

The impacts of alcohol marketing and advertising, and the alcohol industry's views on marketing regulations: Systematic reviews of systematic reviews

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Abstract

Issues: Advertising and marketing affect alcohol use; however, no single systematic review has covered all aspects of how they affect alcohol use, and how the alcohol industry views alcohol marketing restrictions.

Approach: Two systematic reviews of reviews were performed according to the Preferred Reporting Items on 2 February 2023. Results were analysed using a narrative synthesis approach.

Key Findings: Twenty-three reviews were included in the systematic reviews. The first systematic review examined youth and adolescents (11 reviews), digital or internet marketing (3 reviews), alcohol marketing's impact on cognition (3 reviews), and alcohol marketing and policy options (2 reviews). The second systematic review focused on alcohol industry (i.e., importers, producers, distributors, retailers and advertising firms) response to advertising restrictions (four reviews). The reviews indicated that there is evidence that alcohol marketing (including digital marketing) is associated with increased intentions to drink, levels of consumption and harmful drinking among youth and young adults. Studies on cognition indicate that advertisements focusing on appealing contexts and outcomes may be more readily accepted by adolescents, and may be less easily extinguished in this population. The review of the alcohol industry found a strong desire to self-regulate alcohol advertising.

Implications: We found alcohol advertising and marketing is associated with increased drinking intentions, consumption and harmful drinking. Thus, policies which restrict advertising may be an effective way to reduce alcohol use.

Conclusion: More research is needed to assess all aspects of the observed associations, especially as to how marketing policies impact women and people with alcohol dependence.

KEYWORDS

advertising, alcohol, marketing, policy, systematic review

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1 | INTRODUCTION

Alcohol use causes an estimated 3 million deaths each year [1]. There are many proximal and distal factors that contribute to the initiation of alcohol consumption, drinking among under-age youth, and drinking among other sectors of a population [2, 3]. International evidence has demonstrated that alcohol pricing (including taxation), physical availability and advertising and marketing are the some of the most important factors which affect alcohol use [4–6]. In particular, the marketing (i.e., identifying or creating, predicting and meeting customer needs) and, specifically, the advertising (i.e., placing messaging or branding in a particular location) of alcoholic beverages play key roles in informing potential consumers and/or current consumers about where and what alcohol is available, why they should obtain it, what the price is and what benefits consuming alcohol will provide [7]. Thus, alcohol marketing and advertising play critical roles in linking the consumer to the product, normalising alcohol use and introducing alcohol to new consumers and new geographic regions [5].

There are multiple systematic reviews on the evidence of how advertising and marketing affect alcohol use [8–30]. For example, systematic reviews have found that exposure to alcohol advertisements increases overall and immediate alcohol consumption [12, 19, 31]. Additionally, studies of the impact of alcohol advertising on youths have found advertising increases the number of adolescents who start to use alcohol, and alcohol consumption among adolescents who drink [10]. However, these reviews are limited as no single review assesses all aspects of how advertising and marketing affect alcohol use. Furthermore, a review of systematic reviews on how advertising and marketing impact alcohol use has not been performed. Also, this research area continues to grow as the modes and avenues of alcohol production expand and evolve to cover the multitude of alcohol promotion mediums: TV and radio advertisements; wine columns and cooking shows; advertisements in newspapers and magazines; billboards and ads on public transit vehicles; various types of social media; alcohol ads in shop windows and in bars; various sponsorships by alcohol producers or retailers; and the depiction of alcohol use in TV shows and movies, including streaming services.

Accordingly, the aim of the present study is to conduct a systematic review of systematic reviews to provide a high-level snapshot of: (i) what is known about the association between alcohol marketing and alcohol use; and (ii) what is known about the alcohol industry's (i.e., importers, producers, distributors, retailers and advertising firms) views on marketing restrictions.

2 | METHODS

The systematic reviews were performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis [32] and the Cochrane Handbook for Systematic Reviews of Interventions [33]. The two systematic reviews were performed in unison. The systematic search strategy included terms covering alcohol marketing and advertising and systematic reviews. A search of Pubmed (Inception: 1996), PsycINFO (Inception: 1967), Embase (Inception: 1947), Web of Science (Inception: 1997) and Scopus (Inception: 2004) from the inception of the search engine was performed on 2 February 2023. A sample of the systematic search strategy can be found in Data S1, Supporting Information. Similar terms and strategies were used for all databases.

Studies were eligible for inclusion in the study if they presented a systematic review of the literature, were published in peer-reviewed journals, were written in English, Spanish or Portuguese (which could be translated by a co-author). For both systematic reviews, inclusion criteria and exclusion criteria were based on a population, intervention, comparator and outcome framework. For the first systematic review, inclusion criteria were based on the intervention (i.e., reporting information related to alcohol marketing and/or advertising), outcome (i.e., consequences of alcohol marketing and advertisement) and study design (i.e., systematic review of primary research studies). Studies were excluded if they focused solely on counter-advertising, health messages or control of alcohol marketing. No inclusion or exclusion criteria based on population or controls were utilised.

For the second systematic review, inclusion criteria were based on the intervention, (i.e., reporting information related to alcohol marketing and/or advertising), outcome (i.e., industries views and/or practices) and study design (i.e., systematic review of primary research studies). Studies were excluded if they focused solely on counter-advertising or health messages. No inclusion or exclusion criteria based on population or controls were utilised.

Two reviewers (Emilene Reisdorfer and Norman Giesbrecht) screened titles and abstracts and decided whether to include or exclude studies. Full-texts were obtained and were independently reviewed by Emilene Reisdorfer and Norman Giesbrecht. Studies that did not meet inclusion criteria were excluded. During data extraction, all three authors identified studies to be excluded. Finally, reference lists of remaining studies were hand-searched for additional studies. Additionally, the references cited by Babor et al. in their non-systematic review of the effects of alcohol advertising and marketing policies on alcohol use (namely, Chapter 9 of the book *Alcohol: No Ordinary Commodity*) were searched for relevant systematic reviews [5].

Two reviewers (Emilene Reisdorfer and Kevin Shield) conducted the data extraction. The following information was extracted from all studies: author, year, title, focus of review, inclusion criteria, number of studies included, range of years, types of alcohol marketing, population, types of analyses, main findings, design and quality of original studies. Quality assessment was performed using the A Measurement Tool to Assess systematic Reviews (AMSTAR) version 2 assessment [34]. To assess agreement between reviewers, two reviewers (Emilene Reisdorfer and Norman Giesbrecht) extracted data from three studies and the findings were similar.

