Substance Use Prevention among Asian American Adolescents: A Systematic Review of Literature

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Abstract

Asian American (AA) adolescents are the fastest growing population in the United States yet understudied in substance use and prevention research. This systematic review aimed to summarize existing literature published through January 2024 on programs targeting substance use prevention among AA adolescents in the U.S. Four independent raters screened 1,008 records with a systematic process for reconciling disagreement following PRISMA guidelines, yielding nine articles (six studies) for systematic review. The studies utilized a range of different designs (e.g., RCT, single-arm trial, and qualitative) and assessed heterogeneous outcomes, including cognitive (e.g., risk perceptions, attitudes, mood, and self-efficacy) and behavioral outcomes (e.g., drug use initiation and frequency). Four of the six programs reported promising changes in substance use intentions, with program strategies including psychoeducation, skills training, and photovoice. The small number of studies reported in this systematic review underscores the need for more preventative efforts for AA adolescents, particularly culturally tailored substance use prevention programs targeting alcohol, illicit drugs, and emerging substances.

Keywords: substance use, Asian American, adolescent, prevention programs, systematic review

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Introduction

Substance use — including alcohol, tobacco, and other drug use — typically starts during adolescence (Jackson, 2019) and can lead to both short-term and long-lasting social and health consequences (Green et al., 2016; Moss et al., 2014). While historically low, substance use rates among adolescents remain concerning. In 2022, the past-month prevalence of alcohol, cigarettes, and marijuana among adolescents 12 to 17 years old was 6.8%, 1.2%, and 6.4%, respectively (Substance Abuse and Mental Health Services Administration, 2023). Furthermore, the use of certain substances such as electronic cigarettes (i.e., e-cigarettes) and hookah has increased in recent years. From 2017 to 2019, the 30-day prevalence of vaping nicotine and marijuana among adolescents doubled or tripled, rising from 11.9% to 25.5%, and 4.9% to 14%, respectively (Johnston et al., 2020). Most worryingly, substance-related deaths among adolescents have risen, mostly due to the presence of fentanyl in illicit drugs (Friedman et al., 2022). Given the severe social and health consequences of substance use in adolescents, early prevention is critical.

Extensive racial/ethnic disparities exist in adolescent substance use for Asian Americans (AA). According to the U.S. Census Bureau (U.S. Census Bureau, n.d.), Asians originate from “the Far East, Southeast Asia, or the Indian subcontinent.” Chinese, Indian, Filipino, Vietnamese,

Korean, and Japanese ethnic groups comprise the majority of AAs (Budiman & Ruiz, 2021). Substance use rates among AAs are poorly understood and understudied because of historically racialized research practices like data aggregation and stereotype bias in health research (Yi et al., 2022). Particularly, race-related stereotypes (e.g., model minority, healthy immigrant, perpetual foreigner) perpetuate inaccurate research and conceal the reality of healthcare access disparities within and among AAs and AA subgroups.

Although AA adolescents as a group generally show lower substance use rates than White, Black, and Hispanic populations (Keyes et al., 2017; Swaminath et al., 2023; Terry-McElrath & Patrick, 2020; Wu et al., 2015), specific AA subgroups demonstrate disproportionate risk. For instance, alcohol and tobacco use is more prevalent among Korean, Japanese, Filipino, and "other" Asian ethnicities (Ahmmad & Adkins, 2021; Hai et al., 2021). This is especially concerning given that AA adolescents show faster growth in alcohol use over time compared to their White counterparts (Cambron et al., 2018). Additionally, multiracial AAs show higher rates of substance use and AA sexual minorities are at increased risk of use (Ahmmad & Adkins, 2021; Hahm et al., 2008).

