 1999;89(9):1322-1327. doi:10.2105/ajph.89.9.1322
54. D'Angelo H, Ramsey AT, Rolland B, et al. Pragmatic Application of the RE-AIM Framework to Evaluate the Implementation of Tobacco Cessation Programs Within NCI-Designated Cancer Centers. *Front Public Health*. 2020;8:221. doi:10.3389/fpubh.2020.00221
55. Chow CK, Corsi DJ, Gilmore AB, et al. Tobacco control environment: cross-sectional survey of policy implementation, social unacceptability, knowledge of tobacco health harms and relationship to quit ratio in 17 low-income, middle-income and high-income countries. *BMJ Open*. 2017;7(3):e013817. doi:10.1136/bmjopen-2016-013817
56. Mangham LJ, Hanson K, McPake B. How to do (or not to do) ... Designing a discrete choice experiment for application in a low-income country. *Health Policy Plan*. 2009;24(2):151-158. doi:10.1093/heapol/czn047
57. Lanza ST, Collins LM, Lemmon DR, Schafer JL. PROC LCA: A SAS Procedure for Latent Class Analysis. *Struct Equ Model Multidiscip J*. 2007;14(4):671-694. doi:10.1080/10705510701575602

58. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24(2):105-112. doi:10.1016/j.nedt.2003.10.001
59. Jackson K, Bazeley P. *Qualitative Data Analysis With NVivo*.; 2019. Accessed October 27, 2024. https://researchdirect.westernsydney.edu.au/islandora/object/uws%3A55501/
60. Thompson J. A Guide to Abductive Thematic Analysis. *Qual Rep*. 2022;27(5):1410-1421. doi:10.46743/2160-3715/2022.5340
61. Association of Southeast Asian Nations. The ASEAN Tobacco Control Report 2015-2020. ASEAN Main Portal. Accessed October 4, 2024. https://asean.org/book/the-asean-tobacco-control-report-2015-2020/
62. World Health Organization. *WHO Global Report on Trends in Prevalence of Tobacco Use 2000–2030*.; 2024. Accessed September 7, 2024. https://www.who.int/publications/i/item/9789240088283
63. Benowitz NL. Nicotine Addiction. *N Engl J Med*. 2010;362(24):2295-2303. doi:10.1056/NEJMra0809890
64. Fagerström K. Time to first cigarette; the best single indicator of tobacco dependence? *Monaldi Arch Chest Dis Arch Monaldi Mal Torace*. 2003;59(1):91-94.
65. Baker TB, Piper ME, McCarthy DE, et al. Time to first cigarette in the morning as an index of ability to quit smoking: Implications for nicotine dependence. *Nicotine Tob Res*. 2007;9(Suppl 4):S555-S570. doi:10.1080/14622200701673480
66. Lopez AD, Collishaw NE, Piha T. A descriptive model of the cigarette epidemic in developed countries. *Tob Control*. 1994;3(3):242. doi:10.1136/tc.3.3.242
67. Thun M, Peto R, Boreham J, Lopez AD. Stages of the cigarette epidemic on entering its second century. *Tob Control*. 2012;21(2):96-101. doi:10.1136/tobaccocontrol-2011-050294
68. Li H, Zhou Y, Li S, et al. The Relationship between Nicotine Dependence and Age among Current Smokers. *Iran J Public Health*. 2015;44(4):495-500. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4441962/
69. Qiu D, Chen T, Liu T, Song F. Smoking cessation and related factors in middle-aged and older Chinese adults: Evidence from a longitudinal study. *PLoS ONE*. 2020;15(10):e0240806. doi:10.1371/journal.pone.0240806

