

## Alcohol-Branded Merchandise Ownership and Drinking

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### Abstract

**CONTEXT:** Alcohol branded merchandise (ABM) has a longer shelf-life than other forms of alcohol marketing and the potential to become integrated into children's self-identities.

**OBJECTIVE:** This review sought to explore current literature on children's exposure to, and the impact of, ABM.

**DATA SOURCES:** PsycInfo, Proquest, Science Direct and ABI-Inform were searched from the earliest available date to May 2015. Additional studies were identified by a manual review of the reference lists of retrieved articles, and contacting the corresponding author of each included study.

**STUDY SELECTION:** Articles that reported on child or adolescent ownership of ABM and/or the relationship between ABM ownership and drinking were included.

**DATA EXTRACTION:** Data on key measures was tabulated; where data of interest was not reported, requests for further information were sent to articles' authors.

**RESULTS:** Nine cross-sectional and four longitudinal studies. ABM ownership ranged from 11% to 59%; and was higher among older children and males. Seven cross-sectional studies reported associations between ABM ownership and drinking-related behaviours. All 4 longitudinal studies reported a significant relationship between ownership at baseline and drinking initiation at follow-up.

**LIMITATIONS:** The small number of available studies, with different measures of ABM ownership and of associations/effects.

**CONCLUSIONS:** The few studies exploring ABM ownership are consistent in showing high rates of ownership; and associations between ownership and current and future drinking. There is a need for further research into specific aspects of ABM ownership. However, there is also a need for policy interventions to reduce children's access to and ownership of ABM.

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Adolescent alcohol use is associated with a range of physical, psychological and social harms; and there is increasing evidence that earlier alcohol initiation is associated with greater drinking problems in adult years.<sup>1,2</sup> Although there are numerous influences on adolescent drinking – including individual, family, peer/social group, and community influences, there is substantial evidence that alcohol advertising impacts on alcohol initiation as well as frequency and quantity of consumption.<sup>3-5</sup>

Much of the research into the effects of alcohol marketing on young people has focused on print and broadcast media, where advertisements appear in locations and at times determined by the marketer. In the current environment, the Internet and social media provide a platform for alcohol marketing that blurs the lines between ‘advertising’ and social discourse;<sup>6-8</sup> and alcohol brand sponsorship of sporting and cultural events enables messages developed by the marketer but communicated by (or on) the performers, such as on players’ jerseys.<sup>9-11</sup> The majority of these forms of advertising are ‘perishable’, in that they appear at a place in time and are then replaced by other stimuli (such as the reader turning the page in a magazine, or newer Facebook posts pushing prior ones down the feed).

Alcohol branded merchandise (ABM), also referred to as alcohol promotional items, has a longer shelf-life than other forms of advertising. For example, a branded keyring may be used, and seen, on a daily basis or a branded clothing item worn many times and in many locations. Because ABM is generally something that a person wears or carries on their person, it has the potential to become part of, or be used to convey, their self-image. Marketers seek not only immediate sales of their products, but also to form ‘relationships’ between their brands and current and future consumers.<sup>12,13</sup> Young people, who are developing their self-concepts, utilise brand ownership as a way of constructing and communicating their self-

image and group membership.<sup>13-15</sup> There is evidence that adolescents actively engage with alcohol marketing and incorporate alcohol brands into their self-identity.<sup>16,17</sup> Even amongst children, preference for alcohol branded promotional items over non-alcohol branded items appears to prime future drinking.<sup>18,19</sup>

There have been several systematic reviews of the impact of alcohol advertising and/or promotions on adolescent alcohol use, but these have incorporated a wide range of exposures. A review of alcohol advertising effects identified seven studies, none of which included ABM.<sup>4</sup> A subsequent review of 13 longitudinal studies<sup>5</sup> included two that focused specifically on ABM<sup>20,21</sup> and two that included ABM ownership among a wider range of alcohol marketing exposures.<sup>22,23</sup> They concluded that 12 of the 13 studies demonstrated that exposure to alcohol marketing predicts drinking initiation and increased levels of consumption. However, they did not draw specific conclusions about the effects of ABM, an important distinction given that several studies have identified that the association between drinking and ABM ownership is stronger than that for other marketing variables.<sup>22-25</sup> Thus, this review sought to explore the current literature on child and adolescent ownership of ABM and the impacts of ABM ownership.

## **METHODS**

A 3-stage approach was taken to identifying relevant papers for inclusion in the review. The first was a systematic search of electronic databases (PsycInfo, Proquest, Science Direct and ABI-Inform). The keywords used were “alcohol brand\* merchandise OR alcohol brand ownership OR alcohol promotional items.” A separate search was conducted using “ABM” as the keyword but this identified > 2,000 articles (due to the multiple terms that utilise that

abbreviation), only eight of which were potentially relevant and all of which were also identified in the initial search.

The inclusion criteria were as follows: reported on child or adolescent ownership of ABM (whether as the sole alcohol marketing exposure variable or one of several variables) and/or the relationship between children's or adolescents' ABM ownership and drinking (initiation, frequency or degree); cross-sectional and longitudinal study designs; and written in English. Articles excluded were those in which information on ABM ownership was not provided, such as studies that reported generically on exposure, opinion pieces, or policy/position statements.