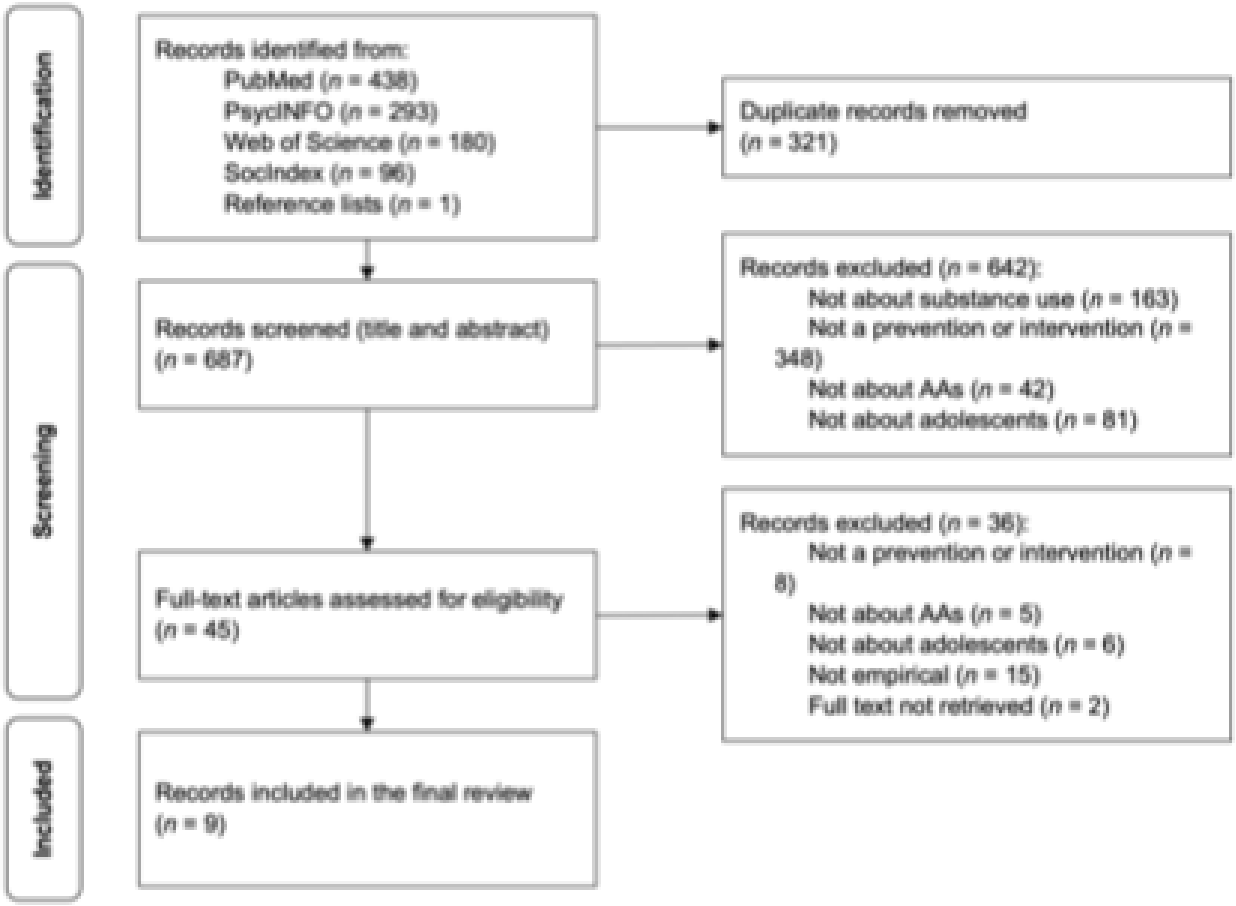
Moreover, when a substance problem exists, AAs are less likely to receive treatments. AAs were less likely than other racial groups to report being screened for alcohol use or discussing it with a healthcare provider, which was associated with lower rates of treatment use (Mauro et al., 2023). Additionally, AA, Native Hawaiian, and Pacific Islanders in substance use treatment received lower quality treatment and had lower rates of completion compared to other racial/ethnic groups (Choi et al., 2024). Asian adolescents are also more likely to be discharged from treatment by the facility before completion (Marotta et al., 2022).

Existing systematic reviews have summarized prevention programs for adolescents in general (Faggiano et al., 2008; Onrust et al., 2016) or for specific ethnoracial subgroups, including Native Hawaiian/Pacific Islander (Durand et al., 2016; Edwards et al., 2010; Rosario et al., 2021), African American (Metzger et al., 2013), Indigenous (Maina et al., 2020; Snijder et al., 2020), and Latino (Hernandez Robles et al., 2018) adolescents. One recently published systematic review summarized culturally sensitive substance use prevention programs for adolescents of color, noting more research is needed for AA adolescents as the authors did not identify any studies for AAs (Bo et al., 2023). To our knowledge, no systematic reviews of substance use prevention programs for AAs exist. Given the increasing prevalence and unique factors that may influence substance use among AA adolescents, there is a need to summarize existing prevention efforts targeting this group. This systematic review aims to synthesize existing literature on substance use prevention programs for AA adolescents in the U.S. and identify critical research gaps to be addressed in future studies.

Methods

An adolescent mental healthcare disparities researcher (WL), clinical health psychologist/immigrant health and cancer disparities researcher (FL), two graduate students of social work (MC) and applied behavior analysis (JL), and university librarian formed the panel to develop an appropriate search strategy. We aimed to collect all published, peer-reviewed articles describing or evaluating substance use prevention programs targeting AA adolescents. The systematic review was conducted prospectively per the Preferred Reporting Items for Systematic Reviews and Meat-Analysis (PRISMA) guidelines (Page

Figure 1
PRISMA flowchart of literature search



et al., 2021) and was pre-registered on INPLASY (INPLASY202450042).

Search Strategy

Comprehensive searches were conducted in Medline (PubMed), PsycINFO (Ovid), Web of Science, and SocIndex in 2022 using both controlled vocabulary and keywords combined with Boolean operators related to the program(s) and population(s) of interest (see Appendix A). The search strategy was created by a university librarian and reviewed by the first author (WL). After data saturation was reached, final search results were imported to Covidence (Veritas Health Innovation, n.d.) and duplicates were removed. An updated search was completed in March 2024, and no new studies were identified.

