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THE GLOBAL PLAYBOOK FOR TOBACCO CONTROL POLICY: CHALLENGES, STRATEGIES, AND A CASE STUDY FROM MALAYSIA

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Abstract

Tobacco use remains a leading cause of preventable death globally, disproportionately affecting low- and middle-income countries (LMICs). Despite the implementation of the WHO MPOWER strategy, significant challenges persist, including the high prevalence of smoking among lower socioeconomic groups and the rapid emergence of e-cigarettes, particularly among youth. This narrative review explores the contemporary challenges in tobacco control, outlines effective strategies, and analyzes Malaysia's policy alignment with global recommendations to guide future interventions. A literature search was conducted in May 2025 across the Scopus, PubMed, and Cochrane Central databases. The search focused on articles published in English within the last 15 years, using keywords related to the challenges (e.g., "policy resistance," "enforcement problems") and strategies (e.g., "taxation," "cessation programme") of tobacco and e-cigarette control policy. All study designs were considered, while editorials and presentations were excluded. The review identifies two primary areas. First, key challenges to tobacco control include significant socioeconomic disparities in nicotine dependence, aggressive marketing targeting vulnerable populations, regulatory gaps concerning synthetic nicotine and novel products, and industry interference through legal challenges and manipulation of international trade policies. Second, effective strategies are categorized across three levels: macro (comprehensive taxation, product regulation), meso (community-based initiatives, pictorial health warnings), and micro (individual-level interventions like incentive programs and pharmacological support). Effective tobacco control demands a multi-layered, equitable approach that integrates robust policy with community and individual support. By enacting the Control of Smoking Products for Public Health Act, Malaysia has taken a positive step, but further action is crucial. Key future priorities include: 1) enhancing and harmonizing fiscal and legal measures through international collaboration to prevent industry forum-shopping; 2) sustaining investment in public education to reduce initiation and normalize cessation; and 3) advancing targeted research on cessation supports, especially for LMICs.

Keywords: Tobacco control, WHO FCTC, MPOWER, nicotine regulation, synthetic

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INTRODUCTION

One of the leading causes of preventable deaths in the world is related to tobacco use and it has contributed to approximately 100 million deaths worldwide (WHO, 2017). The economic cost of smoking surpasses the productivity loss due to smoking-attributable diseases/deaths (SADs) and the impact also resulted in suffering for the families of those who succumbed due to SADs (Drope et al., 2018).

World Health Organization has introduced the MPOWER strategy in 2003 as measure to tackle the dire situation posted by tobacco use globally, in which it combines tobacco control policies to reduce prevalence of active smokers while preventing second-hand (SHS) and third-hand smokers (THS) from harmful effects of smoking (WHO,2003; Kaleta et al., 2009). This strategy composed of six critical and most effective strategies for tackling global tobacco epidemic, specifically: monitoring tobacco use and prevention policies, protecting people from tobacco smoke, offering assistance to quit smoking, educating the public about the dangers of tobacco use, enforcing bans on tobacco advertising, promotion, and sponsorship, and raising taxes on tobacco products.

Despite significant global progress in tobacco control, tobacco use remains a critical threat to the health and well-being of an estimated 1.3 billion people worldwide, 80% of whom reside in low- and middle-income countries (LMICs) (WHO, 2021b). The South-East Asian Region is the most heavily burdened, with the highest percentage of tobacco users at 26.5% (PAHO, 2024). In Malaysia, recent data from the National Health and Morbidity Survey (NHMS) 2023 and the Global Adult Tobacco Survey 2023 show a smoking prevalence of 19.0% (Ministry of Health Malaysia, 2024) and 19.5% (WHO, 2024), respectively. The burden is most concentrated among the Bottom 40% (B40) household income category (Prevalence: 20.3%) and working adults aged 35-44 (Prevalence: 25%) (Ministry of Health Malaysia, 2024), indicating that the major impact of tobacco smoking in Malaysia falls upon lower-income and working-class groups

Compounding this issue is the rising popularity of electronic cigarettes (e-cigarettes), whose widespread availability and insufficient regulation undermine public health messaging, increase youth initiation, and inhibit successful smoking cessation (Starr et al., 2023). Globally, e-cigarette prevalence is reported at 10.72%, with the highest usage among young adults aged 18-24 (Martins et al., 2022; Albadrani et al, 2024). A similar trend is observed in Malaysia, where the e-cigarette prevalence is 5.0%, and the highest concentration of users is among adolescents and young adults aged 15-24, as reported in the NHMS 2023 (Ministry of Health Malaysia, 2024). The rising use of e-cigarettes among this younger demographic poses a significant new threat on top of the nation's unresolved burden of traditional tobacco smoking.