70. Ziedonis D, Hitsman B, Beckham JC, et al. Tobacco use and cessation in psychiatric disorders: National Institute of Mental Health report. *Nicotine Tob Res*. 2008;10(12):1691-1715. doi:10.1080/14622200802443569
71. Koob GF, Volkow ND. Neurobiology of addiction: a neurocircuitry analysis. *Lancet Psychiatry*. 2016;3(8):760-773. doi:10.1016/S2215-0366(16)00104-8
72. Li L, Feng G, Jiang Y, Yong HH, Borland R, Fong GT. Prospective predictors of quitting behaviours among adult smokers in six cities in China: findings from the International Tobacco Control (ITC) China Survey. *Addict Abingdon Engl*. 2011;106(7):1335-1345. doi:10.1111/j.1360-0443.2011.03444.x
73. Kaleta D, Korytkowski P, Makowiec-Dąbrowska T, Usidame B, Bąk-Romaniszyn L, Fronczak A. Predictors of long-term smoking cessation: results from the global adult tobacco survey in Poland (2009–2010). *BMC Public Health*. 2012;12:1020. doi:10.1186/1471-2458-12-1020
74. Wang R, Jiang Y, Yao C, et al. Prevalence of tobacco related chronic diseases and its role in smoking cessation among smokers in a rural area of Shanghai, China: a cross sectional study. *BMC Public Health*. 2019;19(1):753. doi:10.1186/s12889-019-7110-9
75. Sachs-Ericsson N, Schmidt NB, Zvolensky MJ, Mitchell M, Collins N, Blazer DG. Smoking cessation behavior in older adults by race and gender: the role of health problems and psychological distress. *Nicotine Tob Res*. 2009;11(4):433-443. doi:10.1093/ntr/ntp002
76. Feng G, Jiang Y, Li Q, et al. Individual-level factors associated with intentions to quit smoking among adult smokers in six cities of China: findings from the ITC China Survey. *Tob Control*. 2010;19 Suppl 2:i6-11. doi:10.1136/tc.2010.037093
77. Driezen P, Abdullah AS, Quah ACK, Nargis N, Fong GT. Determinants of intentions to quit smoking among adult smokers in Bangladesh: findings from the International Tobacco Control (ITC) Bangladesh wave 2 survey. *Glob Health Res Policy*. 2016;1:11. doi:10.1186/s41256-016-0012-9
78. Pasick RJ, Burke NJ, Barker JC, et al. Behavioral Theory in a Diverse Society: Like a Compass on Mars. *Health Educ Behav Off Publ Soc Public Health Educ*. 2009;36(5 Suppl):11S. doi:10.1177/1090198109338917
79. Naddaf A. The social factors implicated in cigarette smoking in a Jordanian community. *Pak J Biol Sci PJBS*. 2007;10(5):741-744. doi:10.3923/pjbs.2007.741.744

80. Fernando HN, Wimaladasa ITP, Sathkoralage AN, et al. Socioeconomic factors associated with tobacco smoking among adult males in Sri Lanka. *BMC Public Health*. 2019;19(1):778. doi:10.1186/s12889-019-7147-9
81. Mak KK, Ho SY, Day JR. Smoking of parents and best friend--independent and combined effects on adolescent smoking and intention to initiate and quit smoking. *Nicotine Tob Res*. 2012;14(9):1057-1064. doi:10.1093/ntr/nts008
82. Baig M, Bakarman MA, Gazzaz ZJ, et al. Reasons and Motivations for Cigarette Smoking and Barriers against Quitting Among a Sample of Young People in Jeddah, Saudi Arabia. *Asian Pac J Cancer Prev*. 2016;17(7):3483-3487.
83. Viet Nam Steering Committee on Smoking and Health, World Health Organization, Ha Noi Medical University, et al. *Global Adult Tobacco Survey (GATS) Vietnam 2010*.; 2010.
84. Cahill K, Lancaster T. Workplace interventions for smoking cessation. *Cochrane Database Syst Rev*. 2014;2014(2):CD003440. doi:10.1002/14651858.CD003440.pub4
85. Adams S. Psychopharmacology of Tobacco and Alcohol Comorbidity: a Review of Current Evidence. *Curr Addict Rep*. 2017;4(1):25-34. doi:10.1007/s40429-017-0129-z
86. Rich ZC, Xiao S. Tobacco as a social currency: cigarette gifting and sharing in China. *Nicotine Tob Res*. 2012;14(3):258-263. doi:10.1093/ntr/ntr156
87. Hu M, Rich ZC, Luo D, Xiao S. Cigarette Sharing and Gifting in Rural China: A Focus Group Study. *Nicotine Tob Res*. 2012;14(3):361-367. Accessed October 4, 2024. https://www.jstor.org/stable/26762939
88. Hammond D, Fong GT, Zanna MP, Thrasher JF, Borland R. Tobacco denormalization and industry beliefs among smokers from four countries. *Am J Prev Med*. 2006;31(3):225-232. doi:10.1016/j.amepre.2006.04.004
89. Antin TMJ, Lipperman-Kreda S, Hunt G. Tobacco Denormalization as a Public Health Strategy: Implications for Sexual and Gender Minorities. *Am J Public Health*. 2015;105(12):2426-2429. doi:10.2105/AJPH.2015.302806
90. Levy DT, Yuan Z, Luo Y, Mays D. Seven years of progress in tobacco control: an evaluation of the effect of nations meeting the highest level MPOWER measures between 2007 and 2014. *Tob Control*. 2018;27(1):50-57. doi:10.1136/tobaccocontrol-2016-053381