The searches identified a total of 435 unique articles; the abstracts of which were reviewed by two researchers to identify those that referred to or mentioned ABM. Forty-two articles were identified as potentially relevant and uploaded into Covidence software ([www.covidence.org](http://www.covidence.org)) for full-text review. On full-text review, 31 were excluded (see Table 1); the remaining 11 papers consisted of 7 cross-sectional and 4 longitudinal studies.

\*\*\*INSERT-TABLE-1-HERE\*\*\*

The second stage was a manual review of the reference lists of retrieved articles, which resulted in the inclusion of 1 additional article.<sup>57</sup> As this paper was not identified in the database searches and used the term 'alcohol promotional clothing items,' a search was re-run in all 4 databases using this term. This resulted in the identification of one additional paper (by the same author) for inclusion in review.<sup>58</sup>

The third stage was to contact the corresponding author of each included paper and ask whether they were aware of any further studies that addressed this topic. The contacted authors provided details of 2 further studies they had authored and 7 authored by others; however, all of these had already been included in the review (3 articles) or excluded as they did not meet the inclusion criteria (6 articles).

Thus a total of 13 papers were included in the review; 9 reported on cross-sectional and 4 on longitudinal studies (see Figure 1 for PRISMA [Preferred Reporting Items for Systematic Reviews and Meta-Analysis] flow diagram).

In cases in which information important for the review was not reported in the original papers, the corresponding author was asked (in the same email as the request for further relevant studies) to provide this information; for example, 8 articles did not report ownership by gender and 6 did not provide the wording of the question(s) asked. In 5 cases, no response was obtained from the corresponding author or they were unable to provide this data.

## **RESULTS**

### *Cross-sectional studies*

Of the 9 cross-sectional studies, 6 were conducted in the US and one each in the Philippines, Uganda and Australia. The papers were published between 2003 and 2015, with data collected between 2000 and 2012 (see Table 2 for ownership and Table 3 for associations).

There was considerable variation between the papers in the nature of the analyses conducted and statistics reported; where odds ratios (ORs) and/or adjusted odds ratios (aORs) for drinking initiation were provided these are reported below.

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A survey of 7<sup>th</sup> to 12<sup>th</sup> grade students (N=260) in a Midwestern US state found that > 36% owned  $\geq 1$  items of ABM (mean 4.5 items).<sup>57</sup> ABM ownership was twice as likely among susceptible adolescents as non-susceptible adolescents<sup>a</sup> and four times as likely among established drinkers, suggesting a relationship with both susceptibility and drinking initiation. A subsequent study with university students aged 18-25 years (N=320) found a higher rate of ownership of (clothing) ABM; 44.7% owned  $\geq 1$  items.<sup>58</sup> Ownership was significantly higher among established drinkers than susceptible experimental drinkers; and ABM owners were significantly more likely to report having drunk alcohol in the last 7 days, more than twice as likely to be weekly drinkers, and three times as likely to report having been drunk in the last 7 days.

A survey of 5<sup>th</sup> to 8<sup>th</sup> grade students (n=2,406) in New England found 14.2% (n=341) reported owning  $\geq 1$  ABM items.<sup>21</sup> ABM owners were significantly more likely to have initiated alcohol use (OR=2.3); adjusting for covariates (including demographics, personality characteristics, parenting style and peer drinking) and accounting for clustering by school (AOR=1.5).

Of 2,125 Californian middle school students in sixth to eighth grade, one-fifth (20.0%) reported owning  $\geq 1$  items of ABM.<sup>24</sup> ABM ownership was associated with and increased

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<sup>a</sup> Respondents were considered 'susceptible' if their answer to the question "Do you think you will use alcohol in the next two months?" was yes, probably, I don't know, or I don't think so; and nonsusceptible if their answer was 'no, definitely not'

likelihood of ever drinking (OR=6.7) and having drunk alcohol in the last 30 days (OR=1.8).

After controlling for demographics, peer and parent drinking, risk taking and parental supervision, both associations remained significant (aOR= 3.3 and 1.5, respectively).

In a cross-sectional survey<sup>25</sup> of 1,734 ever-drinkers aged 15 to 20 years (remaining participants from an earlier longitudinal study<sup>63</sup> study supplemented by a sample of African-American youth) one-third (33%) reported owning ABM; and ownership had both a direct association with binge drinking and indirect associations (mediated by drinker identity and having a favourite alcohol brand). The article did not report on drinking initiation or recent drinking.

A survey of 920 adolescents in the second year of high school (aged 12-14 years) in Scotland found 45% owned  $\geq 1$  items of alcohol-branded clothing, far exceeding any other form of involvement with alcohol marketing.<sup>59</sup> ABM ownership was significantly higher among drinkers than non-drinkers (51% compared to 43%;  $P < .05$ ).<sup>64</sup>

The Philippines' arm of the Global School-based Student Health Survey (GSHS) asked 5,290 students aged 11-16 years about their alcohol use and exposure to alcohol marketing.<sup>60</sup> One in eight (14.7%) reported owning an item of ABM; in bivariate analysis this was associated with an increased likelihood of current alcohol use (OR = 1.86) and experience of drunkenness (OR = 1.43). A survey of urban youth aged 14-24 years living in the slums of Kampala (n=457) found 25.9% of these vulnerable young people owned  $\geq 1$  items of ABM<sup>61</sup> in bivariate analyses, ABM ownership was associated with increased likelihood of current alcohol use (OR = 6.34), problem drinking (OR = 6.36) and reported drunkenness (OR =

5.91). However, in both of these studies, the relationship between ABM ownership and drinking behaviour was not significant in the multivariate analyses.