This narrative review explores global challenges in tobacco control regulation and synthesizes successful strategies to guide future interventions for advancing global public

health. The review provides a focused analysis of Malaysia's policy framework, examining its alignment with international recommendations to reduce smoking prevalence in the nation.

METHODS

Literature Search

We searched Scopus, PubMed and Cochrane Central in May 2025 using the following search strategy:

i) **Challenges of Tobacco Policy Control:** ("tobacco control" OR "tobacco policy" OR "smoking regulation" OR "nicotine regulation" OR "smoking policy") OR ("electronic cigarette" OR "e-cigarette" OR vaping OR "heated tobacco" OR "nicotine delivery system") AND (challenges OR barriers OR obstacles OR "policy resistance" OR "implementation issues" OR "enforcement problems")
ii) **Strategies for Tobacco Control Policy**: ("tobacco control" OR "tobacco policy" OR "smoking regulation" OR "nicotine regulation" OR "smoking policy") OR ("electronic cigarette" OR "e-cigarette" OR vaping OR "heated tobacco" OR "nicotine delivery system") AND ("policy strategy" OR "public health intervention" OR "legislation" OR "marketing restrictions" OR "taxation" OR "cessation programme")

Eligibility Criteria

The criteria of the included articles were 1) study design: all types of study design (Meta-analysis, systematic review, cross-sectional, cohort, case-control and interventional articles), 2) articles written in English. 3) Articles published in the past 15 years. Exclusion criteria included papers that were published as editorial comments and presentations.

RESULTS

The findings of this review are organised into two main subsections: *Challenges of Tobacco Control Policy and Strategies for Tobacco Control Policy*. This structure is intended to present the key issues and responses identified across the literature.

The first subsection, *Challenges of Tobacco Control Policy*, highlights several critical barriers that continue to hinder the effectiveness of global tobacco control efforts. Foremost among these are socioeconomic disparities in tobacco use and nicotine dependence, with lower-income and marginalised populations disproportionately affected. The review also identifies the persistent influence of targeted advertising, particularly campaigns directed at youth and other vulnerable groups, as a significant contributor to tobacco initiation and sustained use. Furthermore, regulatory shortcomings—particularly in relation to synthetic nicotine and novel products such as e-cigarettes —are shown to undermine national control measures. These challenges are further exacerbated by fragmented international trade policies and industry interference, which collectively enable tobacco companies to resist or circumvent public health regulations.

A) Challenges of Tobacco Control Policy

Social and Cultural Challenges

Increased nicotine use and dependence were notably significant among individuals with lower education and income and the changes over time in these nicotine outcomes were greater among those with lower socioeconomic status relative to those with greater income and education (Grant et al., 2020). Low socioeconomic status interacts with an array of other factors to influence behavior of smoking, such as race / ethnicity, cultural characteristics, social marginalization (e.g. lesbian, gay, bisexual and transgender communities, people with mental illness and substance use disorders), stress and lack of community empowerment (Brady, 2020).

Policy and Regulatory Issues

Most of current regulation for tobacco control are still dependent on how the laws define the products covered by the regulations and synthetic nicotine products regulation differ from one country to another. Review by WHO Study Group on Tobacco Product Regulation (2023) found that among the 211 jurisdictions to control of products containing synthetic nicotine, only 52 jurisdictions have clear coverage of certain products, meanwhile the remaining either have broad coverage, unclear coverage or no coverage.
Tobacco companies are well versed that some tobacco control laws do not cover synthetic nicotine products and thus sought to take advantage of such regulatory gaps (WHO, 2023). Laws that apply only to "tobacco products" or "tobacco-derived" products are specifically referring to conventional tobacco products and its may not be broad enough to cover synthetic nicotine products, as synthetic nicotine is not derived from tobacco plants.

Nevertheless, non-health government agencies, particularly in lower and middle-income countries (LMICs) often disregard the commitment signed under WHO Framework Convention on Tobacco Control (WHO FCTC) and support the tobacco industry (Lencucha et al., 2015; Lenchucha et al., 2020; Patay et al., 2022a). Such practice is commonly explained by industry interference and government agency mandates to prioritize economic, trade industry and agriculture interests (FCTC Secretariat, 2018; Jongenelis, 2022).