A narrative synthesis was used to analyse the results of the included reviews. After all data were extracted from the reviews, two reviewers (Emilene Reisdorfer and Norman Giesbrecht) performed a thematic meta-analysis to identify descriptive themes [35]. Each extracted analysis (outcome compared across exposures) was grouped by the two reviewers by looking at similarities and differences between analyses, allowing for grouping of analyses into domains.

The following areas of interest emerged from the thematic analysis: alcohol marketing and adolescent drinking; alcohol marketing's impact on cognition; digital alcohol marketing and alcohol use; alcohol marketing and policy options and the alcohol industry and alcohol marketing. After the themes were identified the narrative synthesis was performed in accordance with the guidance of Popay et al., by performing a primary synthesis of the results, exploring relationships in the data (i.e., assessing how alcohol and marketing are related to alcohol use) and then assessing the robustness of the synthesis [36]. The systematic review was performed using Covidence, a web-based literature review management program. The systematic review was not pre-registered.

3 | RESULTS

Twenty-three published reviews were located that met the inclusion criteria and data extraction was completed on the full manuscripts (see Figure 1). While there is some potential overlap, the results of the 23 studies were organised into five groups based on their main foci: youth and adolescents (11 reviews), digital or internet marketing (3 reviews), alcohol marketing and marketing's impact on cognition (3 reviews), alcohol marketing and policy options (2 reviews), and the alcohol industry's views on alcohol marketing (4 reviews). There was substantial variation in the goals and inclusion criteria, as well as the number of original studies included in a review (see Table 1). Most of the reviews included a narrative synthesis of their findings. Four reviews did not

note any limitations. The reviews were assessed according to AMSTAR 2 criteria. The results indicate that two scored high, five moderate, nine low and seven critically low (see Table 1).

3.1 | Alcohol marketing and adolescent drinking

Hastings et al. examined 60 publications between 1980 and 2005, focusing on adolescents and young adults [8]. Hastings et al. provided summary text instead of tabular analysis [8], and considered both econometric studies and consumer studies (i.e., studies of how drinkers' knowledge, attitudes and behaviours vary with exposure to alcohol advertising). While the economic studies showed little effect, more focused studies with sophisticated designs showed clear associations between advertising and behaviour. Consumer studies suggested that, among youth, instore advertising and advertising in magazines and beer concession stands at sports or music events were related to younger onset of drinking, increased frequency of drinking, more positive attitudes towards alcohol and positive beliefs about drinking. Conflicting results were found on the effects of exposure to television advertising and drinking initiation, with non-significant results found in one study and a significant relationship between exposure to television advertising and drinking initiation found in another study.

Pinsky et al. examined 85 original articles [9]. This review indicated that factors such as exposure to advertising and attractiveness of alcoholic beverage advertising were related to greater expectations of future consumption and higher consumption of alcohol, especially among adolescents and young adults.

Anderson et al. conducted a systematic review of 16 publications based on 13 longitudinal studies, with data collected between 1985 and 2005 [10]. Their focus was on youth aged 18 and younger and aged 21 and younger in US-based studies. In 12 of the studies, evidence was found that adolescent exposure to alcohol advertising and promotion predicted both the onset of drinking among non-drinkers and increased levels of consumption among existing drinkers. They concluded that alcohol advertising, among other factors, encourages drinking among youth.

Nine prospective cohort studies were the focus of Smith and Foxcroft's systematic review [11]. The examined studies included a wide range of media and promotional material. The combined studies included 13,000 participants and showed some evidence of an association between prior exposure to alcohol advertising and marketing and subsequent alcohol consumption behaviour among youth. The studies showed significant effects across

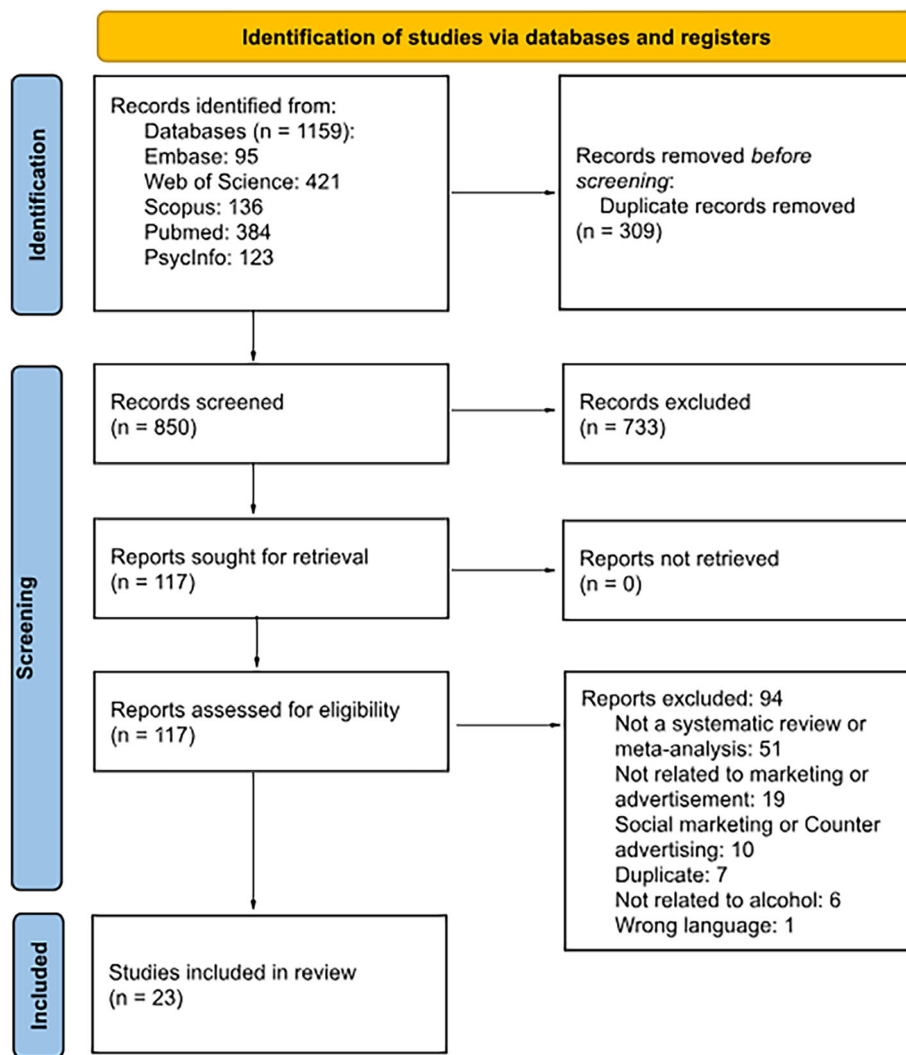


FIGURE 1 Identification of studies, screening and inclusion.

a range of different exposure variables, and noted that the consistency of an effect across a heterogeneous group of studies may be considered a strength.