Of 210 secondary students aged 12-17 years surveyed in New South Wales, Australia, 59.0% reported owning at least 1 item of ABM.<sup>62</sup> ABM ownership was significantly associated with alcohol initiation (but not drinking recency among initiators), perceived peer drinking, and perceptions that friends would think it was a good idea for them to drink alcohol.

Six of the cross-sectional studies did not report controlling for covariates, controlled for only a few limited variables and/or did not separately report the associations for ABM when controlling for other variables.<sup>57-62</sup> Three controlled for demographics (age/year level, gender, race/ethnicity); individual characteristics (eg, school grades, personality factors); and social influences (such as peer drinking, parental drinking, parenting style).<sup>21,24,25</sup>

### *Longitudinal studies*

All four of the longitudinal studies were conducted in the US. ABM was the sole exposure focus in one paper;<sup>28</sup> one of two components of alcohol marketing awareness or receptivity in two;<sup>20,23</sup> and one of several alcohol marketing exposures in one.<sup>22</sup> The papers were published between 2007 and 2009, with data collected between 1998 and 2005 (see Table 2 for ownership and Table 4 for effects). All four studies controlled for a range of known covariates, as well as baseline drinking.

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A study with South Dakotan elementary school students explored associations between exposure to alcohol marketing in 6<sup>th</sup> grade (mean age 11.8 years) and drinking intentions and behaviours in 7<sup>th</sup> grade.<sup>22</sup> A total of 1786 students completed the survey at both time points; 19% owned an item of ABM at baseline. Controlling for 6<sup>th</sup> grade drinking, baseline ownership of ABM was associated with an increased likelihood of drinking in 7<sup>th</sup> grade drinking (OR = 1.76) and intending to drink in the next six months (OR = 1.65).

A national survey of 5,511 adolescents aged 11 to 18 years at baseline found 26% owned or were willing to use an item of ABM.<sup>23</sup> At 12-month follow-up 19% of girls and 17% of boys who were never-drinkers at baseline had initiated alcohol use; those who owned or were willing to use ABM were more likely to have done so (OR = 1.74 for girls, OR = 1.78 for boys).

A study of alcohol marketing receptivity among 1,080 Californian middle school and high school students (never drinkers at baseline) found 21% owned at least one item, and 19% wanted to own an item, of ABM.<sup>20</sup> Those who owned or wanted to own ABM at baseline were more likely to have initiated alcohol use at 12-month follow-up (OR = 1.77) and to be current drinkers (OR = 1.75).

A 4-wave national survey of US 6522 adolescents (4309 of whom were never-drinkers) collected data on ABM ownership at wave 2 (8 months), wave 3 (16 months) and wave 4 (24 months).<sup>63</sup> Prevalence of ABM ownership increased from 11% at wave 2 to 20% at wave 4. Using a cross-lagged panel model the authors identified a reciprocal relationship between ABM ownership and susceptibility to drinking (three items that assessed response to peer offers, intentions, and positive expectancies); and both direct and indirect effects of ABM

ownership on drinking initiation. Adolescents who owned ABM at 8 months were more likely to have initiated drinking at 16 months (HR (hazard ratio<sup>b</sup>) =1.41) and non-susceptible adolescents who owned ABM at 8 months were more likely to become susceptible to drinking by 16 months, HR = 1.66). They found a similar reciprocal relationship between ABM ownership and susceptibility, and direct and indirect effects of ABM, for binge drinking.

The longitudinal studies<sup>20,22,23,63</sup> all reported data from analyses that controlled for a wide range of known covariates; demographics; individual characteristics; and social influences. One study also controlled for exposure to a range of other forms of alcohol marketing,<sup>22</sup> one television viewing and exposure to alcohol portrayals in movies,<sup>63</sup> one alcohol brand recall and recognition,<sup>20</sup> and one talking to friends about alcohol advertisements.<sup>23</sup>

#### *Demographic correlates of ABM ownership*

Studies that focused on younger adolescents, and have reported data by age, have generally found that ABM ownership increases with age<sup>21,63</sup> and/or with increasing grade level.<sup>57</sup>

The majority of cross-sectional studies have found that ABM ownership is higher among males in both school<sup>20,21,24,59,63</sup> and university<sup>58</sup> samples. Two studies, 1 in the United States<sup>57</sup> and 1 in Australia,<sup>62</sup> found boys and girls were equally likely to report owning ABM, although in the US study boys owned more items on average.<sup>57</sup> Ownership by gender was not available for four papers.<sup>22,25,60,61</sup> While most of the studies have not separately reported and/or have not found differences in effects by gender, one study found that after adjusting for

