

SPECIAL ARTICLE

Tobacco Control Youth Initiatives: Mississippi's Multipronged Approach

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Despite progress in reducing youth tobacco use, the epidemic persists as a pressing public health challenge, exacerbated by the rise of vaping and flavored products. This article synthesizes the latest evidence on effective youth tobacco control interventions and presents a detailed examination of the comprehensive initiatives implemented in Mississippi over the past six years. Data from the Mississippi State Department of Health's Office of Tobacco Control program evaluations from 2018-2023 are presented, covering school curricula, community events, peer education, advocacy, media campaigns, and other activities delivered by tobacco-free coalitions, physician groups, and partner organizations statewide. Over this period, these multi-level initiatives reached tens of thousands of youths annually through evidence-based programs like CATCH My Breath[®] and Tar Wars[®], as well as awareness presentations, leadership training, policy advocacy, digital content, and more. Evolving strategies included increased virtual programming and social media engagement during the COVID-19 pandemic. While evaluation limitations exist around long-term impacts, Mississippi's multifaceted approach reflects expert-recommended practices of combining school/community interventions with youth engagement, professional education, media outreach, and policy change. As tobacco landscapes shift, such comprehensive, adaptable strategies remain crucial to protecting the next generation from tobacco, e-cigarette, and vaping addiction's harms. Continued investment in innovative, evidence-based youth tobacco control programming is vital.

Introduction

Tobacco use among youth remains a pressing public health challenge worldwide, with dire consequences for individual well-being and societal financial burden.^{1,2} Global statistics indicate that current tobacco use among people 15 and older is 23% with males comprising the majority of this trend (37% vs 8% for females).³ Notably, current smoking use has decreased among youth (18-24 years old) in the United States, according to 2021 data.⁴ Respectively, in Mississippi, the prevalence rate of cigarette use among the 18-24 age groups dropped by 72.4% between 2011 and 2022, from 29.0% to 8.0% in each respective year.⁵ Yet, disparities exist among middle and high-school students who reportedly smoke menthol cigarettes or fall into the consumption of an array of flavored e-cigarettes and vaping products.⁶

⁷ While strides have been made in curbing youth tobacco consumption in recent years, particularly in the United States, the epidemic persists, necessitating continued vigilance and targeted interventions.^{8,9} For example, while 18% of high school students nationwide reported using electronic vapor products in 2021, the rate was higher in Mississippi at 20.9%.¹⁰ There was also a larger gender gap in Mississippi, with 22.1% of females and 19.5% of males using e-cigarettes compared to the national rates of 21.4% and 14.9% respectively.¹¹ In Mississippi, while comprehensive tobacco control measures implemented since the 1997 settlement have been effective in reducing traditional tobacco use, the rise in e-cigarette use presents a new challenge, with data suggesting a shift towards heavier use and potential nicotine addiction among adolescents.^{10,12} Encouragingly, research has demonstrated the efficacy of comprehensive tobacco control programs and policies tailored to youth in preventing smoking initiation and promoting cessation.^{12,13} Reflecting this evidence, initiatives spearheaded by entities like the Mississippi State Department of Health's Office of Tobacco Control (MSDH, OTC) have yielded promising results, with statistically significant reductions in the past 30-day use of cigarettes and cigars among a weighted sample of 9th to 12th grade students in the state.^{10,14} These initiatives demonstrate the effectiveness of comprehensive, multi-component approaches to youth tobacco prevention and cessation where the most successful programs often combine education, policy changes, community involvement, and media campaigns to create a supportive environment for tobacco-free living among youth.¹⁵⁻¹⁸

Even though causal inferences cannot be conclusively drawn between decreasing tobacco use rates and implementation of youth programs, it is important to maintain and steadily increase the existence of such programs. This article synthesizes the latest evidence on youth-focused tobacco control interventions and policies while providing a detailed description of the initiatives and programs implemented in Mississippi over the past six years, offering insights into effective strategies for combating this pervasive threat to youth health.

Background

Multiple studies have established that school-based education and peer-led initiatives can reduce youth tobacco use when implemented effectively. Holden et al.¹⁹ found that statewide youth-led tobacco control programs increased empowerment outcomes among the youth involved. Nimbabazi²⁰ also reported positive impacts from peer education programs in Rwandan schools and campuses. However, Alesci et al.²¹ found no significant effects on youth smoking rates from the Minnesota Youth Tobacco Prevention Initiative or its defunding, highlighting the need for high-quality program design and evaluation.