Inclusion and exclusion criteria

Studies were included in the review if they: (1) focused on substance use, (2) developed or evaluated a substance use prevention program, (3) were empirically based (i.e., based on observations of the program being studied), (4) were conducted in the U.S., (5) included an adolescent sample, (6) either recruited solely or mostly AA samples or included culturally appropriate prevention strategies for AAs, and (7) published in peer-reviewed publications in or after 2000. Given

the specific sociocultural factors unique to AA adolescents (Kim et al., 2013; Lu et al., 2019), we limited our search to studies conducted in the U.S. Prevention programs were defined as strategies that aimed to prevent future substance use-related problems in adolescents. An inclusive approach was employed in this review whereby studies were included if they involved adolescents aged 10 to 19 years old, with no lower age limit and an upper age limit of 24, as the larger age range may be considered more representative of modern-day adolescent development phase and experience (Sawyer et al., 2018).

Two researchers (MC, JL) conducted independent title, abstract, and full-text screenings to identify relevant studies. Disagreements between the researchers were resolved by discussing with the first author (WL) until a consensus was reached. To ensure the search was exhaustive, we searched the reference lists of studies that passed full-text screening for relevant articles that were missed during the initial database search.

Data extraction

Data extracted from the articles included information about study, participant, and prevention program characteristics. To ensure the accuracy of the data extracted, two researchers (MC, JL) independently coded the articles and cross-checked for any errors. Discrepancies were resolved by consensus among all authors. When published articles did not present sufficient data, we contacted the corresponding author twice to request the required information.

Results

The search strategy yielded 1,008 records, reduced to 687 unique records excluding duplicates, and to nine articles reporting data from six unique studies following the application of inclusion and exclusion criteria (Figure 1).

Participant characteristics

As summarized in Table 1, a total of 5,628 study participants across six studies were included in the review (Fang & Schinke, 2013, 2014; Fang et al., 2010; Ferketich et al., 2007; Johnson et al., 2005; Lee et al., 2019; Ma et al., 2004; Mitschke et al., 2010; Unger et al., 2004). One study included mothers as participants, but the mothers were excluded from the total calculation of participants. The AA sample comprises only 39.2% across all six studies, primarily because the study with the largest participant pool recruited a mixed sample (Johnson et al., 2005; Unger et al., 2004). Across the four studies that assessed ethnicity (Ferketich et al., 2007, Lee et al., 2019; Ma et al., 2004; Mitschke et al., 2010), most participants were Japanese (22.57%). Most participants were female (51.01%). Participants' mean age was 12.6 years. Among the three studies that reported generational status (Fang & Schinke, 2013, 2014; Fang et al., 2010; Johnson et al., 2005; Lee et al., 2019; Unger et al., 2004), 74.92% reported foreign-born parents and/or children.

Table 1
Sample and Study Characteristics of the Included Studies

Author, year	Target participants (sample size)	Mage	Gender	Race/Ethnicity	Study design	Setting	Culturally Tailored (Yes/No)	Follow-up
Fang, 2010, 2013, 2014	Mother - adolescent girl dyads (*N* = 108 dyads)	12.99 (adolescent girls); 39.42 (mothers)	100% female	100% Asian	Randomized controlled trial	Web-based, across the U.S.	No	1 year, 2 years
Ferketich, 2007	Junior high school students (*N* = 51)	N/A	N/A	100% Asian (Chinese or Taiwanese)	Program development and evaluation (pre-post survey)	Urban New York City	Yes	8th grade
Johnson, 2005; Unger, 2004	Middle school students (*N* = 3,157)	11.34	51.2% female	57.6% Hispanic, 24.1% Asian American, 1.6% African American, 6.2% White, 10.5% Other/multiethnic	Randomized controlled trial (3 arms: multicultural curriculum, standard curriculum, wait-list control)	Urban Southern California	Yes	8th grade

Lee, 2019	Participants from SEAYL (a youth advisory group affiliated with local health and social service agencies; Lee et al., 2013) (*N* = 9)	15-24	50% female	Southeast Asians (Laotian, Cambodian, Hmong)	Community-based participatory research	N/A	No	N/A
Ma, 2004	Students from schools with large Asian American population (*N* = 161)	14.1	Female *(n* = 75*)*, male (*n* = 82)	41.6% Chinese, 14.3% Korean, 17.4% Vietnamese, 12.4% Cambodian, 14.3% Other	Single-arm trial	Pennsylvania, New Jersey	Yes	N/A
Mitschke, 2010	Sixth, seventh, and eighth grade students (*N* = 2,142)	12.02	48.6% female, 51.4% male	24.9% Japanese, 14.7 White, 13.8% Native Hawaiian, 11.8% Chinese, 10% Filipino, 6.9% Pacific Islander, 5.4% Korean, 9.6% Other	Program development and evaluation (pre-post survey)	Urban Honolulu	No	N/A

Note. Age ranges were reported if the average age of participants was not specified. SEAYL, Southeast Asian Young Leaders.