Following on Anderson et al. [10], noted above, Jernigan et al. [12] conducted a systematic review of longitudinal studies published since 2008. Twelve studies published between 2009 and 2016 were included. The authors provided a tabular analysis of these studies, and reported that for all 12 studies, there were significant associations between exposure to, awareness of, engagement with and/or receptivity to alcohol marketing at baseline and initiation of alcohol use, initiation of binge drinking, drinking in the previous 30 days and/or alcohol consumption problems at follow-up. The authors also noted that evidence was stronger for initiation of binge drinking or participation in binge or hazardous drinking at follow-up than for initiation of alcohol use. Their review found evidence of an association between marketing exposure and youth drinking behaviours in multiple

population groups, cultures and nationalities among a range of younger age groups, and using an array of different measurement methods. A similar general conclusion was drawn by Stockings et al., noting that consistent evidence showed that high exposure to alcohol advertising predicts drinking initiation and increased drinking in young people [37].

Berey assessed the myriad influences of advertising on adolescent drinking, examining TV, magazine and print and digital social media [13]. Nine studies, from 2008 to 2016, focused on potential mechanisms between alcohol advertising and adolescent drinking. They noted that alcohol advertising appears to influence adolescents' attitudes towards alcohol, increase positive expectations regarding alcohol, and make alcohol use appear more normative.

Jiang et al. examined alcohol use and harms among young people in Asian countries [15]. Based on 41 studies, they concluded that initiation of youth drinking and risky patterns of drinking were affected by exposure to alcohol

TABLE 1 Summary of the studies included in the reviews.

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Hastings et al (2005)	This paper presents a review of the literature showing that, while many econometric studies suggest little effect, more focused consumer studies, especially recent ones with sophisticated designs, do show clear links between advertising and behaviour.	Not stated	NA	NA	Qualitative synthesis	Furthermore, these effects have to be viewed in combination with the possible impact of other marketing activities such as price promotions, distribution, point of sale activity and new product development. Here, the evidence base is less well developed, but there are indications of effects. It must be acknowledged that categorical statements of cause and effect are always difficult in the social sciences; marketing is a complex phenomenon involving the active participation of consumers as well as marketers, and more research is needed on its cumulative impact. Nonetheless, the literature presents an increasingly compelling picture that alcohol marketing is having an effect.	Critically low
Gupta et al (2006)	To conduct a systematic review of studies exploring the relationship between exposure to Internet-based alcohol-related content and alcohol use among young people.	Inception to 2015	Medline, Embase, PsycINFO, Scopus, CINAHL Plus and Sociological abstracts	15	Qualitative synthesis	This systematic review found that exposure to Internet-based alcohol-related content was consistently associated with young people's alcohol use. The included studies employed various study designs and a range of exposure and outcome measures. Overall, the findings suggest that exposure to alcohol-related content in online environments predisposes young Internet users to pro-alcohol discourses and constitutes an active and continuous conduit	Low

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Pinsky et al (2008)	The aim of this article is to provide an update on international studies on alcohol advertising.	1990–2008	Medline, SciELO, PsycINFO, Google Scholar	109	Qualitative synthesis	for the flow of apparently enjoyable peer-to-peer transmissions of marketers' messages. The overall set of papers indicate that factors such as exposition to the advertising and attractiveness of the alcoholic beverage advertising are related with greater expectation of future consumption and with a higher and precocious consumption of alcohol, especially among adolescents and young adults. Despite methodological difficulties, recent econometrical studies indicate that reduction and/or banishment of advertising would decrease alcohol consumption. We also consider issues about the neurophysiology of decision-making process and the freedom of choice in the context of exposition to advertisements.	Critically low
Anderson et al (2009)	To assess the impact of alcohol advertising and media exposure on future adolescent alcohol use	January 1990 to September 2008	Sociological abstracts and PsychLIT	13	Narrative synthesis	Twelve of the 13 studies found evidence that adolescent exposure to alcohol advertising and promotion predicts both the onset of drinking among non-drinkers and increased levels of consumption among existing drinkers. Seven of the eight studies that measured the dose-response relationship between level of exposure and initiation of drinking.	

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Smith and Foxcroft (2009)	We evaluated the relationship between exposure to alcohol advertising, marketing and portrayal on subsequent drinking behaviour in young people by systematic review of cohort (longitudinal) studies.	Inception to 2006	Medline and Embase	9	Narrative review	<p>Seven of the eight studies that measured the dose-response relationship between level of exposure and initiation of drinking.</p> <p>Twelve of the 13 studies found evidence that adolescent exposure to alcohol advertising and promotion predicts both the onset of drinking among non-drinkers and increased levels of consumption among existing drinkers.</p> <p>Seven of the eight studies that measured the dose-response relationship between the level of exposure and initiation of drinking.</p> <p>Baseline non-drinkers were significantly more likely to have become a drinker at follow-up with greater exposure to alcohol advertisements. There was little difference in drinking frequency at follow-up in baseline drinkers.</p> <p>In studies that included drinkers and non-drinkers, increased exposure at baseline led to a significantly increased risk of drinking at follow-up. The strength of the relationship varied between studies, but effect sizes were generally modest. All studies controlled for age and gender; however, potential confounding factors adjusted for in analyses varied from study to</p>	