Research on tobacco use among youth in the United States has revealed important disparities across racial and ethnic groups. Recent data showed declines in youth tobacco use across most racial/ethnic groups from 2019-2020, with large decreases among non-Hispanic Black students, though flavored tobacco product use increased significantly among non-Hispanic White, Hispanic, and other non-Hispanic groups.²² Examining Asian American and Native Hawaiian / Pacific Islander (AANHPI) youth, a higher prevalence of current e-cigarette use was found among Native Hawaiian/Pacific Islander youth (28%) compared to Asian American youth (10.3%) and other racial/ethnic groups.²³ Policy efforts like raising the minimum legal sales age to 21 have been shown to reduce youth cigarette smoking.^{24,25} Also, prominent Black leaders are calling for finalization of proposed FDA rules to end menthol cigarette sales in order to curb the tobacco industry's targeted marketing toward Black communities.⁷

Studies have emphasized the importance of tailored, youth-oriented regulations aligned with WHO recommendations. However, more research is needed on factors driving disparities, especially the influence of sociocultural factors on tobacco use within demographic subgroups.²³ Ranabhat et al.² systematically reviewed global youth tobacco policies, identifying taxation, advertising restrictions, and cessation support as impactful, but underutilized interventions for this population. Pérez et al.²⁶ provided evidence on peak initiation ages to guide education timing. A few studies demonstrated comprehensive flavor bans can reduce youth tobacco access and use compared to partial restrictions.^{27,28}

As Mississippi has effectively implemented youth-targeted initiatives, other states have reported significant reach and potential impact from similar initiatives.¹⁶ For example, the CATCH My Breath[®] curriculum in Texas reached over 105,000 students across 250 schools in the 2019-2020 school year. Furthermore, the results from a study in Texas showed that students who completed CATCH My Breath[®] were 45% less likely to experiment with e-cigarettes compared to those who did not receive the program.¹⁵ Similarly, in New York implementation of the same program in 77 schools reached 21,025 students by the end of 2018-2019 school year, potentially helping to combat e-cigarette use rising trends. North Carolina also experienced rapid growth in CATCH My Breath[®] implementation when multiple trainings, presentations, and webinars reached approximately 9,897 middle schoolers and 7,286 high schoolers during the 2018-2019 school year.

Evaluation results from additional youth programs echo similar benefits. The “TEENS Against Tobacco Use” (TATU), a peer-led tobacco prevention program carried out in Montana where high school students were trained to educate younger students about the dangers of tobacco use, showed significant increases in knowledge about tobacco risks and stronger anti-tobacco attitudes among participants.¹⁷ “The Real Cost” campaign, a U.S.

Food & Drug Administration initiative, used hard-hitting advertisements to educate youth about the dangers of tobacco use.¹⁸ The campaign was estimated to have prevented up to 587,000 youth from initiating smoking between 2014 and 2016. In California raising the minimum legal age of tobacco sales to 21 has shown that self-reported cigarette use among 18–20-year-olds decreased from 14.2% to 11.3% after implementation.²⁵ Additional community-based interventions such as “ALERT Plus” in Oregon for middle and high school students or the American Lung Association’s cessation program “Not On Tobacco” (N-O-T) in West Virginia for high school students have shown long-term effects in reducing cigarette use among high-risk youth who may also consume other addictive substances like marijuana.^{29,30}

Key challenges related to tobacco cessation programs targeting youth include high costs, industry interference, competitive outside school programs vying to gain access, and difficulties reaching this population effectively. Cofer et al.⁹ highlighted the need for evidence-based, multi-level tobacco control efforts, describing a comprehensive state-wide program integrating policy change, professional education, and treatment.

An example of evidence-based approaches demonstrates that traditional tobacco use has significantly decreased in Mississippi.³¹ According to surveillance data from 1998 to 2023, cigarette smoking has seen a dramatic decline, with current smoking among public high school students decreasing by 89%, resulting in 34,963 fewer young smokers. Similarly, smokeless tobacco use has dropped substantially, with a 73% decrease among high school students, leading to 8,968 fewer young users. Cigar smoking has also seen a marked reduction, with a 77% decrease in current use among high school students, translating to 22,226 fewer young cigar smokers. These decreases extend to middle school students as well, with significant reductions across all traditional tobacco products. These surveillance data demonstrate the effectiveness of statewide tobacco control programs implemented since 1999 in reducing youth tobacco use in the state. Naturally, further research is still needed on policy impacts, tailored interventions, and evolving tobacco products; however, sufficient evidence confirms youth-focused, research-driven tobacco control initiatives should remain a priority.