Emerging Nicotine Products and Marketing Strategies

Cigarette manufacturers have been documented to manipulate product design, such as appearance, flavour and smoke characteristics to enhance their appeal and consumer acceptance. WHO Study Group on Tobacco Product Regulation (2023) revealed that several additives were added to improve sensory attributes of Tobacco and Nicotine products, leading to higher nicotine blood levels or maintenance of nicotine dependence. Menthol and synthetic cooling agents were found to reduce aversive sensory responses to both tobacco cigarettes and e-cigarettes. In the same report, evidence of menthol resulting in deeper inhalation of cigarette smoke and higher blood cotinine levels were found in study of rodents. Similarity of the effects of synthetic coolants to those of menthol is biological plausible, as both share an underlying mechanism, despite synthetic coolants and menthol differ in potency, with stronger effects of synthetic coolants on coolness and pleasant respiratory sensations.

In the same report by WHO, flavour additives with sweet properties, particularly in e-cigarettes have shown consistent reduction of perception of bitterness. Other perceptions of

harness, contribution of olfactory and gustatory effects and increase smoothness were however inconclusive. However, the use of fruit-flavoured e-cigarettes among adolescents were associated with increased levels of most inhalation behavior, including puff duration and count.

Since 2015, Next Generation Labs (NGL) began marketing synthetic nicotine in the United States of America (USA) under the trademark of Tobacco Free Nicotine (TFN) for consumer products. NGL further filed application for USA and worldwide patent with the title "Proccess for the preparation of (RS)-nicotine" and was assigned in 2017. The process describes a synthetic pathway that ethyl nicotinate as the starting material. Ethyl nicotinate is derived from nicotinic acid (niacin), a synthetic chemical produced from petrochemical sources and it reacts with N-vinyl-2pyrrolidinone to form myosmine, a tobacco alkaloid. Myosmine is then converted to nornicotine, which is then results in racemic (50:50) nicotine mixture of S- and R-nicotine after methylation process. The two forms of synthetic nicotine are currently in marketed products and synthetic S-nicotine is chemically identical to tobacco-derived S-nicotine, with its toxicological, metabolic and pharmacological properties were believed to be identical, especially when manufacturer claimed the purity added are more than 99%.

A recent systematic review and meta-analysis have presented that e-cigarettes were associated with less quiting in adult populations when regularly used as consumer products (Kalkoran and Glantz, 2016). Increasing number of studies have revealed potential harms of e-cigarettes, which include variety of known inhalation toxins (Strongin, 2019; Zhao et al., 2020), e-liquids with potential harm from explosions and poisoning (Tzortzi et al., 2020) and potential gateway to combustible cigarette and other substance use among youth (Chan et al., 2021).

Despite its harmful effects, review on perception of harmful and additives effects of e-cigarettes among adolescent have shown that adolescent perceived e-cigarettes as less harmful than tobacco cigarettes (Aly et al., 2022). As a result, prevalence of e-cigarettes has been reported at 10.72% by Martins et al. (2022) and Albradani et al., 2024) and the highest percentage of users are between 18 - 24 years old. This finding correlates with the rise of e-cigarettes users from 1.5% up to 27.5%, specifically among high school students during 2011 - 2019 (Cullen et al., 2019), leading to use of e-cigarettes among adolescent and young adults currently been recognized as a global public health challenge. Malaysia is also experiencing similar phenomenon with the majority e-cigarette smoker aged between 15 - 24 years old with the prevalence of 9.7% (Ministry of Health Malaysia, 2024).

Promoting the initiation of youth into tobacco use through surrogate advertisements and dubious marketing tactics affects cessation of tobacco use indirectly (Aghi et al., 2022). Many companies diverted their products portfolio to e-cigarettes as synthetic nicotine products are not well regulated in many nations. Many companies market synthetic nicotine products by suggesting their product are "safer" than products containing tobacco-derived nicotine, both implicitly or explicitly (WHO, 2023). Examples include claims that synthetic nicotine contains fewer impurities than tobacco-derived nicotine, other advantages over products with tobacco-derived nicotine (more satisfaction, better taste experience and more environmentally friendly) and effective aids for smoking cessation or equivalent to approved nicotine replacement therapy (WHO, 2023).