Study Characteristics

Table 1 also summarizes the design of the six studies under review. Two studies utilized a randomized controlled trial design (Fang & Schinke, 2013, 2014; Fang et al., 2010; Johnson et al., 2005; Unger et al., 2004). Participants in the control groups either did not receive any intervention or received their school's anti-substance use program. One study compared a culturally tailored substance use prevention program (Project FLAVOR) to a non-tailored program designed for the general population (Project CHIPS) (Johnson et al., 2005). Two studies utilized survey methods to assess students' program experiences, but did not directly assess changes in substance use-related outcomes (Ferketich et al., 2007; Mitschke et al., 2010). One study used a single-arm trial design by comparing outcomes pre- vs. post-intervention (Ma et al., 2004), and one study used a qualitative, community-based participatory research design (Lee et al., 2019). Study follow-up times ranged from six months to two years (Fang & Schinke, 2013, 2014; Ferketich et al., 2007; Johnson et al., 2005; Unger et al., 2004).

Study Quality

The National Heart, Lung, and Blood Institute Study Quality Assessment Tools (2019) were used to evaluate the presence of key internal validity concepts within the studies under consideration. Specifically, the Controlled Intervention Studies assessment was applied to assess the quality of two studies (Fang & Schinke, 2013, 2014; Fang et al., 2010; Johnson et al., 2005; Unger et al., 2004), while the Before-After (Pre-Post) Studies with No Control Group assessment was employed for the remaining four (Ferketich et al., 2007; Lee et al., 2013; Ma et al., 2004; Mitschke et al., 2010).

Table 2 summarizes the quality assessment results for two controlled intervention studies. While both controlled studies categorized their research as randomized, only one study (Fang & Schinke, 2013, 2014; Fang et al., 2010) provided details about random assignment methods and disclosed blinded assignments to the participants and assessors. Dropout rates were 20% or below in one study (Fang & Schinke, 2013, 2014; Fang et al., 2010). One study documented high adherence to program protocols (Fang & Schinke, 2013, 2014; Fang et al., 2010). Both studies reported the utilization of valid and reliable measures. Neither reported information about power analysis.

Program Characteristics

Five studies were informed by theories, including the Family Interaction Theory (Fang & Schinke, 2013, 2014; Fang et al., 2010), Social Influence Model of Prevention (Ferketich et al., 2007; Johnson et al., 2005; Unger et al., 2004), Health Belief Model (Ma et al., 2004), Theory of Reasoned Action (Ma et al., 2004), and Theory of Planned Behavior (Mitschke et al., 2010).

Table 2
Quality Assessment of Controlled Intervention Studies

Author, year	Fang, 2010; 2013; 2014	Johnson, 2005; Unger, 2004
Criteria		
Was the study described as randomized, a randomized trial, a randomized clinical trial, or an RCT?	Yes	Yes
Was the method of randomization adequate (i.e., use of randomly generated assignment)?	Yes	NR
Was the treatment allocation concealed (so that assignments could not be predicted)?	Yes	NR
Were study participants and providers blinded to treatment group assignment?	CD	NR
Were the people assessing the outcomes blinded to the participants' group assignments?	Yes	NR
Were the groups similar at baseline on important characteristics that could affect outcomes (e.g., demographics, risk factors, co-morbid conditions)?	Yes	Yes
Was the overall drop-out rate from the study at endpoint 20% or lower of the number allocated to treatment?	Yes	No
Was the differential drop-out rate (between treatment groups) at endpoint 15 percentage points or lower?	Yes	Yes
Was there high adherence to the intervention protocols for each treatment group?	Yes	NR
Were other interventions avoided or similar in the groups (e.g., similar background treatments)?	CD	CD
Were outcomes assessed using valid and reliable measures, implemented consistently across all study participants?	Yes	Yes
Did the authors report that the sample size was sufficiently large to be able to detect a difference in the main outcome between groups with at least 80% power?	NR	NR

Author, year	Fang, 2010; 2013; 2014	Johnson, 2005; Unger, 2004
Criteria		
Were outcomes reported or subgroups analyzed prespecified (i.e., identified before analyses were conducted)?	Yes	Yes
Were all randomized participants analyzed in the group to which they were originally assigned, i.e., did they use an intention-to-treat analysis?	Yes	Yes

Note. CD: cannot determine; NR: not reported.