In this study, we hypothesized that comprehensive, multi-faceted tobacco control initiatives targeting youth in Mississippi, including school-based programs, community outreach, peer education, and digital campaigns, lead to increased awareness about the dangers of tobacco and e-cigarette use among young people, potentially contributing to reduced youth tobacco initiation rates over time. A series of statewide initiatives have targeted youth through school curricula, community events, peer education, media

campaigns, and other activities. The results aim to show the reach of these multi-level, multi-partner programs in educating and influencing youth regarding tobacco and vaping prevention.

Methodology

Since 2018, MSDH OTC has introduced a variety of initiatives that target the youth population in Mississippi.³² The data presented here are derived from program evaluation analysis covering six fiscal years (FY) from 2018 to 2023 and from program activities that took place from July 1 to June 31 of each reporting period. The only exceptions are family physician programs and other statewide youth initiatives that cover six and four years, respectively.

In this article, we present three major initiatives with multiple programs that have occurred in the state. Tables and a map show the total number of events (interventions) and their estimated reach, also known as participation rate or the proportion of individuals participating in an event (intervention). The youth initiatives represent the state's strategic efforts to drive down tobacco use among Mississippi's youth, aligning with state and national trends seen in surveillance data and reinforcing the effectiveness of public health interventions.^{3,10,11,31}

The Institutional Review Board (IRB) at the authors' Institution determined the study protocol exempt. Data were entered in the Tobacco Reporting and Progress System (TRAPS), an innovative cloud-based visual analytic tool used for managing and evaluating tobacco prevention and cessation programs in Mississippi.³³ TRAPS allows grantees, program officers, and evaluators to access and analyze data to measure program outcomes. TRAPS accommodates different program levels and users and provides critical data for effective tobacco control education, programming, and strategic planning. The portal, which complies with Centers for Disease Control (CDC) requirements, allows MSDH, OTC to monitor and provide short-term, intermediate, and long-term intervention outcomes to influence program and policy direction, ensure accountability, and demonstrate effectiveness.

A description of tobacco control youth intervention initiatives follows next.

Tobacco Control Youth Intervention Programs

COALITION INITIATIVES

The Mississippi Tobacco-Free Coalitions (MTFC) consist of 34 partnerships throughout the state. MTFCs conduct various types of tobacco-control activities, some of which are nationally implemented and recognized. These activities include the following:

- “*CATCH*®” – a Coordinated Approach to Children’s Health is an evidence-based and peer-reviewed youth nicotine vaping prevention program, now expanded to middle and high schools. The *CATCH*® program, including the *CATCH My Breath*® materials, was developed by The University of Texas Health Science Center at Houston (UTHealth) School of Public Health and apart from Mississippi, it also is implemented in California, Indiana, North Carolina, and Tennessee, among others.
- “*E-Cigarettes/Vaping Presentations*” – youth tobacco prevention programs implemented statewide to deter the initiation of tobacco use among school-age and college youth.
- “*Youth Tobacco Awareness*” – presentations to youth in summer camps and to other populations of young people about the dangers of tobacco use.
- “*Secondhand Smoke Awareness*” – information about smoke exposure to children and adults including strategies to reduce the dangers of secondhand exposure through a series of handouts, presentations, and awareness events. There are partnerships with community service agencies and county officers, and pediatric clinics to create events throughout the state, including civic clubs, local government entities, conferences, youth groups, or back-to-school events.
- “*Take Down Tobacco Day*” – a national campaign (formerly known as Kick Butts Day) for Tobacco-Free Kids’ signature platform empowering people to stand up and speak out against the tobacco industry. The Take Down Tobacco program is a 365-day-a-year effort that culminates every April 1 with the Take Down Tobacco National Day of Action.

TAR WARS®

The Mississippi Academy of Family Physicians (MAFP) Foundation trains staff located in family physician clinics to refer tobacco users to appropriate treatment. MAFP’s most notable program is Tar Wars®, a tobacco-free education program created by the American Academy of Family Physicians which consists of training to medical students who then present the program to elementary and middle school students. The Tar Wars® program actively mobilizes University of Mississippi Medical Center (UMMC) 3rd year medical students and William Carrey University (WCU) 1st year medical students to teach Mississippi’s children about the short-term health effects of

tobacco. The presentations engage elementary and middle school students by utilizing health facts and hands-on activities related to the dangers of tobacco and e-cigarette use.