Electronic nicotine products (ENPs), or more commonly known as e-cigarettes), electronic nicotine delivery systems (ENDS) or vaping products were first invented by a Chinese pharmacist in year 2003 and it is currently widely available after 20 years across the world (Kaisar et al., 2016). The rapid expansion has been facilitated by aggressive marketing as a smoking cessation aid or a healthier alternative to combustible cigarettes (Franck et al., 2014), due to its ability to deliver nicotine in isolation without exposure to other harmful chemicals generated from burning of tobacco (Balfour et al.,2021).

Economic Interest, International Trade and Legal Challenges

Evidence shows small island developing states and LMICs are targeted by the tobacco industry due to vulnerabilities such as limited economic and regulatory capacities, geographic isolation, and dependence on policies from larger economies. Tobacco companies increasingly use international trade and investment agreements, including WTO mechanisms, to challenge existing tobacco control policies and deter future legislation. Legal disputes often arise from claims that tobacco control policies infringe upon trademark rights or international trade agreements, undermining national regulatory efforts (Crosbie and Glantz, 2014; Mitchell and Sheargold, 2014; Savell et al.., 2014). Strengthening international collaborations and clearly defining public health exemptions in trade agreements could mitigate these legal challenges..

Tobacco industry is increasingly manipulating the problem of tobacco smuggling for policy gain in ways that seriously threaten progress in tobacco control. Tobacco companies only prioritize their sale to distributor and whether the cigarettes are then sold through legal or illegal channels make little difference. The illegal channels has multiple advantages for tobacco companies and evidence has shown that tobacco companies' historical involvement in cigarette smuggling and increasing evidence of ongoing complicity, such as overproducing or oversupplying markets with products that eventually leaks into illicit channels. Such trades undermine the control efforts and contributes to the availability of cheaper and unregulated products. Tobacco companies have been actively and effectively hijacked the Illicit Trade Protocol (ITP) within the FCTC by using the threat of illicit trade to counter tobacco control policies through arguments, misleadingly claimed that tobacco control policies drive increases in illicit trade (Crosbie and Glantz, 2014; Mitchell and Sheargold, 2014).

The role of harmful commodity industries in using the rhetoric of individual responsibility is often documented in the public health and tobacco control literature (Friedman et al., 2015; Hoek, 2015; McKenzie and Collin, 2017; Magnussion, 2015; WHO, 2019). In the casual ideas that is frequently used to explain substance use, blame is commonly shifted on the raw material provider - manufacturer - seller - consumer axis, and the consumer is argued to be culprit of the issue. Such idea is commonly used to oppose regulatory measures, calling such policies "an assault on freedom and choice" and the government as "nanny state" (Chau et al., 2019; MacKenzie et al., 2018; Oliveira da Silva et al., 2019).

B) Strategies for Tobacco Control Policy

This second subsection, Strategies of Tobacco Control Policy, synthesizes a range of emerging and established approaches aimed at addressing the previously mentioned challenges. The review emphasizes the significance of integrated, multi-tiered strategies that function across macro- (policy and taxation), meso- (community-based initiatives), and

micro- (individual-level interventions) levels. Identified effective measures include comprehensive taxation, plain packaging laws, advertising restrictions, and public awareness campaigns. The review also highlights the importance of equity-centered policies that address social determinants of health and ensure equitable access to cessation support. Innovative approaches such as digital cessation platforms, targeted outreach programs, and school-based prevention initiatives are recognized for their potential scalability and adaptability across various settings. Furthermore, the review underscores the necessity of international collaboration to harmonize standards, close regulatory loopholes, and counteract the legal and commercial pressures exerted by the tobacco industry.

According to Tracy et al. (2023), tobacco control strategies can broadly be organized into three categories: (1) prohibition, (2) contraction, and (3) harm minimization. Prohibition strategies are aimed to completely eliminate the sale of all tobacco products from the marketplace, and are almost impossible to achieve, mostly due to existing experience that has shown they are unworkable. Contraction strategies such as interventions attempt to scale down the overall size of the tobacco marketplace. Examples of contraction strategies are efforts targeting the demand of tobacco products such as taxation, advertising bans, flavour bans, consumer education about product harms and efforts to increase smoking cessation for users who want to stop using tobacco. Harm minimization strategy's major goal is to reduce the harm caused by use of tobacco by shifting consumers toward lower risk tobacco products.