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Vendrame et al (2011)	We examined in this review all articles on the subject of industry self-regulation of alcohol advertising published in the international literature.	1991–2010	Medline, SciELO, Camy and Google Scholar	11	Qualitative synthesis	<p>study. Important risk factors such as peer drinking and parental attitudes and behaviour were not adequately accounted for in some studies.</p> <p>Studies from five different countries showed that the control of the content and frequency of alcohol advertising by the group of advertising producers itself gives rise to subjective interpretations and fails in its objective of protecting vulnerable audiences, as well as avoiding messages that encourage the consumption of irresponsible and excessive use of alcohol.</p>	Low
Bryden et al (2012)	To describe how community-level availability and marketing of alcohol influence alcohol use and the strength of any associations	Inception to 22 October 2010	Medline, Web of Science, IBSS and PsycINFO	7	Narrative synthesis	<p>Two of the three studies found that exterior advertising was significantly associated with an increase in alcohol use.</p> <p>The systematic review of the association of indoor advertising and alcohol use resulted in mixed results. One study found no association between indoor advertising on alcohol use. One study found that absence on indoor advertising was significantly associated with less binge drinking. One study found indoor advertising was significantly associated with increased alcohol use but not the frequency of alcohol use. One study found that indoor advertising was associated with</p>	Critically low

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Brown (2016)	We review evidence on the relationship between exposure to alcohol sports sponsorship and alcohol consumption.	Inception to June 2015	PubMed, Cochrane Library, Google Scholar and International Alcohol Information Database	7	Narrative review	ever having an alcoholic beverage but not alcohol use. All studies report positive associations between exposure to alcohol sports sponsorship and self-reported alcohol consumption, but the statistical significance of results varies. Two studies found indirect exposure to alcohol sports sponsorship was associated with increased levels of drinking among schoolchildren, and five studies found a positive association between direct alcohol sports sponsorship and hazardous drinking among adult sportspeople.	Low
Buyucek et al (2016)	To establish the extent different groups of stakeholders are used in social marketing interventions aiming to minimise harm from alcohol consumption	January 2000 to May 2015	EBSCO, Emerald, Ovid (All databases), ProQuest Central, Scencedirect, Taylor and Francis and Web of Science	54 (23 studies)	Narrative synthesis	The number of stakeholders was greatest in more complex community settings when compared to more narrow settings such as universities and schools. Limited stakeholder involvement in social marketing interventions limits their potential. The limited stakeholder involvement was identified in the current review, the use of a broader array of stakeholders in formative research and evaluation is recommended to optimise behavioural outcomes.	Moderate

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Noel et al (2016)	This paper provides a systematic review of studies investigating the content of, and exposure to, alcohol marketing in relation to self-regulated guidelines.	No date restrictions	SCOPUS, Web of Science (WOS), PubMed and PsycINFO	96	Narrative review	Of the 19 studies evaluating a specific marketing code and 25 content analysis studies reviewed, all detected content that could be considered potentially harmful to children and adolescents, including themes that appeal strongly to young men. Of the 57 studies of alcohol advertising exposure, high levels of youth exposure and high awareness of alcohol advertising were found for television, radio, print, digital and outdoor advertisements. Youth exposure to alcohol advertising has increased over time, even as greater compliance with exposure thresholds has been documented.	Moderate
Noel and Babor (2016)	This paper critically reviews research designed to evaluate the effectiveness of the alcohol industry's compliance procedures to manage complaints when alcohol marketing is considered to have violated a self-regulatory code.	No date restrictions	PubMed, SCOPUS, PsychINFO and CINAHL	31	Narrative synthesis	The evidence indicates that the complaint process lacks standardisation across countries, industry adjudicators may be trained inadequately or biased and few complaints are upheld against advertisements pre-determined to contain violations of a self-regulatory code. The current alcohol industry marketing complaint process used in a wide variety of countries may be ineffective at removing potentially harmful content from the marketplace. The process of determining the validity of complaints employed by most industry groups appears	Low

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Savell et al (2016)	To systematically review, using a qualitative, narrative synthesis approach, papers examining alcohol industry efforts to influence alcohol marketing policy, and compare with those used by the tobacco industry.	1990–2013	Web of Knowledge (which includes Web of Science, BIOSIS Previews and MEDLINE), Business Source Premier and Embase	17	Narrative synthesis	<p>to suffer from serious conflict of interest and procedural weaknesses that could compromise objective adjudication of even well-documented complaints. In our opinion the current system of self-regulation needs major modifications if it is to serve public health objectives, and more systematic evaluations of the complaint process are needed.</p> <p>This review identified 20 separate tactics falling under 5 main strategies which we have termed as follows: ‘information’ (providing or misrepresenting evidence), ‘constituency building’ (forming alliances with other sectors, organisations, or the public to give the impression of larger support for the industry’s position), ‘policy substitution, development and implementation’ (proposing, supporting or helping to implement alternative policies), ‘legal’ (using the legal system) and ‘financial incentive or disincentive’ (offering direct or indirect monetary incentives or threatening financial withdrawal).</p>	Critically low

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Stautz (2016)	This systematic review aimed to assess immediate effects of exposure to alcohol marketing on alcoholic beverage consumption and related cognitions.	Inception to 2015	MEDLINE, EMBASE, PsycInfo, ASSIA, Science Citation Index Expanded, Social Sciences Citation Index, and Econlit and two grey literature databases (CPCI—Science and CPCI—Social Science and Humanities)	24	Qualitative synthesis	Twenty-four studies met the eligibility criteria. A meta-analysis integrating seven studies found that viewing alcohol advertisements increased immediate alcohol consumption relative to viewing non-alcohol advertisements. A meta-analysis integrating six studies did not find that viewing alcohol portrayals in television programs or films increased consumption. Meta-analyses of secondary outcome data found that exposure to alcohol portrayals increased explicit alcohol-related cognitions but did not find that exposure to alcohol advertisements influenced explicit or implicit alcohol-related cognitions. Confidence in results is diminished by underpowered analyses and unclear risk of bias.	Low
Berey et al (2017)	To summarise the evidence on the association between alcohol advertising and adolescent drinking	Not stated	NA	NA	Narrative synthesis	Nine studies, from 2008 to 2016, focused on potential mechanisms between alcohol advertising and adolescent drinking. They noted that alcohol advertising appears to influence adolescents' attitudes towards alcohol, increase positive expectations regarding alcohol, and make alcohol use appear more normative.	High