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<sup>b</sup> More commonly used in medical sciences to describe survival rates or treatment effects, in this context a hazard ratio is the percentage change in the hazard (e.g., drinking initiation) for a one-unit increase in the predictor (e.g., ownership of ABM)

covariates the relationship between ABM ownership and early alcohol initiation was only significant for females (AOR=3.3);<sup>21</sup> and another that ABM ownership was a significant predictor of initiation for both genders but binge drinking only for girls' (OR = 1.79).<sup>23</sup>

ABM ownership has also been found to be higher among those who report that their peers drink,<sup>21,23</sup> and those scoring high on rebelliousness, sensation seeking, and engagement in risk behaviours<sup>21</sup>; with inconsistent findings regarding association between ABM ownership and parental drinking.<sup>24,63</sup>

### *Type of ABM owned*

The majority of the studies included in this review – including all of the longitudinal studies – included a single measure of ABM ownership (dichotomous yes/no for all forms of ABM). In 2007 Hurtz and colleagues<sup>24</sup> noted the need for research that provides more detailed evidence about the number and nature of ABMs that young people own and whether there is a dose-response relationship.

Of the 5 studies that collected data on types of ABM owned, there were some consistencies and some differences between findings. All four US studies that included this measure reported that ABM owned by adolescents was predominantly clothing and headwear.<sup>21,57,58,63</sup>

The 1 Australian study identified different forms of ABM ownership,<sup>62</sup> with cups or bottle holders more prevalent (34.8%) than hats (25.7%) or t-shirts (19.0%), and ownership of bags and coolers (18.6%) not identified in the US studies. This may indicate differences in the ABM products that are distributed, or made available to adolescents, in the two countries; and/or that ABM has become more diverse over time, given that the Australian study was

conducted more recently than the US studies.

### *Source of ABM*

McClure and colleagues<sup>21</sup> note that it is important to consider the source of ownership of ABM, because of likely differences in the influences on youth drinking. They posit that an adolescent who purchases their own ABM may have a pre-existing positive attitude toward drinking whereas an adolescent who receives an item of ABM from a parent may interpret this to mean that their parent condones their alcohol use. In a subsequent study<sup>63</sup> these authors asked adolescents where they obtained their ABM; 71.0% reported that it was a gift from a friend or family member, 24.1% that they purchased it, and 4.1% that they won, found, or got it for free. In an earlier study, Workman<sup>57</sup> found that parents were the primary source of adolescents' ABM<sup>26</sup> and, consistent with this premise, that those who had been given ABM by their parents were more likely to perceive that their parents approved of them drinking. A study with an older cohort (18-25 years) found the most common sources of ABM were alcohol vendors and stores, with parents the source of only 10.2% of recalled items.<sup>58</sup>

The Australian study<sup>62</sup> also included qualitative research with parents of adolescents which found they were aware of ABM, and could recall items that they and their children owned and used, but appeared not to have previously critically engaged with the concept of ABM as alcohol marketing. Once engaged in the discussion, many began to express concerns about its potential impact on young people's alcohol-related attitudes and behaviours.

## DISCUSSION

It is evident that ownership of ABM among adolescents is prevalent in all of the countries in which this issue has been studied. Studies from outside the United States suggest lower rates of ABM ownership in lower income countries than higher income countries; however, differences in the nature of the question(s) asked make comparisons across countries and time points difficult.

Of the 8 cross-sectional studies that focused on children/younger adolescents (i.e., sample solely or predominantly aged <18), 4 reported odds ratios for ABM ownership and drinking behaviour. It is noteworthy that the two which were of higher quality (large sample sizes, analyses controlled for a wide range of covariates) reported significant adjusted odds ratios for drinking initiation, ranging from 1.5<sup>21</sup> to 3.3.<sup>24</sup> Cross-sectional studies, however, can only report associations between factors measured at the same point in time; that is, it could be argued that ABM ownership influences young people to initiate drinking or that initiating drinking influences young people to obtain ABM.

Longitudinal studies enable the inference of causation, by controlling for the baseline level of the posted dependent variable (in this case drinking initiation). All 4 longitudinal studies reported a significant relationship between ABM ownership at baseline and drinking initiation at follow-up, with remarkable consistency (aORs between 1.4 and 1.8).<sup>20,22,23,63</sup> The two studies that included a measure of binge drinking reported similar AORs).<sup>23,63</sup>

The longitudinal studies reported much greater associations with drinking initiation for ABM than other measured marketing variables. For example, an OR of 1.2 for exposure to sports

beer ads and radio listening and no significant effect of magazine reading;<sup>22</sup> no significant effect for exposure to beer concessions;<sup>22</sup> an odds ratio for exposure in-store displays of 1.5 for ever drinking and non-significant for current drinking (compared to 3.3 and 1.5 for ABM ownership);<sup>22</sup> and no significant association for other measures of receptivity such as being able to name a favourite alcohol brand.<sup>20</sup>

An Internet survey of reasons for selection of specific alcohol brands among 13-20 year olds in the US identified that 10.2% stated that their choice of brand was influenced by their ownership of products with the brand's logo.<sup>49</sup> It is noteworthy that 30.8% of these 1,031 young people also reported that their choice was influenced by the fact that they 'identify with this brand,' given that having a favourite alcohol brand or advertisement has been shown to be an indicator of susceptibility to future drinking.<sup>20,65</sup>

There is preliminary evidence that even very young children may have an interest in ABM, with parents in a qualitative study describing ABM items that appealed to their primary school aged children.<sup>62</sup> A study of preferences for ABM compared to similar non-alcohol-branded items among third-to-fifth graders (not included in the review as did not assess ownership of ABM) identified an association between preferences for ABM and perceived desirability and identification with alcohol ads.<sup>47</sup> This was a cross-sectional survey that did not assess causation, and further research could explore whether allowing young children to own ABM may enhance their positive views of alcohol advertising and alcohol per se.