Effective enforcement of tobacco related regulation will require similar targeted strategies to reduce supply of nicotine-contained products and focus on alternatives of tobacco products or e-cigarettes meanwhile incentivization reduces the demand of nicotine-contained products, a similar concept for spectrum of e-cigarette regulation and incentivization explained by Campus et al. (2021). Sustained demand and uncontrolled supply of nicotine-contained products remained as the driving force for both legal and illicit pathways which will reduce the effectiveness of tobacco enforcement activities as a part of tobacco control.

Macro-level Policies: Economic Measures and Product Marketing Regulation

Commercial determinant of health, particularly referring to the regulation of tobacco industry is an important approach in governance for LMICs (Patay et al., 2022b) and it aligns with raising taxes of tobacco strategy under WHO's MPOWER policy package.
Existing evidence (Jha et al., 2012) revealed increase in price of tobacco products effectively reduce consumption in five countries in Asia. This association of tobacco product prices / taxes are statistically significant and negative towards tobacco products consumption, enabling tax / price measure to be effective in controlling tobacco product consumption. Jawad et al. (2018) reported that 10% price increase would reduce demand by 8.3% for cigars, 6.4% for roll your owns, 5.7% for bidis and 2.1% for smokeless tobacco among adults. Similar findings were also reported in terms of e-cigarettes by recent systematic reviews (Yan et al., 2023; Chugh et al., 2023) in which reduction of affordability are effective policies in reduction of use.

In another systematic review conducted by Nazar et al., 2021 in the region of South East Asia, the effect of tobacco price and taxation on consumption were inconsistent as they may be influenced by per capita income growth of the country (He et al., 2018; Word Health Organization, 2019b). In the same report, the key finding from the review is majority of studies estimated that less affluent group were more price sensitive as compared to the

affluent group, which supports the use of raising tax or price of tobacco products for reduction of smoking consumption relevant in LMIC nation.

For innovative tobacco products such as e-cigarettes and vape, there are limited evidence found for the effectiveness of taxation in reduction of adolescent e-cigarettes use in a recent systematic review by Yan et al. (2023). Other restrictions in terms of age restrictions, indoor vaping restrictions and tobacco product directives were not shown to be associated with reduction of e-cigarettes use.

Therefore, another important recommendations in terms of nicotine use control is to address the regulatory gap for synthetic nicotine products (as compared to products containing nicotine derived from tobacco) and consider amending the tobacco control laws to ensure that they include synthetic nicotine products (WHO, 2023). Another element that was advised by WHO (2023) is to enforce standards for the purity of synthetic nicotine in products and regulators should consider implement product standards to ban the mixing of tobacco-derived nicotine with synthetic nicotine in marketed products. Systematic review by Yan et al. (2023) reported limiting access to flavours for minors is one of the effective policies in reduction of e-cigarettes use. This finding is aligned with WHO Study Group on Tobacco Product Regulation policy recommendation, where ban of ingredient that facilitates inhalation to reduce the attractiveness of any tobacco and e-cigarette products.

Exposing tobacco industry misconduct is an important first step of disrupting tobacco industry interference in misguiding policy making and public perception (Gilmore et al., 2015). Uniform labelling rules should be applied to any products containing nicotine and consideration should be made for restriction of marketing practices for promotion of synthetic nicotine as generally "tasteless and odourless", "pure" or "healthier" than tobacco-derived nicotine, unless new scientific evidence is available to support such claims is provided.

There is also a need to formulate tobacco control policies tailored according to age groups and the vulnerable age group is the youth, as there is a need for early prevention that is cost-effective and a lesser burden to the disease both clinically and economically (Ranabhat et al., 2019). This is of urgent importance as global prevalence of e-cigarettes is rising with the highest prevalence of users are among the age group of 18 - 24 years old (Martins et al., 2022; Albadrani et al., 2024).

Meso-level Policies: Community-level Initiative and Accessibility Intervention

Institutional structure plays substantial role in achieving policy coherence for tobacco control (Lencucha and Thow, 2019). Previous evidence from tobacco control initiatives had shown impact of intervention at institutional levels, including schools (Coppo et al., 2014; Thomas et al. , 2013) and general workplaces (Cahill and Lancaster, 2014; Tan and Glantz, 2012). Specialist settings also showed relative effect of reduction of active smoking as reported by Frazer et al. (2016), in which healthcare facilities (RR 0.75), higher education institution (0.72) and correctional facilities (RR 0.99) but evidence presented were of low quality and therefore more robust studies are necessary to increase the strength of estimate of effect observed.