T A B L E 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Jernigan et al (2017)	The purpose of this review was to review and summarise longitudinal research published since 2008 to inform current debates regarding regulation of commercial alcohol marketing activities.	2008–2016	MEDLINE (PubMed), Web of Science, CINAHL and PsycINFO	12	Narrative synthesis	This review has identified 12 longitudinal studies published since 2008 containing original data from 9 cohorts not reported on previously regarding children and young people’s exposure to alcohol marketing and their consumption of alcohol. All found positive associations between exposure to marketing and some measure of subsequent drinking behaviour and/or negative consequences of drinking.	Critically low
Noel et al (2017)	A systematic review was conducted to examine studies of associations between exposure to digital alcohol marketing and alcohol consumption.	1969–2018	Cochrane Central Register of Controlled Trials (CENTRAL) (1992 to 14 February 2017); MEDLINE via Ovid (1946 to 14 February 2017); Embase via Elsevier (1947 to 14 February 2017); Web of Science (1900 to 14 February 2017) and CINAHL via EBSCO (1981 to 14 February 2017); PsycINFO via EBSCO (1806 to 14 February 2017); Communication & Mass Media Complete via EBSCO (1918 to 14 February 2017); Econlit via Proquest (1969 to 14 February 2017).	25	Qualitative synthesis	There was a consistent finding across studies that participation and engagement with digital alcohol marketing—such as clicking on an alcohol ad, visiting an alcohol-branded website, liking or sharing an ad on social media, or downloading alcohol-branded content—was positively associated with alcohol use. The effects of simple exposure to digital alcohol advertising were inconclusive. Proper blinding of subjects, measuring exposures before the outcomes, and measuring the exposures multiple times would improve study quality.	Critically low

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Scott (2017)	To systematically review evidence on the influence of specific marketing components (Price, Promotion, Product attributes and Place of sale/availability) on key drinking outcomes (initiation, continuation, frequency and intensity) in young people aged 9–17.	Inception to July 2015	MEDLINE, EMBASE, SCOPUS, PsychINFO, CINAHL and ProQuest databases (including CSA Illumina)	48	Narrative synthesis	Authors tended to report that greater exposure to alcohol marketing impacted on drinking initiation, continuation, frequency and intensity during adolescence. Nevertheless, 23 (66%) studies reported null results or negative associations, often in combination with positive associations, resulting in mixed findings within and across studies. Heterogeneity in study design, content and outcomes prevented estimation of effect sizes or exploration of variation between countries or age subgroups. The strength of the evidence base differed according to type of marketing exposure and drinking outcome studied, with support for an association between alcohol promotion (mainly advertising) and drinking outcomes in adolescence, while only two studies examined the relationship between alcohol price and the drinking behaviour of those under the age of 18. Previous systematic reviews have suggested that exposure to media and alcohol advertisements is associated with the likelihood that adolescents will start to drink alcohol, and with increased drinking among baseline drinkers.	Low

T A B L E 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Buchanan et al (2018)	To provide an overview of how digital marketing exerts its influence on young people	1990 and 2017	Business Source Complete, Emerald Insight, ProQuest Central	28 studies (21 quantitative, 7 qualitative)	Narrative synthesis	Digital marketing improved attitudes towards (67% = 2/3 studies), enhancing intention to use (78% = 7/9 studies) and current use of (65% = 11/17 studies) alcohol.	Low
Jiang et al (2018)	The paper reviews alcohol consumption patterns and alcohol-related social and health issues among 15–29-year-old young people in Asian countries, and discusses strategies for preventing and controlling alcohol use and related harms.	1 January 1990 and 31 August 2016	PsycINFO, Scopus and Web of Science	41	Qualitative synthesis	The current drinking levels and prevalence among young people are markedly different between eight included Asian countries, ranging from 4.2% in Malaysia to 49.3% in China. In a majority of the selected Asian countries, over 15% of total deaths among young men and 6% among young women aged 15–29 years are attributable to alcohol use. Alcohol use among young people is associated with a number of harms, including stress, family violence, injuries, suicide, and sexual and other risky behaviours. Alcohol policies, such as controlling sales, social supply and marketing, setting up/raising a legal drinking age, adding health warning labels on alcohol containers, and developing a surveillance system to monitor drinking pattern and risky drinking behaviour, could be potential means to reduce harmful use of alcohol and related harm among young people in Asia.	Moderate

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Finan et al (2020)	This article provides a systematic review of cross-sectional research examining associations between exposure to alcohol marketing and alcohol use behaviours among adolescents and young adults	Inception to February 2017	Cochrane Central Register of Controlled Trials (CENTRAL;1992–14 February 2017); MEDLINE via Ovid (1946–14 February 2017); Embase via Elsevier (1947–14 February 2017); Web of Science and CINAHL (nursing/alliedhealth) via EBSCO (1900–14 February 2017); PsycINFO via EBSCO (1806–14 February 2017); Communication and Mass Media Complete via EBSCO (1918–14 February 2017); and Econlit via Proquest	38	Qualitative synthesis	Across alcohol use outcomes, marketing exposure types, and different media sources, our findings suggest that, overall, the cross-sectional research provides more evidence for a positive relationship between alcohol marketing exposure and alcohol use behaviour among adolescents and young adults than negative or null evidence. In other words, the cross-sectional evidence supports that alcohol marketing exposure may be associated with young peoples' alcohol-use behaviours.	Critically low
Henehan et al (2020)	This review examines the research of the effects of alcohol advertising on the cognitive mechanisms that precede underage alcohol use.	Inception to February 2017	Cochrane Central Register of Controlled Trials (CENTRAL;1992–14 February 2017); MEDLINE via Ovid (1946–14 February 2017); Embase via Elsevier (1947–14 February 2017); Web of Science and CINAHL (nursing/allied health) via EBSCO (1900–14 February 2017);	22	Qualitative synthesis	The studies were predominantly cross-sectional (59.1%), used convenience sampling (63.6%), had 74 to 3521 participants, and were from six countries. The most common methods and applied theories for assessing advertising effects on cognitions were linear methods based on priming and modelling theories, and structural equation modelling based on information-processing models. Overall, advertising content appealed to youth, particularly	Low

T A B L E 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Noel et al (2020)	To examine studies of the associations between exposure to digital alcohol marketing and alcohol consumption	Inception to February 2017	PsycINFO via EBSCO (1806–14 February 2017); Communication and Mass Media Complete via EBSCO (1918–14 February 2017); and Econlit via Proquest	25	Qualitative synthesis	<p>advertisements that emphasised the lifestyles of drinkers rather than the product quality. Youth exposed to alcohol advertisements were more likely to associate positive and arousing effects with alcohol, and in some studies effects were modified by sex, alcohol use and age. Residual confounding and selection bias were a concern in the majority of studies. Conclusions: Exposure to alcohol advertising may affect underage perceptions of risks and rewards of alcohol use.</p> <p>In all, 25 studies were included, including 2 randomised controlled trials, 15 cross-sectional studies and 8 prospective cohort studies. There was a consistent finding across studies that participation and engagement with digital alcohol marketing—such as clicking on an alcohol ad, visiting an alcohol-branded website, liking or sharing an ad on social media, or downloading alcohol-branded content—was positively associated with alcohol use. The effects of simple exposure to digital alcohol advertising were inconclusive.</p>	Medium