### *Implications for research*

The small number of studies identified suggest a need for more research into the nature, extent and effects of ABM. The questions used to measure ABM ownership varied between

studies, in terms of both their breadth (e.g., some focused only on clothing and others on all forms of ABM) and depth (ranging from a single yes/no question to detailed exploration of the number and type of items owned). Future research in this area would benefit from the use of consistent questions across time-points and jurisdictions.

Given the wide variations in reported prevalence of ABM ownership between studies conducted in different countries, future research could explore the nature and extent of ABM available in the different jurisdictions as well as whether this has changed over time. Cross-jurisdictional studies could explore the differential extent and effects of ABM ownership in countries with differing social norms and legal drinking ages. Including a broad age range of participants in such studies would enable exploration of reasons for age-related differences in ABM ownership, including differences in accessibility as well as appeal of different ABM product types.

Studies not included in this review that have focused on alcohol media literacy often include a measure of preference for ABM over other branded or non-branded merchandise.<sup>18,66</sup> These studies generally position preference for ABM as a measure of receptivity to alcohol marketing. Future research could explore the extent to which allowing young children to own ABM may enhance their attention to and engagement with alcohol brands and alcohol advertising more generally, the extent to which preference for ABM drives and/or reflects interest in alcohol; and children's motivations for wanting to purchase or own ABM.

This research gap is particularly important given that ABM is a largely unregulated form of alcohol marketing; exposure to ABM occurs in home, social and educational environments; and this exposure is mediated by friends and family and thus contributes to social norms. Few

studies have assessed exposure to ABM owned/worn by peers,<sup>c</sup> and none have asked about exposure in the home beyond personal ownership; future research could explore the effects of ABM exposure via important others as well as cumulative exposure (dose-response effects). Future research could explore parents' awareness of the effects of ABM and the messages parents believe they are communicating (and adolescents believe they are receiving) by parental provision, or condoning of ownership, of ABM.

### *Implications for policy*

Although this review identified a surprisingly small number of studies on adolescents' ownership of ABM and the impacts of this ownership on drinking behaviours, these studies show strong and consistent effects of ABM ownership on young people's drinking-related attitudes and behaviours. Given that these associations were stronger than for other marketing variables, which are subject to legislative controls in many jurisdictions to reduce youth exposure, there is a clear need for strategies to reduce youth ownership of ABM.

There are a number of gaps in the evidence base to be addressed before we can fully understand the extent of, and reasons for, this apparently strong association between ABM and current and future drinking. However, as set out in the Introduction, there are aspects of ABM that differentiate it from other forms of alcohol marketing. Unlike alcohol advertising in traditional or even new (electronic) media, ABM has the potential to become a part of, and to communicate, a young person's self-identity. Qualitative research from both New Zealand and the United Kingdom has found that teenagers associate desirable characteristics with specific alcohol brands, identify brands that fit their self-image, and believe that this association endows on them positive attributes that are associated with that brand in the eyes

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<sup>c</sup> Workman (2003, 2004) asked respondents whether they had seen someone at school/university today wearing something with an alcohol brand on it



of their peers.<sup>16,17</sup> ABM is accessible to children and teenagers and enables them to identify with a brand even before they begin drinking; this relationship with an alcohol brand as part of ‘who I am’ may thus have the potential to facilitate drinking initiation.

In 2008, reporting the strong association between ABM ownership and drinking status 12 months later, Henriksen and colleagues<sup>20</sup> called on government to take action to document the nature and extent of ABM; “more detailed information is needed about the production and distribution of alcohol promotional items” (p.34). They also noted that the findings on alcohol marketing receptivity (measured by ownership/desire to own ABM) are “consistent with the research on tobacco marketing receptivity, which formed the evidence base for banning cigarette promotional items in the United States” (p. 34) and called for a similar policy for ABM. However, seven years later there is still no systematic collection of data on its production, availability or restrictions (in the United States or elsewhere; the World Health Organisation asks about sponsorship and product placement in their periodic questionnaire regarding alcohol policies, but not ABM).

Restrictions on the placement of alcohol advertisements, such as on television or in magazines, are put in place by governments due to the recognition that these exposures have the potential to increase young people’s susceptibility to drinking. Due to its nature, it would not be feasible to impose placement restrictions on ABM (governments would be unlikely to legislate where people could wear their branded hat or use their branded keyring) although it would be possible to impose restrictions on where ABM can be sold or distributed. Perhaps more feasible, given governments’ general unwillingness to legislate alcohol marketing, would be to exert pressure on the alcohol industry to self-regulate to restrict the distribution of

ABM in forms that would be appealing, and locations that would be accessible, to young people.