OTHER STATEWIDE YOUTH INITIATIVES

Programs targeting the young population of Mississippi are delivered by various organizations [including Caffee, Caffee & Associates Public Health (C&C), The Partnership for a Healthy Mississippi (PHM), and Enrich MS] under the direction of MSDH, OTC. The main goal of these programs is to reduce youth initiation and prevalence rates of tobacco and electronic cigarette use. Examples of these programs include such statewide initiatives as:

- “*Youth Leaders*” – a national tobacco prevention campaign for youth and young adults that inspires tobacco- and vape-free lives amongst their peers, organized by C&C.
- “*School Presentations*” – youth cessation presentations that advocate for policies that identify alternatives to suspension as disciplinary actions for those caught vaping on school properties, offered by PHM.
- “*Vaping Summit*” – a two-day virtual summit that used to provide the community with education and resources as it relates to e-cigarette use and the youth vaping epidemic in the state of Mississippi, delivered by Enrich MS.

The aforementioned youth tobacco programs align with Mississippi's five-year outcome plan from the Mississippi Tobacco Control Network (MTCN).³⁴ This strategic framework is part of MSDH's effort to synchronize with the Centers for Disease Control and Prevention (CDC) in recognizing youth and adolescents as a critical population in tobacco control initiatives. MTCN proposes a multi-faceted approach to address tobacco use among young people, combining policy changes, education, peer engagement, and targeted messaging, as described below.

Results

Over the past several years, coalitions, physician groups, and organizations in Mississippi have worked to educate youth about the dangers of tobacco use and vaping. The Catch My Breath® initiative started strong in 2018 with 258 events reaching 23,001 youth. Each training course consists of four sessions, one per week. The organizers continued hosting hundreds of training sessions over the next few years, although the number of youth reached started declining, mainly due to the COVID-19 pandemic that necessitated school closures. By 2023, the program coordinators held 245 sessions reaching 12,419 youth. Presentations about e-cigarettes and vaping

began in 2018, with over 300 events reaching more than 24,000 youth. As vaping grew more popular, these presentations continued, but fewer students were reached each year. Access into the schools from COVID-19 may be partially responsible. Secondhand Smoke awareness presentations also engaged thousands of youth each year, although events and attendance declined over time. Take Down Tobacco days and other awareness events like rallies or announcements rounded out the coalitions' youth education efforts.

By 2023, the total number of events dropped to 579 and the total of youth reached was down to around 30,000. This decline could be due to reduced funding, shifting priorities, or access issues to the schools since the COVID-19 pandemic. However, some groups like the Family Physicians who delivered Tar Wars[®] presentations increased their reach in recent years. The youth initiatives also evolved from broader awareness campaigns to more targeted prevention programming. This included youth leadership training, advocacy workshops, peer-to-peer education, and social media engagement.

By partnering directly with youth and schools, the initiatives continue engaging tens of thousands of students. However, attendance at in-person events decreased, likely due to COVID-19 restrictions. Virtual programs such as video series and online field trips became new strategies to reach youth. While the methods changed, the coalitions maintained their commitment to educating youth about tobacco and vaping harms.

Furthermore, statewide occurrence showed significant growth in scale of the tobacco/vaping education programs. Over the past five years, MSDH, OTC has steadily increased its outreach efforts and expanded its impact in educating youth about the dangers of tobacco and vaping. In 2020, outreach events and presentations grew to 521 reaching 10,715 youth. A decline in the numbers of events was observed in the years followed, mostly due to COVID-19 restrictions; yet "reach" maintained and even surpassed its pre-COVID numbers which suggests an increased interest in these types of outreach programs for youth. To mitigate COVID-19 lockdown restrictions, virtual strategic initiatives such as a Vaping Summit, Virtual Field Trips, and Videos replaced traditional methods and further expanded the reach to over 20,000 youth. Additionally, in the years 2020 and 2021, over 800,000 youth accessed tobacco control programs largely through social media outreach.

[Tables 1-5](#) show the number of events and reach of specific initiatives. Furthermore, [figure 1](#) shows a map with a glimpse of youth initiatives in the state of Mississippi for fiscal year 2023 only.

