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Review Article

A systematic review of children's alcohol-related knowledge, attitudes and expectancies☆

Sandra C. Jones*, Chloe S. Gordon

Centre for Health and Social Research (CHaSR), Australian Catholic University, Australia

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ABSTRACT

Understanding the nature of, and transitions in, young children's alcohol-related knowledge and attitudes is important to determining the age at which we should start educating children about alcohol and informing our understanding of the focus of such education. This paper aimed to explore current literature on the alcohol-related knowledge, beliefs, attitudes and expectancies of children aged 12 years and under. Electronic databases were searched for papers published from January 2000–August 2016. Further papers were identified by a manual review of reference lists, and contacting corresponding authors of included papers. Papers that reported on children's knowledge or beliefs about alcohol, attitudes towards alcohol and/or expectancies regarding alcohol consumption were included. Seventeen cross-sectional, experimental or observational studies and seven longitudinal studies met the inclusion criteria. Data on key measures was tabulated. From a very young age children are aware of and able to identify alcohol, and have some knowledge of its effects; their attitudes become more positive with increasing age and these shifts appear to precede drinking initiation by some years. The small number of available studies, with different measures of knowledge, attitudes and expectancies, made assessment of bias unfeasible. Only three studies were published in the last five years. Children's knowledge of, and attitudes towards, alcohol form before they initiate alcohol use, and are likely acquired through observation. Alcohol-related education should commence before children begin drinking, and should encourage the delay of alcohol initiation, address social norms, and reduce positive expectancies.

1. Introduction

The child and adolescent brain undergoes dynamic changes which can be adversely and irrevocably affected by alcohol consumption (Bava and Tapart, 2010). Other harms associated with underage drinking include increased risk of injury (Hingson and Zha, 2009), regretted/unprotected sex (Kiene et al., 2009), and delinquency (French and Maclean, 2006). Furthermore, early initiation of alcohol use is associated with greater risk of binge drinking and alcohol-use disorders later in life (Ellickson et al., 2003; Hingson et al., 2006; Sartor et al., 2007).

There is a paucity of data on drinking prevalence among pre-adolescents (Donovan et al., 2004; Windle et al., 2008), but we know that by eighth grade, 26% of US adolescents have tried alcohol and 10% have consumed it in the last 30 days (Johnston et al., 2016). In Australia, 57% of 13-year-olds have tried alcohol and 11% have consumed it in the past month (White and Williams, 2016).

During adolescence, children face a range of developmental issues (such as changes in brain structure and function, changes in peer and romantic relationships, puberty, changing family and social roles) which have complex interactions with their decisions regarding alcohol consumption (Windle et al., 2008). However, the available research suggests that children's beliefs about, and early experience with, alcohol also predict later alcohol use and misuse (Donovan et al., 2004). This raises two important questions for parents and educators: *when* should we begin teaching children about alcohol?; and *what* is it that we need to teach them? Understanding the nature of – and transitions in – young children's alcohol-related knowledge and attitudes prior to alcohol initiation will inform the answers to these questions.

There is considerable evidence that children and adolescents overestimate the proportion of their peers who consume alcohol (social norm) (Glazer et al., 2010; Lintonen and Konu, 2004), and that these inflated perceptions can increase drinking intentions and behaviours (Wambeam et al., 2014). Understanding children's alcohol expectancies

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* Corresponding author at: Centre for Health and Social Research (CHaSR), Australian Catholic University, Level 5, 215 Spring St, Melbourne, VIC 3000, Australia.
E-mail address: Sandra.Jones@acu.edu.au (S.C. Jones).

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is important, given that higher positive alcohol expectancies have been shown to increase the likelihood of early alcohol use and hazardous drinking among children (Cruz and Dunn, 2003; Jester et al., 2015; Van Tyne et al., 2012).

This review sought to explore the current literature on the alcohol-related knowledge, beliefs, attitudes and expectancies of children aged 12 years and under; in order to inform our understanding of when and what we should start teaching children about alcohol.

2. Methods

2.1. Eligibility criteria

Studies of interest reported on children's knowledge or beliefs about alcohol, attitudes towards alcohol and/or expectancies regarding the effects of consuming alcohol. For the purpose of the review 'children' was defined as those aged 12 years or less. Due to the small number of studies, both cross-sectional and longitudinal studies were included.

2.2. Study selection

A three-stage approach was taken to identifying papers for inclusion in the review. The first stage was a systematic search of electronic databases (A + Education, Cochrane, Eric, Informit Complete, Proquest Health and Medical Collection, PsycInfo, Scopus and Web of Science). The keywords used were "alcohol" NEAR/5 child* OR kinder* OR preschool OR school AND knowledge OR attitude* OR belie*. The search was limited to articles written in English and published from 1 January 2000 onwards. Papers were excluded where data on children's knowledge, beliefs, attitudes or expectancies was not provided – such as studies that reported generically on exposure, opinion pieces, or policy/position statements – or where the sample was children older than 12 years of age.