Table 3

Quality Assessment of Before-After (Pre-Post) Studies with No Control Group

Author, year	Ferketich, 2007	Lee, 2019	Ma, 2004	Mitschke, 2010
Criteria				
Was the study question or objective clearly stated?	Yes	Yes	Yes	No
Were eligibility/selection criteria for the study population prespecified and clearly described?	Yes	Yes	Yes	No
Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Yes	No	Yes	Yes
Were all eligible participants that met the prespecified entry criteria enrolled?	Yes	Yes	Yes	NR
Was the sample size sufficiently large to provide confidence in the findings?	No	No	No	NR
Was the test/service/intervention clearly described and delivered	Yes	Yes	Yes	Yes

Author, year	Ferketich, 2007	Lee, 2019	Ma, 2004	Mitschke, 2010
Criteria				
consistently across the study population?				
Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants?	Yes	No	No	CD
Were the people assessing the outcomes blinded to the participants' exposures/interventions?	No	No	No	No
Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?	No	NR	NR	NR
Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?	Yes	No	Yes	Yes
Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?	Yes	NR	No	No
If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	No	No	NR	NR

Note. CD: cannot determine; NR: not reported.

As listed in Table 4, five of the six identified studies focused exclusively on tobacco use (Ferketich et al., 2007; Johnson et al., 2005; Lee et al., 2019; Ma et al., 2004; Mitschke et al., 2010; Unger et al., 2004), while the remaining study targeted alcohol, tobacco, and other substances (Fang & Schinke, 2013, 2014; Fang et al., 2010).

Three programs were school-based (Ferketich et al., 2007; Johnson et al., 2005; Mitschke et al., 2010; Unger et al., 2004), two were delivered in both school and community settings (Lee et al., 2019; Ma et al., 2004), and one was web-based (Fang & Schinke, 2013, 2014; Fang et al., 2010). Lessons and lectures were used in five studies (Fang & Schinke, 2013, 2014; Fang et al., 2010; Ferketich et al., 2007; Johnson et al., 2005; Lee et al., 2019; Unger et al., 2004). Other activities included optional readings for group discussion (Ferketich et al., 2007), role-playing (Johnson et al., 2005; Unger et al., 2004), and oral presentations (Lee et al., 2019).

Intervention strategies

Table 4 also lists specific intervention strategies used in the identified programs, which fall within three overall categories: psychoeducation, skills training, and photovoice.

Psychoeducation

Four studies incorporated psychoeducation strategies in their programs, with a focus on teaching the long-term and short-term consequences of substance use (Johnson et al., 2005; Ma et al., 2004; Mitschke et al., 2010; Unger et al., 2004), persuasive advertising of the tobacco industry (Ferketich et al., 2007; Ma et al., 2004), and the negative impact of smoking (Ferketich et al., 2007; Ma et al., 2004; Mitschke et al., 2010).

Three of the four studies that employed psychoeducation strategies included culturally tailored elements in their programs. These elements included emphasizing the importance of family and providing bilingual materials (Ferketich et al., 2007), incorporating the ancient Chinese philosophy of yin and yang to convey the idea that smoking disrupts the body's balance (Johnson et al., 2005; Unger et al., 2004), and using images of popular Asian figures to increase activity engagement (Ma et al., 2004). One study did not use culturally specific psychoeducation strategies. Mitschke and colleagues (2010) educated participants on the long-term and short-term consequences of tobacco use, as well as myths, images, and misconceptions surrounding tobacco use through the drama *Crossroads*, which follows the life of a student, Brent, whose life outcomes are severely impacted by cigarette smoking.

Skills training

Four studies used skills training strategies in their program, including training in parenting skills (Fang & Schinke, 2013, 2014; Fang et al., 2010), refusal/resistance skills (Ferketich et al., 2007; Johnson et al., 2005; Unger et al., 2004), general social skills (Johnson et al., 2005; Mitschke et al., 2010; Unger et al., 2004), and stress-reducing skills (Ferketich et al., 2007; Johnson et al., 2005; Unger et al., 2004).

Two studies incorporated culturally tailored skills training strategies in their programs through role-play activities and group discussions. Ferketich et al. (2007) included concepts like collectivism (i.e., sharing and prioritizing the needs and achievements of the social group before oneself; Kim et al., 2001), emotional self-control, family recognition through achievement, and humility. Project FLAVOR also integrated culturally relevant coping techniques like tai-chi to alleviate stress

related to acculturation, discrimination, and family conflicts common among AA adolescents (Johnson et al., 2005; Unger et al., 2004).

Photovoice

One study used photovoice, a participatory research method initially developed by health promotion researchers (Wang & Burris, 1997) involving participant-led photo documentation and community engagement, as an intervention strategy (Lee et al., 2019). The project encouraged adolescents to reflect on the social and environmental drivers of tobacco use behaviors in their communities through group discussions and self-assessments (Lee et al., 2013).

Program Outcomes

There is a great deal of heterogeneity in the outcomes reported because of the range of different designs that were utilized, such as RCT (Fang & Schinke, 2013, 2014; Fang et al., 2010; Johnson et al., 2005; Unger et al., 2004), single-arm trial (Ma et al., 2004), and qualitative focus group study (Lee et al., 2019), with some reporting behavioral outcomes (e.g., changes in substance use) and others reporting cognitive outcomes (e.g., changes in attitudes or knowledge). As shown in Table 4, four studies reported promising effects in improving at least one cognitive or behavioral outcome that would help prevent substance use (Fang & Schinke, 2013, 2014; Fang et al., 2010; Lee et al., 2019; Ma et al., 2004; Mitschke et al., 2010).