These statewide youth initiatives connect Mississippi's five-year strategic framework with data surveillance from youth surveys and overall trends.^{10, 12,34} The framework highlights significant reductions in traditional tobacco use among Mississippi's youth since 1998, including an 89% decrease in cigarette smoking among public high school students, leading to 34,963

Table 1. Mississippi Tobacco-Free Coalitions Initiatives

	2018		2019		2020		2021		2022		2023	
<u>Initiative</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>
Catch My Breath®	258	23,001	181	2,509	221	14,802	491	14,624	371	17,730	245	12,419
E-Cig/Vaping Presentations	328	24,025	104	1,246	120	7,261	107	3,208	145	6,723	123	4,238
Youth Tobacco Awareness	428	4,980	704	9,457	48	7,862	532	5,340	116	844	71	3,662
Secondhand Smoke Awareness	420	8,885	522	1,387	376	7,147	184	9,154	232	8,169	95	4,512
Take Down Tobacco Day	142	2,224	48	1,017	45	viral	46	5,350	39	3,132	45	4,885
Total	1,576	63,115	1,559	15,616	810	37,072	1,360	37,676	903	36,598	579	29,716

Table 2. Family Physicians Initiatives

	2018		2019		2020		2021		2022		2023	
<u>Tar Wars®</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>	<u>Events</u>	<u>Reach</u>
Total	10	173	141	3,122	8	201	4	78	19	101	162	3,934

Table 3. Summit Initiatives (During COVID-19 Lockdown)

		2021		2022	
	Initiative	Events	Reach	Events	Reach
Enrich MS	Virtual Vaping Summit	1	424	1	1,073
	Vaping Video	18	597		
CATCH®	Virtual Field Trip	2	19,736		
	Video Topic Series (Summit)	1	58		
Total		22	20,815	1	1,073

Note: Years marked without a figure signify an interruption or discontinuation of a specific program for that particular fiscal year.

Table 4. Social Media Outreach (During COVID-19 Lockdown)

		2020		2021	
		Events	Reach	Events	Reach
Enrich MS		247	124,028	789	690,785
CATCH®				3	19,794
Total		247	124,028	792	710,579

Note: Years marked without a figure signify an interruption or a discontinuation of a specific program for that particular fiscal year.

Table 5. Other Statewide Youth Initiatives

		2020		2021		2022		2023	
C&C	Initiative	Events	Reach	Events	Reach	Events	Reach	Events	Reach
	Youth Leaders Educate Peers	43	3,432	19	2,196	38	6,290	11	1,222
	Campaigns & Presentations	13	2,616	14	907	10	434	16	4,433
	Outreach/ National Holidays	429	2,191	35	4,169			40	6,256
PHM	Peer to Peer	20	2,060						
	School Presentations	16	416	2	612	6	1,102	9	1,362
Total		521	10,715	70	7,884	54	7,826	76	13,273

Note: Years marked without a figure signify an interruption or a discontinuation of a specific program for that particular fiscal year. C&C = Caffee, Caffee & Associates Public Health. PHM = The Partnership for a Healthy Mississippi.

fewer young smokers. This aligns with broader surveillance data indicating substantial declines in tobacco use among young people across Mississippi.^{31, 32} The effectiveness of youth-targeted programs, such as those implemented in Texas, New York, North Carolina, Montana, Oregon and other states mirrors Mississippi's evidence-based efforts.^{15-18,25,29,30}

Discussion

This study provides an overview of the initiatives for preventive programming against tobacco use among Mississippi youth. The results highlight the multi-faceted efforts undertaken by MSDH, OTC and partner organizations to combat youth tobacco and vaping use through comprehensive multi-component educational programs and initiatives across the state, reflecting