The searches identified a total of 1573 unique articles; the abstracts of which were reviewed by the two authors to identify those that met the inclusion criteria. The second stage was a manual review of the reference lists of the articles that met the inclusion criteria; performed by the second author. As a final step, once the authors had identified all possible articles through database and manual searching, the second author contacted the corresponding author of each included paper enquiring whether they had authored any further studies that addressed this topic. A follow-up email was sent to corresponding authors approximately two weeks later for non-replies.

A total of 29 articles were identified as potentially relevant, with 12 of these articles being identified through the process of contacting corresponding authors. These articles were uploaded into Covidence software (www.covidence.org) for full-text review by both authors. Covidence provides an online platform for researchers to efficiently manage the review process by enabling them to independently screen articles, record (reasons for) inclusion/exclusion, and keep track of which articles have been reviewed by their co-researchers. Importantly, each reviewer cannot see the other's coding decisions until the process is complete. Conflicts identified during screening ($n = 2$) were resolved by discussion and consensus within the pair. Five studies were excluded as they did not meet the selection criteria.

Thus a total of 24 papers were included in the review; 17 reported on cross-sectional, experimental or observational studies and seven on longitudinal studies (see Fig. 1 for PRISMA diagram).

2.3. Data extraction and quality

Data was extracted by the second author on study setting, study design, study participants, key outcomes assessed, measures used, analysis methods, key findings and study strengths and limitations. Where information important for the review was not reported in the original papers, the corresponding author was asked to provide this information; for example, five papers did not report on the mean age and/or gender of participants, and 12 did not provide the date of data collection. In eight cases, no response was obtained or they were unable to provide these data. The small number of available studies, with different measures of knowledge, attitudes and expectancies; made assessment of bias unfeasible. Complete information describing the included studies can be found in Appendix Tables 1–3.

2.4. Data synthesis

Included studies were classified into, and data synthesized and reported by, three categories, depending on the focus of the study; knowledge, attitudes, and/or expectancies (a study could be classified in more than one category).

The 'knowledge' category included studies related to children's general awareness or knowledge of alcohol, such as their ability to identify alcohol products or their ability to identify the health effects of alcohol consumption. The 'attitudes' category included studies that explored children's reported liking of alcohol; attitudes towards alcohol users; and descriptive (what do others like me do) and injunctive (what do important others think I should do) norms regarding alcohol-related behaviour (Voogt et al., 2013). The 'expectancies' category included studies that assessed children's positive and/or negative alcohol expectancies (beliefs regarding the effects and outcomes of drinking alcohol; (Jester et al., 2015).

As the majority of the studies did not report data on differential responses by gender or race, and others reported only on these differences and not for the sample as a whole, within each category we have provided a sub-section on reported demographic differences.

3. Results

3.1. Children's knowledge of alcohol

Ten studies specifically examined children's knowledge of alcohol. Nine studies were conducted in the US (Andrews et al., 2003; Bridges et al., 2003; Dalton et al., 2005; Dunn and Goldman, 2000; Hahn et al., 2000; Mack, 2003; Mennella and Forestell, 2008; Rinehart et al., 2006; Sigelman et al., 2000) and one in Switzerland (Kuntsche et al., 2016).

Four studies utilised individual interviews in which children were shown pictures of alcohol products and asked to identify what was in the picture; two with kindergarten/pre-school aged children (Hahn et al., 2000; Kuntsche et al., 2016) and two with lower primary (Dunn and Goldman, 2000; Andrews et al., 2003). In all four studies more than half of the children correctly identified alcoholic beverages. Those studies that included more than one age group consistently found that students in higher grades identified more items; for example, Kuntsche et al. (2016) found that correct identification was almost twice as high among six-year-olds (82%) as three-year-olds (45%).

Two studies engaged children in activities to assess alcohol knowledge. In a structured observational study, 62% percent of the 120 two to six-year-olds "bought" alcohol in a role-play shopping scenario (Dalton et al., 2005), of whom 58% identified it by type (e.g. "beer", "wine"). The other study found that while a low proportion of the 145 five to eight-year-olds could identify the odors of alcohol by name (e.g., 11% for beer and whisky) this was similar to the rate of identification of odors liked by the majority of the children (e.g., 16% for cola) (Mennella and Forestell, 2008).

Four studies examined knowledge in more detail by asking questions about the health effects of alcohol. The first found no significant age differences for the open-ended measure of knowledge of alcohol effects among 217 first to sixth-graders, but a developmental trend of a reduction in mistaken ideas about alcohol's effects with increasing age (Sigelman et al., 2000). The second, with 217 first to sixth-graders, found knowledge of alcohol and understanding of how alcohol affects the body increased with age (Bridges et al., 2003). The third, with 317