(Continues)

TABLE 1 (Continued)

Author and date	Focus and goal of review	Start and end time of search	Search engines	Number of papers included	Type of review	Main findings	Amstar 2 score
Sargent and Babor (2020)	This article summarises the findings of narrative and systematic literature reviews focused on the relationship between exposure to alcohol marketing and youth drinking, viewed in context of criteria for causality. We also consider the implications of this proposition for alcohol policy and public health.	1969–2018	Cochrane Central Register of Controlled Trials (CENTRAL) (1992 to 14 February 2017); MEDLINE via Ovid (1946 to 14 February 2017); Embase via Elsevier (1947 to 14 February 2017); Web of Science (1900 to 14 February 2017) and CINAHL via EBSCO (1981 to 14 February 2017); PsycINFO via EBSCO (1806 to 14 February 2017); Communication and Mass Media Complete via EBSCO (1918 to 14 February 2017); Econlit via Proquest (1969 to 14 February 2017).	163	Quantitative synthesis	The reviews document that a substantial amount of empirical research has been conducted in a variety of countries using different but complementary research designs. The research literature available today is consistent with the judgement that the association between alcohol marketing and drinking among young persons is causal.	High

Abbreviation: NA, Not available.

advertising via social media, movie content or branded merchandise. Alcohol companies are sponsors of major music and sports events where youth are heavily involved. The impact of alcohol advertising and marketing appears to be cumulative, increasing young peoples' consumption as they move into their mid-20s and in markets with a greater amount of advertising.

Decline in adolescent drinking is the focus of a systematic review by Vashishtha et al. [16]. They examined 17 studies published after 2000. One study by White et al., concerning 12- to 17-year-old Australian adolescents, explored the effects of changes in alcohol advertising exposure on adolescent drinking [38]. It was noted that these changes were not the result of any specific regulatory changes, but instead reflected variations in industry marketing and adolescent media exposure. The number of alcohol advertisements which adolescents were exposed to on free-to-air television decreased substantially from an average of 24 per month in 1999 to about 9 per month in 2011.

Finan et al. conducted a systematic review of cross-sectional studies focusing on alcohol marketing and alcohol use among adolescents and young adults [17]. After excluding 5 studies because of low-quality assessment scores, they focused on 38 studies with quality assessment scores ranging from 7 to 9 which were published between 1980 and 2015. Cross-sectional evidence supported the conclusion that alcohol marketing exposure was associated with young peoples' alcohol use behaviours. In general, alcohol promotion (e.g., alcohol-sponsored events) and owning alcohol-related merchandise were more associated with young peoples' alcohol use behaviours than were other advertising exposures. These associations were observed across the past four decades, in countries across continents, and with small and large samples.

An article by Sargent and Babor summarised the findings of eight narrative and systematic reviews on the relationship between exposure to alcohol marketing and youth drinking [18]. These were viewed in the context of criteria for causality, and the authors determined that the evidence was sufficient to conclude that alcohol consumption by youth is affected by exposure to alcohol marketing.

We did not detect substantial differences in the findings based on methodology or modes of advertising. With regard to the latter, it is likely related to youth being extensively exposed to multiple different types of marketing. There were not noteworthy contradictions across the 11 reviews considered in this section. While there was variation in the quality of the reviews (see Table 1 Amstar score column) the general findings, as noted above, appear to be similar across reviews of varying quality.

A common limitation is that the original research does not usually take into account other major factors—such as levels and changes in alcohol pricing or physical availability of alcohol—which have been shown to influence drinking among youth [4]. However, it would seem to be beyond the scope of a systematic review to seek to take this into account. We recommend that future research focus on the relative impact of different types of marketing on perceptions, intentions and drinking behaviours of youth, and how contexts such as alcohol pricing, physical availability of alcohol and other policies either enhance or mitigate the impacts of alcohol marketing.

3.2 | Digital alcohol marketing and alcohol use

Gupta et al. assessed the impact of internet-based alcohol-related content on young peoples' alcohol use behaviours [22] by examining 15 studies published between 2011 and 2015. They noted that exposure to both consumer- and alcohol industry-created content were likely to promote positive attitudes towards alcohol use, regular alcohol consumption, cultures of heavy and risky drinking, alcohol-related problems and the risk of developing alcohol use disorders among youth. However, from an assessment of current data, it is difficult to establish the direction of influence—whether drinkers are more likely to create and engage with alcohol-related content while online, whether exposure to this content affects alcohol use at a later stage, or a combination of both.

A subsequent systematic review by Buchanan et al. focused on several unhealthy commodities, including alcohol [23]. Fifteen of the studies focused on alcohol marketing and were published between 2010 and 2017. Buchanan et al. found that digital marketing of unhealthy products significantly improved attitudes towards (in 2/3 studies [67%]), enhanced intentions to use (in 7/9 studies [78%]) and increased current use (in 11/17 studies [65%]) of these commodities. These effects seem to be the most consistent among studies on alcohol products, where 5 of the 7 studies found digital marketing increased intentions to drink alcohol, while 8 of 10 studies found digital marketing increased actual alcohol consumption.

A similar conclusion was drawn by Noel et al. who examined 25 studies published up to 2017 [24]. There was a consistent finding across studies that participation and engagement with digital alcohol marketing—such as clicking on an alcohol ad, visiting an alcohol-branded website, liking or sharing an ad on social media or downloading alcohol-branded content—was positively associated with alcohol use. They noted that existing studies

suggested that engagement with digital alcohol marketing was positively associated with increased alcohol consumption and increased binge or hazardous drinking behaviours. However, the effects of simple exposure to digital alcohol advertising were inconclusive. Proper blinding of subjects, measuring exposures before the outcomes, and measuring the exposures multiple times would improve study quality. Overall, these three reviews found that digital marketing promoted positive attitudes to alcohol, enhanced intentions, and were linked with increased intentions to drink alcohol, and use of alcohol.