## **CONCLUSIONS**

This review identified a surprisingly small number of studies on the prevalence and effects of ABM ownership by young people. A total of 14 papers were identified; with the earliest in 2003 and the most recent in 2015. The most powerful evidence comes from longitudinal studies, however there is an absence of such data reported in the past decade (the included studies collected data between 1998 and 2005).

The small body of evidence that does exist shows a high prevalence of ABM ownership among adolescents, and associations between ownership and current and future drinking. There is a need for further research into specific aspects of ABM ownership – including types and sources of ABM – and more current longitudinal studies that reflect changes in the alcohol marketing landscape. However, there is also a clear need for policy interventions to reduce young people's access to and ownership of ABM and to increase parents' and other stakeholders' awareness of the insidious nature of this form of alcohol marketing.

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## ABBREVIATIONS

ABM: alcohol-branded merchandise

aOR: adjusted odds ratio

OR: odds ratio

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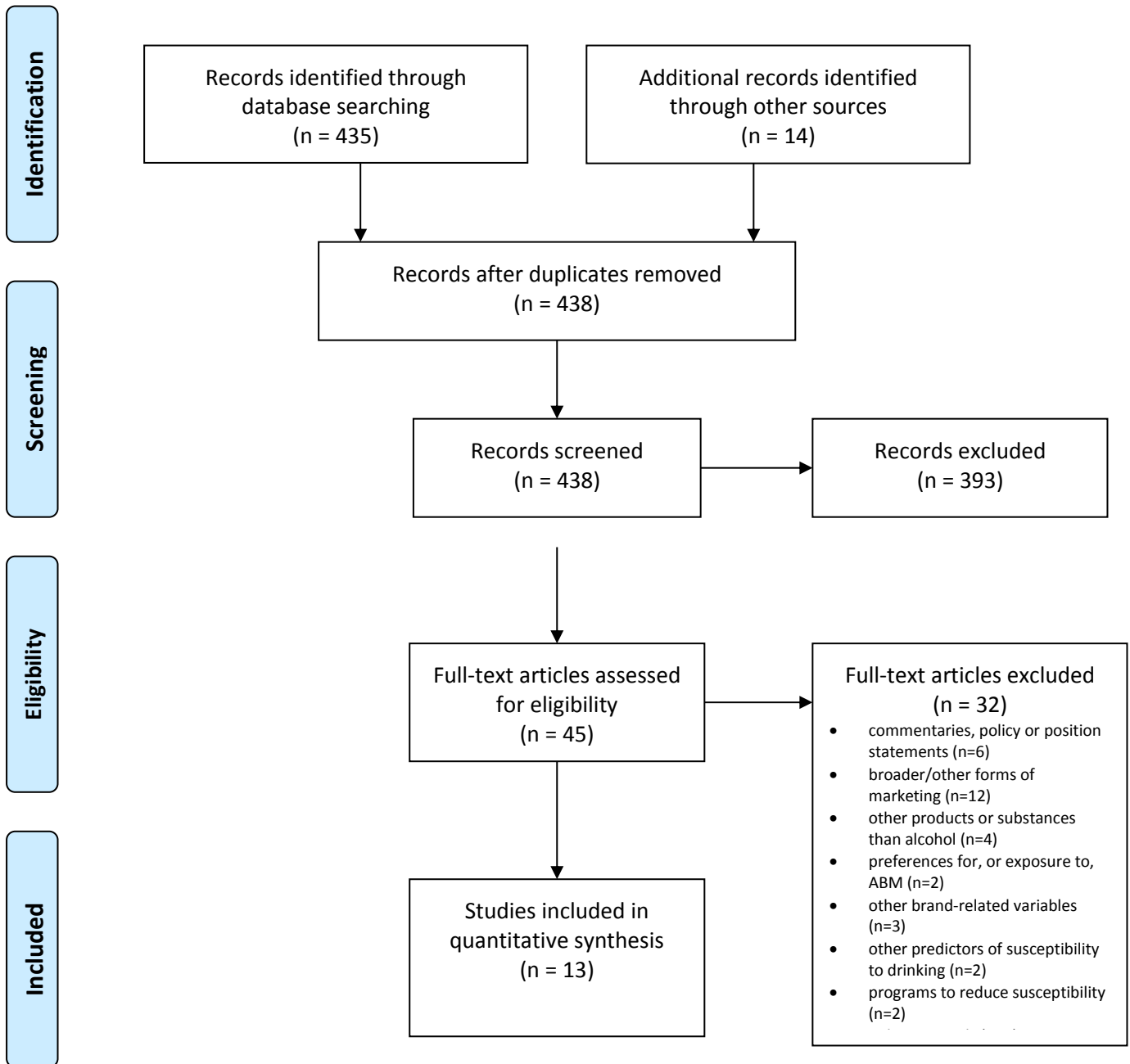
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**Figure 1: Study Selection**