Cognitive outcomes

Risk perceptions, attitudes, mood, and self-efficacy were the most reported cognitive outcomes. For instance, one study of a dyadic mother-daughter program found that participants in the intervention group reported higher mother-daughter closeness and, consequently, less depression in daughters compared to those in the control group (Fang & Schinke, 2013). Ma and colleagues (2004) discovered that after implementing their program, participants had a greater awareness of the link between tobacco use and health diseases, resulting in a better understanding of risk perception.

Another study utilized a play focused on the themes of self-efficacy and the short- and long-term consequences of tobacco use, after which adolescents were more likely to understand smoking-related concepts (e.g., addiction and the effects of secondhand smoke) (Mitschke et al., 2010). In a study of a community-based photovoice program, adolescents reported increased awareness of environmental factors that impact substance use, such as the lack of no-smoking signs and the effects of littering on the school's perception of the community (Lee et al., 2019).

Behavioral outcomes

The most common behavioral outcome was the initiation and frequency of substance use. Fang and Schinke (2013) found that mothers receiving the intervention exerted more parental monitoring and rules, as well as better parent-child communication, which assisted in developing greater refusal skills, lower substance use intention, and fewer instances of substance use among daughters in the intervention group compared to the control group. Ferketich and colleagues' (2007) post-program survey results demonstrated that their psychoeducational program resulted in greater knowledge about tobacco and its harm, which were related to lower odds of ever smoking, though results concerning intention to smoke were mixed. Project FLAVOR did not show promising effects in reducing smoking initiation and use in AA adolescents; however, the standard

Table 4
Program characteristics

Author, year	Targeted substances	Intervention	Control	Intervention Components	Intervention Effectiveness
Fang, 2010, 2013, 2014	• Alcohol • Cigarettes • Marijuana • Prescription drugs for nonmedical purpose	Computer/online modules 9 sessions, 35-45 mins each, 1x/week	No intervention	Session topics: • Mother-daughter relationships • Conflict, mood, & stress management • SU opportunities • Body image • Problem-solving • Social influences • Self-efficacy Activities: • Quizzes • Interactive games • Roleplay	• Intervention group demonstrated improvements in mother-daughter closeness, mother-daughter communication, maternal monitoring, parental rules regarding SU, self-efficacy, refusal skills; lower intentions of future SU; fewer instances of using alcohol, marijuana, and prescription drugs for nonmedical purposes at 2-year follow-up, relative to control group • No significant effects were found for depressive mood, body image, SU normative beliefs, nor cigarette use
Ferketich, 2007	Tobacco	Group lectures, videos, demonstrations, and group discussions delivered in English and/or Mandarin 7 sessions, 40 mins each, every 2-3 weeks in 7th grade;	N/A	Session topics: • Tobacco basics • Tobacco and health • Alternatives to smoking • Skill building • Youth smoking • Tobacco marketing Activities: • Discussions	• Primary outcomes were intentions to smoke in the next year, intentions to smoke under peer influence, and perceptions of tobacco companies • Intervention effectiveness cannot be determined; no significance testing was performed due to a low response rate

Author, year	Targeted substances	Intervention	Control	Intervention Components	Intervention Effectiveness
		booster session in 8th grade		• Skits • Writing contest	
Johnson, 2005; Unger, 2004	Tobacco	Project FLAVOR: activities addressing smoking-related psychosocial issues, incorporating Hispanic and Asian cultural values 8 sessions, duration not mentioned	Received school's anti-tobacco program and non-tailored intervention (Project CHIPS)	Session topics: • Health • Smoking-related social norms • Coping skills • Refusal skills • Consequences of smoking • Stress management Activities: • Games • Exercises	At 2-year follow-up: • Project FLAVOR (multicultural curriculum) was associated with lower risk of smoking initiation between 6th and 8th grades relative to control group • Among Hispanic students in predominantly Hispanic schools, the multicultural curriculum was effective, but not the standard curriculum • Among the Asian students in Asian/multiethnic schools, the standard curriculum was effective, but not the multicultural curriculum
Lee, 2019	Tobacco	Participants documented tobacco advertising, sales, and usage around high schools and different communities	N/A	Training: • Photography techniques • Photovoice • SHOWeD framework Activities: • Photography sessions • Discussions and reflections	Thematic content analysis of qualitative data (i.e., focus group interviews) suggested: • Increased awareness of community change, social health inequities, appreciation for community • Increased skills (critical thinking, perspective-taking)