3.3 | Alcohol marketing's impact on cognition

Stautz et al. conducted a systematic review and meta-analysis of experimental studies in order to assess the immediate effects of exposure to alcohol marketing on alcoholic beverage consumption and related cognitions [19]. Twenty-four studies were included in the qualitative synthesis and 20 in the quantitative synthesis (meta-analysis). The results of their analysis suggested that exposure to alcohol advertisements may increase immediate consumption of alcoholic beverages by small amounts, equivalent to between 0.39 and 2.67 alcohol units for males and between 0.25 and 1.69 units for females (where a unit, i.e., a standard drink, equated to 8 g of ethanol). The authors did not find evidence that exposure to portrayals of alcohol consumption in television programs or films had an effect on immediate alcoholic beverage consumption.

Youth cognitive responses to alcohol promotional messages were the focus of a systematic review by Henahan et al. [20]. They assessed 22 studies published between 1988 and 2016 that examined exposure to photo images, TV, video and magazine ads. Younger populations were found to be less sceptical of advertising claims than were older adolescents. Those who reported prior alcohol use were more likely to report enjoying the advertisements. Youth preferred image advertisements that portrayed the appeal of drinking lifestyles rather than quality advertisements that featured product attributes such as ingredients or taste.

Courtney et al. conducted a review of the neurological aspects of alcohol marketing's effects on underage drinking [21]. Advertisements that associated alcohol with appealing contexts and outcomes (e.g., attractive models, having fun with friends) may be more readily accepted by adolescents, and further, these associations may be less easily extinguished in this population. In addition to potentially acting as a reinforcer, alcohol advertising may selectively appeal to adolescent consumers by highlighting the social benefits of drinking. In fact,

alcohol advertisements are more prevalent in teen-oriented popular media than advertisements for non-alcoholic beverages and often promote youth-relevant content, such as emphasising social and sexual cues. By capitalising on the hypersensitivity of the adolescent brain to social rewards, alcohol advertisements depicting salient social content may more easily grab the attention of a teenage audience and consequently accelerate reward sensitisation to these cues. Studies of cognition and alcohol advertising found that youth preferred image advertisements that portrayed the appeal of drinking lifestyles and appealing contexts and outcomes.

3.4 | Alcohol marketing and policy options

Brown conducted a systematic review of alcohol beverage brands' sponsorship of sports activities and consumption, focusing on seven studies published between 2008 and 2014 [30]. There is a positive association between exposure to this form of sports sponsorship and increased alcohol consumption among sportspeople (people who take part in sport) and schoolchildren, but the statistical significance of study results varied. Among sportspeople, direct-to-user sponsorship in the form of free or discounted alcohol was associated with increased levels of harmful drinking. The author noted that the findings of this review, particularly with regard to the impact on children, warranted close attention from public health policymakers.

A systematic review by Bryden et al. examined the influence of community-level availability and marketing of alcohol use [29]. Nine studies on advertising, published between 2003 and 2009, were considered. The studies provided inconclusive results for the influence of advertising on alcohol use, but there were some indications that greater exposure to advertising may be associated with an increase in drinking and, in particular, the likelihood that adolescents have tried alcohol. This review found four studies (with six effect estimates) on the influence of advertising located in the interior of stores on alcohol use; the results were mixed.

3.5 | Alcohol industries response to alcohol marketing

Self-regulation is the focus of a systematic review by Vendrame and Pinsky, examining 11 studies published between 1990 and 2010 [25]. Based on the international literature, they concluded that industry self-regulation of alcohol advertising did not show evidence of efficacy. Such regulation does not prevent alcohol advertising directed at children and adolescents.

Savell et al. examined how the alcohol industry attempts to influence marketing regulations [26]. They included 17 manuscripts published between 1990 and 2013. Five tactics were identified: providing or misrepresenting evidence; forming alliances with other sectors to give the impression of large support for the industry's position; proposing alternative policies; using the legal system; and providing financial incentives or disincentives. They also noted five arguments used by the alcohol industry: that regulation is redundant and unnecessary; government regulation may be in conflict with existing laws and international agreements (i.e., illegal); there are negative unintended consequences; regulations may be overly complex; and the evidence for the effectiveness of a regulatory system is insufficient.

The effectiveness of the alcohol industry's compliance procedures is the focus of Noel and Babor's review [28]. They examined 3 peer-reviewed manuscripts, 7 non-peer-reviewed reports published by academic institutes and non-profit organisations, and 20 industry reports. They concluded that the compliance process lacks standardisation across countries, potentially inadequate training across adjudicators and/or involves conflicts of interest. Even if there are predetermined code violations, they are upheld by industry review boards. It is not possible to determine if the complaints process is successful in removing potentially harmful advertisements.

Noel et al. conducted a systematic review of industry self-regulation [27]. Their review demonstrated that alcohol advertisements consistently violated the content guidelines of alcohol marketing self-regulatory codes, and contained themes that could be considered inappropriate for children, adolescents and other vulnerable populations, with little variation across time. Of the 19 code studies and 25 content analysis studies reviewed, all detected content that could be considered potentially harmful to youth. Beyond content, exposure studies evaluated the extent to which vulnerable groups are likely to be exposed to alcohol marketing. Although several different methods have been used to measure alcohol advertising exposure, the 57 studies reviewed from 18 countries demonstrated high exposure to alcohol advertising and high awareness of alcohol advertising among youth. The most commonly violated guidelines included those directed at associations with social or sexual success and guidelines intended to protect youth.

These reviews indicate that the self-regulatory schemes do not stand up to scrutiny. The measures promoted do not appear to reduce the exposure of youth to alcohol advertising or marketing. The compliance process is not standardised, enforcement is inconsistent and punishment for code violations is either absent or modest. The reviews examined did not examine the views and roles of different

sectors of alcohol industry (i.e., importers, producers, distributors retailers and advertising firms).

4 | DISCUSSION

A total of 23 reviews published over two decades which assessed the impact of alcohol marketing and advertising on drinking intentions, consumption and harmful drinking were found. There was strong evidence of an association between marketing and advertising and an increased intention to drink, levels of consumption and harmful drinking.

While the quality, scope and number of respondents of the original studies varied, many of the original studies were considered to have a low risk of bias by those conducting the systematic review; however, only six of the reviews were assessed to be of moderate or high-quality following AMSTAR 2 criteria. The reviews also varied in terms of their analyses. Some provided narrative text, or a table with qualitative notes, while others provided several tables offering detailed tabulations of the characteristics of each study included in their review.