Several studies (Hamzah et al, 2021; Majumdar et al., 2017; Brewer et al., 2016; Alaouie et al, 2015; Rahman et al., 2015) reported pictorial health warnings (PHW) are

useful in provision of warning on the health risks associated with smoking. One randomized clinical trial evaluating PHW effectiveness in attempt to quit smoking in United States (Brewer et al., 2016) found that smokers who packs had PHW were more likely than those who packs had text-only warning to attempt to quit smoking in a 4-week trial (OR 1.29, 95% CI 1.09 - 1.54) and it did not differ across any demographic groups.

In the context of Malaysia, authoritative parenting style practiced among Malaysian parents may influence the attitude in understanding of PHW as sensitive matters such as negative habits (such as smoking) are not discussed openly (Hamzah et al., 2021). Therefore, it resulted in fear and reluctance to seek PHW understanding from parents. In the same population, the attempt to seek further understanding of new PHW was not observed. Such observation revealed the importance of inculcate habit among the public of making efforts to understand any health-related information by using narrative that understanding health information may have potential benefit for their own health and their loved ones, encourage culture and best practice in seeking health information through reliable sources and encouraging parents or caregivers to be more open-minded to critical questions from their children.

Higher understanding of message delivered through PHW can be achieved if the 'form' of PHW (wordings, size, graphic, elements, placement and context of PHW's, usage of pictures and the potential adverse outcome) were suited according to the targeted population (Scollo et al, 2019). In Malaysia, despite PHW being fully coloured and printed in the principal language, some of the PHWs was still not fully understood. This emphasized the importance of formulating relatable and clear messages accustomed to the population to avoid confusion among the community.

Another concept worth exploring is whistleblowing practices policy among public. Whistleblowing can be a viable solution based on evidence in disclosing violations or illegal acts, unethical/immoral or other actions to be made in secret against violations. Timely information can be shared, and prompt reaction can be ensured by the authorities in charge. More precise law enforcement in an accountable and transparent manner can be achieved with the assistance of entire community (Asyary et al., 2021).

Compassion club model – exist around the world providing mediation, cannabis, opioids and other drugs through volunteer and nonprofit mechanism to provide supplies of drugs focused on helping the users who need access and providing safe supplier (Gartner et al., 2018). Sanctioned compassion clubs seek to provide low-barrier access to a safe supply of drugs in the context of peer support, and social supports such as mental health and addiction services. Compassion club model for nicotine and tobacco could provide access to a safe supply, education on the risks of the most harmful tobacco products and help in smoking cessation or switching to less harmful options. They can act as gatekeepers to prevent youth initiation. This mode of distribution will allow tobacco to be widely available without being sold as a normal commercial product. This can assist in gaining control of the illicit market and reducing public harm by carefully and rigidly regulating the expanding legal market. The not-for-profit model could make it less appealing for large retailers and corporations to participate in the tobacco industry.

Specific awareness drives on "Benefits of Quitting" through sustained funding for mass communication is also necessary to constantly remind the public on the benefits of quitting smoking. Engagement of nurses, counselors, social and ancillary medical workers,

instead of only doctors is needed to increase the coverage of service accessibility, enabling both smokers and non-smokers to obtain the necessary information and services from legit sources (Aghi et al., 2022).

Increasing distance of tobacco vending retailers and eliminating designated smoking areas abolish surrogate advertisement are important policy related to the environment conditioning to promote smoking cessation by reducing access (Aghi et al., 2022). Such policy is another strategy that is worth investing to de-normalize smoking in the existing environment. Four different type of smoke-free implementation approach can be explored by phases to increase the priority from de-normalization of smoking to progressive expansion to include outdoor and child-related areas (Mlinaric et al., 2020).

Micro-level Policies: Individual-focused Interventions

Contingency, incentive and online smoking cessation approaches were found to be most effective in promoting short-term verified abstinence among rural, regional and remote smokers in high income countries (Trigg et al., 2023). Notley et al., (2025) reported incentive were effective for smoking cessation in mixed populations in the intervention group (incentives) as compared to no incentives with high certainty evidence from 39 randomized controlled trial and 43 other studies. Findings from the same meta-analysis in mixed populations suggests that incentives have significant impact on sustained smoking cessation, even after completion of programme, refuting previous reviews of incentive-based intervention of smoking cessation may be time limited.