Author, year	Targeted substances	Intervention	Control	Intervention Components	Intervention Effectiveness
		6 weeks, 30-45 m discussion groups, 1x/week		• Oral presentations	
Ma, 2004	Tobacco	Youth-PASS: education on dangers of tobacco and the industry's targeting of Asian adults and youths 4 sessions	N/A	Session topics: • Hazardous effects of tobacco and addiction • Health consequences of smoking and secondhand smoke • Hidden cost of smoking • Tobacco industry marketing Activities • Learning activities • Presentations	At posttest as compared to baseline: • Significant increase in knowledge change (e.g., awareness of smoking-related health consequences, understanding the similarities between chemicals in tobacco and insecticides) • Significant increase in attitude score (i.e., increase in negative attitudes and decrease in positive attitudes towards smoking)
Mitschke, 2010	Tobacco	*Crossroads*: a play addressing tobacco use Duration not mentioned	N/A	Activities: Watched *Crossroads*	At post-test as compared to baseline: • Significant increase in understanding of the concept of addiction • Significant increase in knowledge of addiction onset and secondhand smoke • Significant decrease in future intention to smoke

Note. SU, substance use. All results of intervention effectiveness were taken directly from the reviewed articles

curriculum (Project CHIPS) was more effective in reducing smoking initiation and use in AA adolescents compared to the control (Johnson et al., 2005; Unger et al., 2004).

Discussion

This systematic review summarized existing substance use prevention programs for AA adolescents. In total, nine articles reporting results from six prevention programs were identified. Four of these six prevention programs demonstrated promising program outcomes in preventing substance use. Notably, five of the six programs identified in this review were tobacco-focused. Findings from this review highlight critical research gaps in AA adolescent substance use prevention and suggest key areas that require further research.

First, the small number of studies and AA participants in AA-specific studies identified in this systematic review highlights the need for more research on effective substance use prevention targeting AA adolescents. AAs are a diverse group with roots from over 20 countries, each with unique histories, cultures, and languages. From the six identified studies, East Asians (Japanese, Chinese, and Taiwanese) were most represented, suggesting more substance use prevention research is needed for other AA subgroups. Although epidemiological studies documented an overall lower prevalence of substance use in AA communities compared to other racial/ethnic groups (Swaminath et al., 2023; Terry-McElrath & Patrick, 2020), prevalence may be underestimated because data from various Asian subgroups are aggregated, and AA populations are typically undersampled in national studies. More within-group (vs. between-group) studies are needed, both to accurately estimate substance use (Kane et al., 2017; Mukherjea et al., 2014) and to investigate substance use prevention efforts in AA subpopulations (Hong et al., 2011; Islam et al., 2010). The substantial limitations in research methods and funding pertaining to AA substance use hinders the advancement of substance use prevention in this community (Choi et al., 2023; Subica et al., 2024).

Second, more high-quality studies in this area are needed. Optimal criteria (e.g., reduction in use or harm) to determine the effectiveness of substance use prevention programs have been widely debated (Midford, 2010). The identified studies varied greatly in study quality and their reporting. Future studies should utilize objective measures and checklists (e.g., APA Journal Article Reporting Standards, CONSORT) to avoid biases in assessing program effectiveness (Beelmann et al., 2018; Gandhi et al., 2007). Randomized controlled trials are the gold standard, and having more trials using this design would allow researchers to conduct meta-analyses to assess whether specific program characteristics and strategies (such as skills training and psychoeducation, the most used strategies in the studies under review) are more efficacious.

Third, more research is needed to determine whether culturally-tailored programs are necessary for AA adolescents and, if so, what kinds of tailoring may enhance intervention effectiveness. In this review, we identified three programs that were culturally tailored for AA adolescents and three that were not. One of the three culturally-tailored studies showed improvements in substance use outcomes. In contrast, all three of the non-culturally-tailored studies demonstrated improvements. It is important to note, however, that heterogeneity in study design and quality and the resultant inability to conduct a meta-analysis makes it impossible to ascertain whether cultural tailoring was associated with intervention efficacy. Standardized and

consistent reporting definitions and standards are necessary to accurately evaluate culturally- adapted interventions (Harrington & Noar, 2012; Kim et al., 2022). For example, "deep" adaptations that go beyond surface-level changes — e.g., including parents in a program (Fang et al., 2011) given the significance of family caregivers in AA cultures (Hoang & Kirby, 2020) — may be more important for efficacy than surface-level changes (Resnicow et al., 2000).

Successful interventions culturally tailored for other racial groups have incorporated elements that encourage ethnic and cultural socialization and empowerment (Bo et al., 2023). Prior literature has highlighted positive family communication, anti-substance use messaging from family and peers, acculturation level, and religiosity as examples of protective factors against substance use for AA adolescents (Hai et al., 2021; Trucco et al., 2023; Wilhelm et al., 2023). Leveraging culturally consonant and protective values that emphasize respect, obedience, and collectivism may be particularly useful, considering the influence family dynamics and acculturation have on AA adolescent substance use (Trucco et al., 2023).

