

Current trends of smoking among young populations worldwide and its impact in the future: a looming public health paradox

H N Sarker¹ 

The global tobacco epidemic has undergone a paradoxical transformation over the past two decades. While overall smoking prevalence has declined, the persistence and in some regions, resurgence of tobacco and nicotine use among young people presents a formidable challenge to global health systems. The epidemiological transition from traditional cigarette smoking to alternative nicotine delivery systems, coupled with sociocultural and commercial influences, suggests that the burden of tobacco-related disease may remain substantial well into the future.

Globally, tobacco use has declined from approximately 1.38 billion users in 2000 to around 1.2 billion in 2024, reflecting the success of public health interventions and regulatory frameworks^[1]. Despite this encouraging trend, tobacco remains responsible for more than 7 million deaths annually, underscoring its enduring lethality^[2]. Crucially, these aggregate improvements obscure a troubling reality: initiation of tobacco use continues to occur predominantly during adolescence. Nearly 90% of adult smokers begin before the age of 18, highlighting youth as the critical window for intervention^[3].

Recent estimates indicate that at least 37 million adolescents aged 13–15 years, approximately 9.7% globally, currently use tobacco in some form^[4]. In certain settings, particularly low- and middle-income countries, the prevalence remains considerably higher, with earlier studies suggesting rates approaching 20% among adolescents^[5]. Moreover, exposure to secondhand smoke remains widespread, compounding health risks among non-smoking youth and perpetuating intergenerational cycles of tobacco dependence.

Encouragingly, traditional cigarette smoking among youth has declined significantly in many high-income countries. For instance, recent surveillance data demonstrate historically low rates of cigarette smoking among adolescents in some regions^[6]. However, this progress is increasingly offset by the rapid rise of alternative nicotine products, particularly electronic cigarettes. The World Health Organization estimates that at least 15 million adolescents worldwide use e-cigarettes, with youth being significantly more likely to vape than adults in several countries^[7]. These products, often marketed with appealing flavors and perceived as safer alternatives, risk normalizing nicotine addiction among a new generation.

Of particular concern is the emerging evidence that e-cigarette use may act as a gateway to conventional smoking. Young individuals who use vaping devices are significantly more likely to initiate cigarette smoking and develop long-term nicotine dependence^[8]. This phenomenon threatens to reverse decades of progress in tobacco control and underscores the adaptive strategies of the tobacco industry, which has shifted its focus toward novel products to sustain market growth.

Geographical and gender disparities further complicate the global landscape. The WHO European Region, for example, now reports some of the highest rates of tobacco use among adolescents, with girls in this region exhibiting the highest prevalence globally^[9]. Such trends signal a narrowing gender gap and highlight the influence of targeted marketing and evolving social norms.

The future implications of these trends are profound. Early initiation of smoking is strongly associated with prolonged duration of use, greater cumulative

exposure, and increased risk of chronic diseases, including cardiovascular disease, chronic obstructive pulmonary disease, and malignancy. As half of adolescent smokers are likely to continue smoking into adulthood, the current patterns foreshadow a sustained burden of non-communicable diseases (NCDs) in the coming decades^[10]. Additionally, the economic impact—through healthcare costs, lost productivity, and premature mortality—will disproportionately affect low- and middle-income countries, where tobacco control measures are often less robust.

Beyond physical health, the psychosocial consequences of youth smoking warrant attention. Nicotine addiction during adolescence has been associated with impaired neurodevelopment, mental health disorders, and increased susceptibility to other substance use. The intersection of tobacco use with social media, peer influence, and cultural normalization further amplifies its appeal among young populations, necessitating innovative and context-specific interventions.

In conclusion, the global decline in smoking prevalence should not engender complacency. The persistence of tobacco use among youth, coupled with the rise of alternative nicotine products, represents a critical inflection point in the tobacco epidemic. Without decisive and coordinated action—including stricter regulation of emerging products, comprehensive youth-targeted prevention strategies, and sustained public health advocacy—the gains achieved over the past decades may be undermined. The trajectory of youth smoking today will shape the global burden of disease tomorrow; thus, safeguarding the next generation from nicotine addiction remains an urgent public health imperative.

1. Professor (Ex), Medicine, Sher-E-Bangla Medical College, Barishal, and Sheikh Sayera Khatun Medical College, Gopalganj, Bangladesh (ORCID: 0000-0001-6523-9395)

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