Some examples of strategies focusing on incentivisation as proposed by Aghi et al., (2022) is by generating political and bureaucratic will for outcome and quality-oriented tobacco cessation delivery to all tobacco users with ease of access and preferably at minimal to no cost. The approach to motivation to quit tobacco through all possible channels is necessary and must be set within a specific timeline with adequate support for the successful quitters not to relapse. Those unable to quit within the stipulated timeline should be explicitly supported through families, educational institutions, and organizations to which they are affiliated. Incentivisation may be held back until successful quitting achieved.

Deposit-based incentives (White et al., 2020; Halpern et al., 2018) were reported to be effective for long term smoking cessation when compared between deposit-based and incentives intervention in Thailand and United States. This finding imply that despite the challenge to recruit people who smoke into deposit-based programme, those who willingly sign up appear to be strongly committed to the process and are able to achieve high quit rates equivalent to those offered voucher or cash-based incentive trials.

Mandatory licensing for tobacco users is another example that can be considered (Aghi et al., 2022). This allows improved tracking of tobacco users and their preference on the type of tobacco products, which are influential in design of future cessation delivery programme according to product preference. This approach will also ease enforcement team in detection and identification of tobacco sale transaction. Incentivisation may be considered for those who discard card permanently. All medical and health facilities should also introduce systems approach in handling of tobacco cessation clients (TCC). Screen, treat, follow up plus high visibility of the TCC set up in the premises and the displays that inform the tobacco users optimally on the benefits of quitting and how to reach out to TCC.

Strategies based on pharmacological approach for tobacco cessation delivery has been studied and it has shown to have significant relative effect on smoking cessation at 6 months, particularly varenicline (OR2.33, 95%CI: 2.02 - 2.68) and cytisine (OR 2.21, 95% CI: 1.66 - 2.97) as reported by Lindson et al. (2023). Hence, the accessibility of pharmacological therapy is compulsory to support smokers intent to quit. The effect estimate for pharmacological approach studies is however limited when compared between socioeconomic level as contextual factors affecting subpopulations may possibly moderate the efficacy of individual-level smoking cessation intervention (Theodoulou et al., 2025). Therefore, increase in research on tobacco cessation RCT with more focus on efficacy among different socioeconomic status are still necessary in future, especially among LMICs (Kumar et al., 2021).

Despite emerging e-cigarettes use among youth and adolescent population, there are limited evidence to support any prevention or cessation intervention effective for e-cigarettes at the time of writing based on current evidence (Butler et al., 2025; Barnes et al., 2023).

DISCUSSION

The review synthesizes critical challenges and strategies in tobacco control policy, providing a comprehensive exploration of both established and emerging issues. Significant socioeconomic disparities in nicotine dependence and demonstrates how targeted advertising, particularly towards youth and vulnerable populations, perpetuates tobacco use. In the Malaysian community, similar socioeconomic group (lower income household) were found to be the major contributor of current smoking as reported in both NHMS and GATS. The sociocultural norms of offering cigarette to one another is considered as a sign of friendship also serves an impediment to smoking cessation policy (Chean et al., 2019). Emergence of e-cigarettes and its marketing appeal to youth are seen in Malaysia with its evidence reflected in the rising prevalence of e-cigarette users among the 15 - 24 years old population in Malaysia reported in NHMS 2023.

Regulatory gaps, especially concerning synthetic nicotine and novel nicotine products, present substantial barriers to effective tobacco control, further complicated by inconsistent international trade regulations and aggressive industry lobbying. One the major challenges faced by Malaysia is the availability of illicit tobacco products where illegal cigarettes incidence are more than 50% as compared to the estimated total industry cigarette (Nielsen IQ, 2025). Availability of illicit tobacco products combined with the emergency of e-cigarettes which are not well regulated until 2024 are seen to limit effectiveness of policy targeting local tobacco and e-cigarette industry. However, the high incidence of illicit cigarettes in Malaysia, which shares similarities with evidence reported by Crosbie and Glantz (2014) and Mitchell and Sheargold (2014), warrants further investigation to determine whether this phenomenon is attributable to manipulation by the tobacco industry or stems from inadequate regulatory control and enforcement over production and imports.

Key insights emphasize the necessity of integrating robust, multifaceted policy measures tailored to diverse demographic and geographic contexts are discussed in the Strategies for Holistic Tobacco Control Policy Subsection. Macro-level strategies, such as comprehensive taxation and international regulatory frameworks, must align with meso-level community initiatives and micro-level interventions focused on individual behavior change. Importantly, policies must consider socioeconomic equity to prevent exacerbating health disparities. The importance of sustained public education and carefully regulated marketing

practices. Enhanced public awareness initiatives, transparent communication regarding product harms, and tightly regulated advertising practices can collectively reduce tobacco initiation and promote cessation.