**Table 1: Reasons for exclusion at full-text review**

Reason	Number of Articles	Article Details
Did not include data	6	commentaries, policy or position statements <sup>26-31</sup>
Not about ABM – other marketing	12	briefly referred to ABM in the context of broader aspects of alcohol marketing, <sup>32-34</sup> including specific forms such as point-of-sale, <sup>35,36</sup> sponsorship, <sup>37</sup> outdoor advertising, <sup>38</sup> broadcast media, <sup>39,40</sup> video-sharing sites, <sup>41</sup> music, <sup>42</sup> and provision of free alcohol <sup>43</sup>
Not about alcohol	3	other products or substances than alcohol <sup>44-46</sup>
Not about ownership	2	assessed preferences for, or exposure to, rather than ownership of ABM <sup>37,47,48</sup>
Not about ABM – brand-related	3	brand choice, <sup>49</sup> brand/advertising awareness, <sup>50</sup> or using brand information to assess consumption <sup>51</sup>
Not about ABM – susceptibility	4	other predictors of susceptibility to drinking <sup>52,53</sup> or the development of programs to reduce susceptibility <sup>54,55</sup>
Not about ABM - industry	1	about industry trends <sup>56</sup>



**Table 2: Ownership of ABM**

Study	Country [data collection period]	Study design	Sample	ABM type	Extent of ownership	Survey item(s)
Workman (2003) <sup>57</sup>	USA [2000-01]	C-S	N= 260 7 <sup>th</sup> -12 <sup>th</sup> graders; aged 12-18 59.2% female	Clothing	36.5% boys = girls	“Do you own something that has an alcohol brand name on it, such as a t-shirt or a hat?” * [yes/no] “If you own something with an alcohol brand name on it, what is it? Please check every item that you own. For each item that you check, please estimate how many items you own” * “Do you want to own something (or something else) with an alcohol brand name on it?” * [yes/no] <i>(+ questions re brand names and source of ABM)</i>
Workman (2004) <sup>58</sup>	USA [2001]	C-S	N =320 university students; aged 18-24 43.7% female	Clothing	44.7% boys > girls	“Do you own an item of clothing that has an alcohol brand name on it?” * [yes/no] “If you own a clothing item with an alcohol brand name on it, what is it? Please check every item that you own. For each item that you check, please estimate how many items you own” * “Do you want to own something (or something else) with an alcohol brand name on it?” * [yes/no] <i>(+ questions re brand names and source of ABM)</i>
McClure et al (2006) <sup>21</sup>	USA [2000-01]	C-S <sup>2</sup>	N=2406 5 <sup>th</sup> – 8 <sup>th</sup> graders; aged 10-14 53.8% female	Any	14.2% boys > girls	“Do you own something that has the name of a beer or an alcohol brand on it, like a t-shirt, a backpack, or a hat?” [those answering yes were asked to list the types of items owned]
Hurtz et al (2007) <sup>24</sup>	USA [2003]	C-S	N=2125 6 <sup>th</sup> - 8 <sup>th</sup> graders; age not stated 53.1% female	Any	20% boys > girls	“Have you ever owned an item—like a t-shirt, lighter, matches, hat, or sunglasses—with an alcohol brand name on it?” [yes/no/don't know]
Gordon et al (2011) <sup>59</sup>	Scotland [2007]	C-S	N=920 2 <sup>nd</sup> year students; aged 12-14 52.9% female	Any	45% (clothing) boys > girls <sup>3</sup>	Can you look at each of these cards and tell me which, if any, of these you have ever done?... Owned clothing, such as football or other sports-tops, or other personal items with an alcohol brand name or logo on it” * [yes/no/don't know]
McClure et	USA	C-S <sup>4</sup>	N=1,734	Any	33%	Single item:

al (2013) <sup>25</sup>	[2009]		ever drinkers; aged 15-20 (65% 18-20) 49% female		not reported by gender	“Do you own something with an alcohol brand on it?”
Swahn (2013a) <sup>60</sup>	Philippines [2011]	C-S	N=5,290 Students; aged 11-16 (primarily 13-16) 56.4% female	Any	14.7% not reported by gender	...students who have a t-shirt, pen, backpack, or other item, with an alcohol brand logo on it [question wording not reported]
Swahn (2013b) <sup>61</sup>	Uganda [2011]	C-S	N=457 urban youth; aged 14-24 69% female	Any	25.9% not reported by gender	...youth who have a t-shirt, pen, backpack, or other item, with an alcohol brand logo on it [question wording not reported]
Jones et al (2015) <sup>62</sup>	Australia [2012]	C-S	N=210 secondary students; aged 12-17 (primarily 13-15) 52.3% female	Any	59.0% boys = girls <sup>5</sup>	(Six items): “Do you own any [hats/t-shirts/cups or bottle holders/bags or coolers/sports equipment/other products]?”
Collins et al (2007) <sup>22</sup>	USA [2001-02]	L	N=1786 6 <sup>th</sup> grade students (re-surveyed 7 <sup>th</sup> grade); mean 11.8 at baseline 51% female	Any	19% not reported by gender	“Do you own any hats, posters, or T-shirts that advertise alcohol (beer, wine, liquor, or wine coolers) [Yes/no]
Fisher et al (2007) <sup>23</sup>	USA [1998-99]	PC	N=5511 aged 11-18 at baseline 59.6% female	Any	26% owned or willing to use boys > girls	“Have you ever bought or been given stuff like a hat, t-shirt, bag, or cards with the name of an alcohol drink on it (like Coors beer, Absolut vodka, or Kahlua)?” * [yes/no] “Do you think you would ever use something with the name of an alcohol drink on it?” * [yes/no]
Henriksen et al (2008) <sup>20</sup>	USA [2003-04]	L	N=1080 6 <sup>th</sup> –8 <sup>th</sup> graders (never drinkers at baseline); aged 10-15 57.3% female	Any	21% owned, 19% wanted to own boys > girls	“Have you ever owned an item—like a T-shirt, lighter, matches, hat, or sunglasses with an alcohol brand name on it?” [Yes/no] “Would you want to own or use an item with an alcohol brand name on it?” [Yes/no]
McClure et al (2009) <sup>63</sup>	USA [2004-05]	L	N=6522 baseline (5503 wave 2, 5019 wave 3, 4575 wave 4). Aged 10-14	Any	11% at wave 2, increasing to 20% at wave 4 boys > girls	Asked about ownership, type, brand, source [question wording not reported] (+ questions re brand names and source of ABM)