Fourth, future intervention developers should consider recent technological changes that may affect intervention content and delivery. Only one program in this review was web-based (Fang & Schinke, 2013, 2014; Fang et al., 2010), and it showed promising results in reducing substance use intention and instances in AA adolescents. More web-based substance-use prevention programs for AA adolescents are encouraged given the high prevalence of gaming and technology use among AA adolescents and its link to increased substance use (Garakani et al., 2021), as well as the overall high implementation fidelity and greater accessibility of web formats (Champion et al., 2013). Other promising avenues include virtual reality, as well as social media- and game-based programs, but further research is warranted (Monarque et al., 2023).

Relatedly, no prevention programs under review specifically targeted newer emerging substances (e.g., e-cigarettes). Five of the six studies in this review were conducted at least 15 years ago and do not reflect the current landscape of AA adolescent substance use. E-cigarette use has been on the rise, with 3.5% to 19.1% of AA youth aged 11 to 19 reporting having used them, and 10.6% engaging in dual e-cigarette and traditional cigarette use (Shi et al., 2020). One study disaggregating e-cigarette use by AA ethnic groups found that Laotian, multi-racial, Korean, and Filipino adolescents report the highest use levels (Wilhelm et al., 2023). AA youth may switch to e-cigarettes to quit smoking traditional cigarettes under the belief that e-cigarettes pose a lower risk of harm (Maglalang et al., 2016; Wills et al., 2015), highlighting the critical need for early prevention. E-cigarette use among AA youth also need to be tackled from a macro-level given the popularity of vape shops near public schools in neighborhoods with high Asian and Black populations (Venugopal et al., 2020). Prevention efforts should recognize and address AA adolescents' misconceptions about the risks of using e-cigarettes by educating them about the negative health implications of short- and long-term substance use.

Limitations

Our study has several important limitations. First, we did not conduct a meta-analysis due to the small number of studies, limited RCT study designs, and heterogeneity of outcomes, underscoring the need for future prevention program trials to adhere to standard reporting guidelines to allow for the effective synthesis of evidence (Montgomery et al., 2018). Second, although

three programs (Ferketich et al., 2007; Lee et al., 2019; Ma et al., 2004) shed light on the influence of policy-level factors in how adolescents understand structural issues, our review focused solely on prevention programs designed to effect individual behavior change. Third, five out of the six prevention programs identified targeted tobacco, highlighting the need for more studies focused on other substances. Fourth, the underrepresentation of Asian American participants (39% of the sample) and the lack of subgroup-specific outcomes, except in studies by Johnson and colleagues (2005) and Unger and colleagues (2004), limit conclusions about program effectiveness for this population. Lastly, as with any systematic review research, the evaluation procedure for studies that match our inclusion criteria is subjective. Therefore, eligible studies may not have been identified.

Implications for Health Behavior Research

The term "Asian American" encompasses a wide range of cultures, emphasizing the importance of considering the diaspora of Asian culture when developing substance use prevention programs. Substance use prevention programs, especially when they integrate psychoeducation and skills training, have the potential to improve AA adolescents' substance-related outcomes. Suggestions to target culture-related risk and protective factors in designing culturally-tailored prevention programs may facilitate treatment among AA groups given this group's ethnic and linguistic diversity. With the rise of new emerging substances, future substance use prevention initiatives must recognize and address how these substances can affect AA adolescents.

Discussion Question

The findings of this review have direct implications on future substance use prevention research for AA adolescents. Given the unique sociocultural influences AA adolescents face, what considerations should be taken when developing substance use prevention programs for this population?

Author contributions

WL conceived the research idea and study design. WL, MC, and JL conducted the literature search, screened and selected eligible studies, extracted data from reviewed articles, and drafted the manuscript. FL provided critical review to the manuscript. All authors contributed to and agreed upon the final version of the manuscript.

Conflict of interest statement

The authors report no relevant financial or non-financial conflicts of interest to disclose. Some preliminary findings of the systematic review were presented at the 2022 Society of Behavioral Medicine Annual Meeting & Scientific Sessions, Baltimore, Maryland, United States.

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Appendix A

Search strategy

("Substance-Related Disorders" OR alcoholism OR smoking OR marijuana OR tobacco OR cocaine OR heroin OR addiction OR addicted OR painkillers OR "prescription medication" OR "prescription medications") AND (adolescents OR adolescence OR teens OR teenagers OR teenager OR youth) AND ("Asian American" OR "Asian Americans" OR "Cambodian American" OR "Cambodian Americans" OR "Chinese American" OR "Chinese Americans" OR "Filipino American" OR "Filipino Americans" OR "Filipina American" OR "Filipina Americans" OR Filipinx OR "Hmong American" OR "Hmong Americans" OR "Japanese American" OR "Japanese Americans" OR "Korean American" OR "Korean Americans" OR "Taiwanese American" OR "Taiwanese Americans" OR "Thai American" OR "Thai Americans" OR "Vietnamese American" OR "Vietnamese Americans") AND (prevent OR prevention OR control OR intervention OR intervene OR program)