Malaysia has taken a proactive step to enhance its tobacco control policy by transitioning from the older Control of Tobacco Product Regulations (under the Food Act 1983) to the comprehensive Control of Smoking Products for Public Health Act 2024 (Act 852). Enacted on February 2, 2024, with a phased implementation beginning October 1, 2024, this new legislation plays a pivotal role in regulating all smoking products, including tobacco, smoking substances, substitute products, and related devices. The Act establishes a multifaceted regulatory framework covering the entire supply chain, from manufacturing to consumption. This approach aligns with established evidence favouring holistic and stringent regulations that are sufficiently robust to address challenges from both conventional and emerging smoking products. However, as the Act's implementation is still in its early stages, its full impact is yet to be observed.

The WHO recommends that tobacco excise tax should account for at least 70% of the final retail price. However, Malaysia's current taxation policy—which includes 46% of excise duty, a 10% Sales and Service Tax (SST), and import duty—falls significantly short of this benchmark. As of 2025, the total tax burden on tobacco products is approximately 56% of the retail price (Campaign for Tobacco-Free Kids, 2025). A key factor is the stagnant excise duty, which has not been increased since 2014 (Southeast Asia Tobacco Control Alliance, n.d.). This policy inaction is reflected in Malaysia's low score of 2.5 (out of 5) on the 2022 Cigarette Tax Scorecard, which was attributed to the insufficient tax share and the failure to make cigarettes less affordable over time (Drope et al., 2024). Thus, urgent action on Malaysia's tobacco tax policy is essential to align with international public health standards and address the severe domestic consequences of inaction.

Nonetheless, this review underscores the urgent need for international collaboration to counteract the tobacco industry's legal challenges and exploitative market practices. Harmonizing legal frameworks across the region, guided by WHO FCTC recommendations, is a necessary step to prevent the industry from "forum-shopping" for more lenient jurisdictions, especially in the Southeast Asia Region. Looking ahead, more nuanced research on pharmacological interventions is essential to refine cessation strategies, particularly for the socioeconomically diverse populations within low- and middle-income countries, ensuring policies have a broader and more equitable impact.

This narrative review has several limitations. First, its reliance on currently available literature results in limited generalisability to low- and middle-income countries (LMICs), where quantitative studies on the effectiveness of pharmacological interventions are scarce. Second, tobacco control is a rapidly evolving field; consequently, this review represents a snapshot in time and may not capture the very latest developments in international trade policy or litigation strategies. Finally, due to the profound influence of unique social, cultural, economic, and literacy contexts on policy implementation in each nation, this review does not provide universal effect size estimations for the strategies discussed.

CONCLUSION

Tobacco control initiatives through WHO FCTC have come a long way since its inception in 2003 that focuses mainly on tobacco - related products. The huge global success shown by the programme introduced new challenges in terms of the social, cultural, policy making, new

synthetic nicotine products, marketing and advertising, and international trade and legal issues. This review reaffirms that effective tobacco control requires a strategically layered approach—one that addresses macro-level taxation and international regulation, supports community-centered programs, and equips individuals with evidence-based cessation tools. The persistence of socioeconomic inequities, industry-driven marketing, and regulatory loopholes—particularly regarding synthetic and other novel nicotine products—demonstrates that single-track interventions are inadequate. Consequently, policies must incorporate equity safeguards at every level of action to prevent the exacerbation of existing health disparities.

By enacting the comprehensive Control of Smoking Products for Public Health Act, Malaysia has taken a bold step forward, setting a new benchmark in the region for regulating both traditional and emerging smoking products. Looking ahead, three priorities are essential to build on this momentum. First, governments should enhance and harmonize fiscal and legal measures—such as excise taxes and cross-border advertising restrictions—through coordinated international agreements that prevent industry forum-shopping. Second, sustained investment in public education and transparent risk communication is critical to reducing initiation rates and normalizing cessation, particularly among youth and marginalized groups. Finally, targeted research—especially in low- and middle-income settings—should refine behavioral and pharmacological cessation supports while monitoring the evolving landscape of synthetic nicotine. By integrating these elements, policymakers can establish resilient, adaptable frameworks that not only reduce tobacco use but also advance global health equity.

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