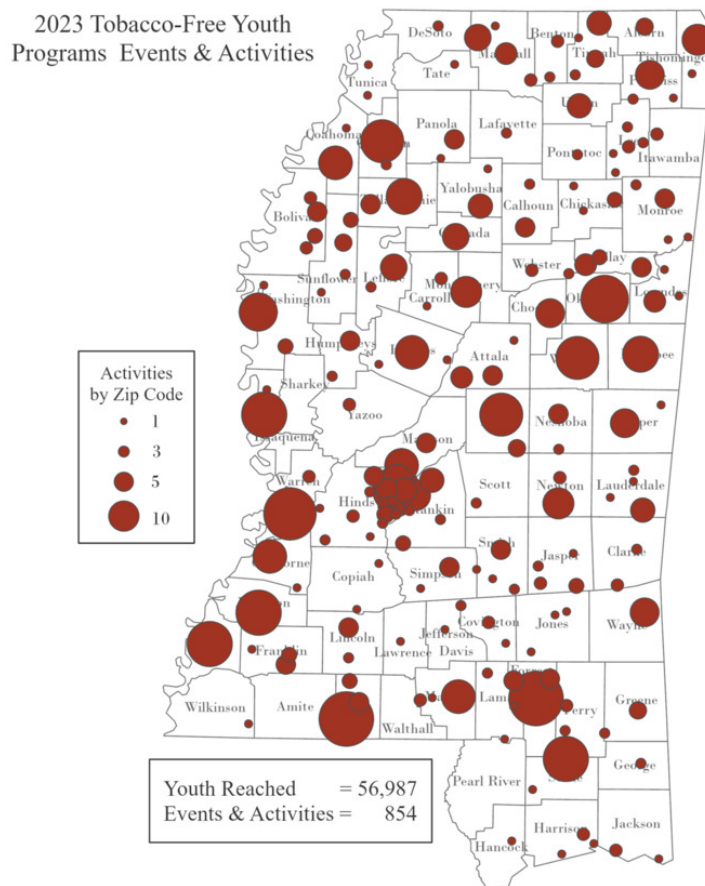


Figure 1.

best practices identified in previous research for effective youth tobacco prevention and cessation.^{2,19,20} Mirroring other states, Mississippi's most successful programs often combine education, policy changes, community involvement, and media campaigns to create a supportive environment for tobacco-free living among youth.^{16,27} Over the past six years, these programs have reached tens of thousands of youth annually through school-based curricula like CATCH My Breath[®], community events, peer education, media campaigns, and other activities with the expectation they will lead to long-term reductions in use.^{10,14,31}

The Tobacco-Free Coalitions have played a major role by implementing evidence-based programs as well as awareness presentations on e-cigarettes, secondhand smoke, and broader tobacco issues, though their reach declined in recent years likely due to COVID-19 disruptions. These types of comprehensive, multi-component interventions have been shown effective.⁹

The family physicians group focused on the Tar Wars[®] program, training medical students as educators to reach youth directly in schools, significantly expanded their reach from 2022 to 2023. Engaging future physicians aligns with recommendations for professional education in tobacco control.⁹ Other statewide initiatives complemented these efforts with youth leadership, advocacy, peer-to-peer education, social media campaigns, virtual events, and targeted outreach which comprise strategies suggested for effectively reaching and resonating with youth.²⁶ Digital content allowed rapid scaling to over 690,000 youth in 2022, overcoming COVID-19 barriers.

These data demonstrate that initiatives targeting youth, including educational campaigns and school-based interventions, have contributed to a significant decrease in tobacco use among middle and high school students. Substantial decreases in youth tobacco use over the past 25 years and the prevalence of adult cigarette smoking has been on a steady decline since 2011.¹⁰ Moreover, per capita consumption among Mississippi adults is at an all-time low.¹⁰ These declines in cigarette consumption and smoking rates among youth and adults, following the implementation of comprehensive tobacco prevention and control programs by the state, are highly consistent with the hypothesis that our quality programs are raising awareness and potentially reducing commercial tobacco use.

Collectively, these multi-level, multi-partner programs provided Mississippi youth with education and skill-building matching recommendations, as previous research has shown.² The initiatives evolved approaches over time, pivoting to more virtual and social media strategies as suggested for this population.²⁶ However, limitations exist around evaluating long-term impacts on youth smoking rates, perceptions, and behaviors, making it a future priority to dive deeper into the influence of sociocultural factors on tobacco use highlighting the need for rigorous outcome studies.^{10,14,19,21} Coordinating dispersed programs and partners is also challenging, suggesting a more centralized, collaborative model could enhance synergies.⁹

Despite limitations, Mississippi's comprehensive tobacco control youth initiatives present an array of tobacco prevention practices of combining school/community education, peer engagement, physician training, policy advocacy, media campaigns, and innovative digital content.^{2,9} As tobacco products and use patterns evolve, these initiatives must continue adapting with effective, evidence-based interventions to protect youth health.

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