<sup>1</sup> C-S = cross-sectional; L=Longitudinal; P-C = prospective cohort

<sup>2</sup> Longitudinal survey (2 time points) but ABM ownership only collected at follow up

<sup>3</sup> Not reported in paper, data obtained from author (17/07/15)

<sup>4</sup> remaining sample from McClure et al (2006) study

<sup>5</sup> Not reported in paper, data obtained from author (27/07/15)

\* additional detail obtained from corresponding author

**Table 3: Cross-sectional studies – association between ABM ownership and drinking**

Citation	Country [data collection]	Sample	ABM type	Association		
				Initiation	Recency	Drunkenness
Workman (2003) <sup>57</sup>	USA [2000-01]	260 7 <sup>th</sup> – 12 <sup>th</sup> graders; 59.2% female	Clothing	+	NR	NR
Workman (2004) <sup>58</sup>	USA [2001]	320 university students (18-25 year old); 43.7% female	Clothing	+	+	+
McClure et al (2006) <sup>21</sup>	USA [2000-01]	2406 5 <sup>th</sup> – 8 <sup>th</sup> graders (never drinkers at baseline); 53.8% female	Any	+	NR	NR
Hurtz et al (2007) <sup>24</sup>	USA [2003]	2125 students in 6 <sup>th</sup> to 8 <sup>th</sup> grade; 53.1% female	Any	+	+	NR
Gordon et al (2011) <sup>59a</sup>	Scotland [2007]	920 junior secondary students 12-14 years; 52.9% female	Any	+	NR	NR
McClure et al (2013) <sup>25</sup>	USA [2009]	1,734 ever drinkers aged 15-20 years; 49% female	Any	NR	NR	+
Swahn (2013a) <sup>60</sup>	Philippines [2011]	5,290 students, primarily aged 13-16; 56.4% female	Any	NR	?	?
Swahn (2013 b) <sup>61</sup>	Uganda [2011]	457 urban youth aged 14-24; 69% female	Any	NR	?	?
Jones et al (2015) <sup>62</sup>	Australia [2012]	210 secondary students aged 12-17; 52.3% female	Any	+	-	NR

+ = significant association between ABM ownership and behaviour

0 = no significant association

NR = not reported/assessed

? = significant in bivariate, not significant in the multivariate analysis

<sup>1</sup> A subsequent paper by the same authors on wave 2 of this project (2-stage cohort study) reported that involvement with alcohol marketing at baseline was predictive of uptake of drinking and increased frequency of drinking, but data was not separately reported for individual forms of marketing (such as ABM).<sup>53</sup>

**Table 4: Longitudinal studies – Impact of ABM ownership on drinking**

Citation	Country [data collection]	Sample	Predictor	Drinking initiation	Other drinking behaviour
Collins et al (2007)	USA [2001-02]	1786 elementary school students surveyed in 6 <sup>th</sup> grade and 7 <sup>th</sup> grade; 51% female	Owned ABM at baseline	Unadjusted OR 3.5 Adjusted OR 1.8 (year 7 drinking controlling for year 6 drinking)	OR = 1.8 for drinking in last year OR = 1.6 for intending to drink in next six months
Fisher et al (2007)	USA [1998-99]	5511 adolescents aged 11 to 18 years at baseline; 59.6% female	Owned/ willing to use ABM at baseline	Adjusted OR 1.7 for girls and 1.8 for boys	AOR = 1.8 for binge drinking for girls (not significant for boys)
Henriksen et al (2008)	USA [2003-04]	1080 6 <sup>th</sup> – 8 <sup>th</sup> graders (never drinkers at baseline); 57.3% female	Owned/wanted to own ABM at baseline	Unadjusted OR 2.8 Adjusted OR 1.8 (never drinkers at baseline who initiated drinking)	Drinking last 30 days Unadjusted OR 3.2 Adjusted OR 1.7
McClure et al (2009)	USA [2004-05]	6522 adolescents aged 10-14 years at baseline (5503 wave 2, 5019 wave 3, 4575 wave 4).	Owned ABM at wave 2	HR = 1.4 at wave 3 HR = 1.6 at wave 4	HR = 1.8 for binge drinking at wave 3 HR = 1.4 for binge drinking at wave 4 Also, indirect impact via increases in susceptibility to drinking