There is evidence that alcohol marketing and advertising has an impact on youth and young adults, including their perceptions of alcoholic beverages, intentions to drink, actual consumption and high-risk drinking. This conclusion draws on numerous cross-sectional [17], longitudinal [12, 31] and prospective cohort studies [11], based on research in a number of countries. The alcohol industry claims that they do not orient their marketing to youth; however, evidence indicates that youth are aware of this marketing and respond to it [39, 40].

There were some differences in the observed conclusions regarding the association between alcohol marketing and alcohol use. For example, Anderson et al. [31] and Jernigan et al. [12] found a substantial impact on alcohol use from alcohol marketing. The research on alcohol advertising is supported by investigations into cognitive and neurological factors (e.g., [21]), particularly among youth. At a young age, the recipients of aggressive marketing are especially vulnerable to the impacts of these messages. Furthermore, there is evidence of the impacts of digital marketing of alcohol-on-alcohol use, especially among youth. However, this is a complicated and largely unregulated area where further research and regulatory interventions are needed.

Regulations on advertising and marketing of alcoholic beverages are recognised as a best-buy by the World Health Organization [6]. Despite this recognition, the alcohol industry often claims that self-regulation is the best approach [27]; however, Noel and Babor identified the

limitations of this option, namely conflicts of interest of industry adjudicators, and the potential for industry adjudicators to be inadequately trained [28]. The alcohol industry often shows a high degree of collaboration in political strategy development between companies, seeking various ways to avoid the more effective policies and regulations. As described by Hastings, industry has also subverted action on alcohol policy by highlighting ‘consumer sovereignty’, ‘value provision’, ‘customer service’, ‘freedom of choice’ and ‘consumer satisfaction’, using alcohol marketing to transform well-known detrimental effects of alcohol use into perceived customer benefits, such as improved socialisation, the promotion of charitable alcohol industry activities and the systematic courting of politicians to undermine alcohol policy legislation [41]. The alcohol industry has also been observed to manipulate the evidence base, and promote policies such as self-regulation of alcohol marketing as well as present their own anti-drink-driving and alcohol education-based programs [26, 42]. The industry has also been known to circumvent marketing restrictions by using advertisements which carry elements of the branding without the name of the product or by advertising surrogate products [43].

4.1 | Limitations

The present review is limited by a few factors. Firstly, data screening and extraction were not performed in duplicate; however, we did assess the accuracy of extraction by extracting data for three articles in duplicate. Secondly, alcohol advertising and marketing does not take place in a vacuum. The effectiveness of advertising and marketing is associated with alcohol pricing, physical availability and other alcohol policies. Furthermore, the synergistic impacts of the introduction of a combination of measures, for example, minimum pricing based on the volume of ethanol sold (i.e., a minimum price per standard drink [i.e., a serving of an alcoholic beverage based on ethanol content, see: [44]]), limits on outlet density, the introduction of enhanced warning labels on alcohol containers, and robust controls on alcohol advertising and marketing, are currently unknown. Accordingly, future studies might consider the concurrent or cumulative impacts of multi-dimensional changes.

The 23 reviews did investigate how alcohol marketing impacts specific populations other than youth or young adults, but did not assess how alcohol marketing impacts the secondary supply for minors. Further research is needed that focuses on the secondary supply for minors as well as research that focuses on the impacts of alcohol marketing on those individuals who are dependent on alcohol, in recovery, and other vulnerable populations [45].

Furthermore, while there is documentation as to how some advertising is directed at young women, further research is needed on the specific impacts of alcohol marketing on this populations’ perceptions, intentions and alcohol-related behaviours.

This study did not include nudging strategies (such as altering beverage container sizes), social marketing and counter-advertising, or controls on alcohol marketing. These studies were not a focus of the manuscript—the objective of the current review was to assess whether advertising and marketing impact alcohol use, and not to assess the interventions used to mitigate the impacts of advertising and marketing on alcohol use.

4.2 | Policy implications

The systematic reviews we reviewed also offered implications for policies and regulations. A number of themes are noted here. Marketing codes often fail to protect minors, and this is particularly important with digital marketing techniques that encourage interactive engagement with brand marketing and are difficult for parents to monitor and control [12]. There also may be a need for restrictions on exposure to free sampling of alcohol for the general public [17]. Furthermore, youth owning alcohol-related merchandise presents a unique issue as it increases alcohol use among a particularly vulnerable group [17]. Government agencies, that are independent from the industry, should restrict alcohol marketing exposures in the adolescent population [18].

Governments should consider implementing digital alcohol marketing regulations under the precautionary principle, as the alcohol industry’s self-regulated marketing codes are likely ineffective at protecting populations vulnerable to alcohol-related harms [24]. As highlighted by Noel and Babor, the process of industry adjudicators determining the validity of alcohol marketing and advertising complaints may suffer from conflicts of interest which compromise objective adjudication of even well-documented complaints [28].

The current systems of self-regulation require major modifications if they are to serve public health objectives, and more systematic evaluations of complaint processes are also needed. Indeed, the ineffectiveness of self-regulation of alcohol marketing and advertising has been demonstrated in multiple countries [27, 28, 46]. Monitoring of alcohol marketing practices should be the responsibility of an independent body or a government agency, and should be performed systematically and routinely [47]. Stronger content guidelines should be developed to eliminate loopholes [27]. Enhanced enforcement of advertising codes can occur through a pre-clearance mechanism, where a panel of

health professionals and representatives of vulnerable populations would review all communications using reliable content rating procedures to identify code violations before advertisement dissemination [27]. Input from the general public, and especially vulnerable groups such as young people, should be included in evaluating advertisements [47].

5 | CONCLUSIONS

This review found evidence that advertising and marketing is associated with drinking intentions, levels of consumption, and harmful drinking; however, more research is warranted to assess all aspects of these associations, such as the specific effects of new marketing and advertising of surrogate products and of marketing and advertising directed at women, people with alcohol use disorders and those in recovery. Policies which restrict alcohol advertising, such as marketing and advertising bans, may be effective in reducing alcohol use and subsequent harms; however, more research is needed on this topic [48].

AUTHOR CONTRIBUTIONS

ER and NG conducted the initial search, assessed the abstracts and full papers, and selected the final papers for inclusion. ER and KS conducted the data extraction. All authors performed Amstar version 2 assessment. ER and NG performed a thematic meta-analysis to identify descriptive themes. All authors developed the first draft of the manuscript and contributed to multiple revisions and approved the final text.

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CONFLICT OF INTEREST STATEMENT

None.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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