91. Zhou L, Niu L, Jiang H, Jiang C, Xiao S. Facilitators and Barriers of Smokers' Compliance with Smoking Bans in Public Places: A Systematic Review of Quantitative and Qualitative Literature. *Int J Environ Res Public Health*. 2016;13(12):1228. doi:10.3390/ijerph13121228
92. Astuti PAS, Assunta M, Freeman B. Raising generation 'A': a case study of millennial tobacco company marketing in Indonesia. *Tob Control*. 2018;27(e1):e41-e49. doi:10.1136/tobaccocontrol-2017-054131
93. Guindon GE. The impact of tobacco prices on smoking onset in Vietnam: duration analyses of retrospective data. *Eur J Health Econ*. 2014;15(1):19-39. doi:10.1007/s10198-012-0444-1
94. Poland B, Frohlich K, Haines RJ, Mykhalovskiy E, Rock M, Sparks R. The social context of smoking: the next frontier in tobacco control? *Tob Control*. 2006;15(1):59-63. doi:10.1136/tc.2004.009886
95. Fathelrahman AI, Omar M, Awang R, et al. Smokers' responses toward cigarette pack warning labels in predicting quit intention, stage of change, and self-efficacy. *Nicotine Tob Res*. 2009;11(3):248-253. doi:10.1093/ntr/ntn029
96. Irwin A, Marquez PV, Jha P, et al. Tobacco tax reform at the crossroads of health and development : technical report of the World Bank Group global tobacco control program (Vol. 2) : Main report. World Bank.
97. Pongutta S, Suphanchaimat R, Patcharanarumol W, Tangcharoensathien V. Lessons from the Thai Health Promotion Foundation. *Bull World Health Organ*. 2019;97(3):213-220. doi:10.2471/BLT.18.220277
98. Farrelly MC, Pechacek TF, Thomas KY, Nelson D. The Impact of Tobacco Control Programs on Adult Smoking. *Am J Public Health*. 2008;98(2):304-309. doi:10.2105/AJPH.2006.106377
99. Chung-Hall J, Craig L, Gravely S, Sansone N, Fong GT. Impact of the WHO FCTC over the first decade: a global evidence review prepared for the Impact Assessment Expert Group. *Tob Control*. 2019;28(Suppl 2):s119-s128. doi:10.1136/tobaccocontrol-2018-054389
100. Gravely S, Giovino GA, Craig L, et al. Implementation of key demand-reduction measures of the WHO Framework Convention on Tobacco Control and change in smoking prevalence in 126 countries: an association study. *Lancet Public Health*. 2017;2(4):e166-e174. doi:10.1016/S2468-2667(17)30045-2
101. Hurt RD, Ebbert JO, Achadi A, Croghan IT. Roadmap to a tobacco epidemic: transnational tobacco companies invade Indonesia. *Tob Control*. 2012;21(3):306-312. doi:10.1136/tc.2010.036814

102. Abascal W, Esteves E, Goja B, et al. Tobacco control campaign in Uruguay: a population-based trend analysis. *Lancet Lond Engl*. 2012;380(9853):1575-1582. doi:10.1016/S0140-6736(12)60826-5
103. Levin MA. Tobacco control lessons from the Higgs Boson: observing a hidden field behind changing tobacco control norms in Japan. *Am J Law Med*. 2013;39(2-3):471-489. doi:10.1177/009885881303900212
104. Nguyen A, Nguyen HT. Income and cigarette price responsiveness: evidence from Vietnam. *Tob Control*. 2022;31(Suppl 2):s152-s157. doi:10.1136/tc-2022-057584