Warning: Alcohol causes cancer.

Examining public responses to alcohol warning labels.

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Abstract

Alcohol is a carcinogen. It is classified as a Group-1 carcinogen—the highest classification of causality, indicating the strongest association with cancer. It is estimated that one in four cancers are attributable to alcohol consumption worldwide. However, public understanding of the cancer risks associated with alcohol consumption is limited. One way of increasing public awareness is through health warning labels on alcohol beverage containers. The cultural and social significance of consuming alcohol, and labelling effectiveness, however, are significant considerations for the success of this public health measure. The aim of this thesis was to investigate what is known about alcohol warning labelling as a public health approach to reduce alcohol-related harm and how Australians might respond to the message that alcohol 'causes cancer.' I considered the cultural ideologies and practices relevant to the Australian public with respect to alcohol-related cancer risk and proposed alcohol warning labels.

A qualitative study design was employed, with two separate phases conducted: a scoping review and focus group research. Phase 1 was a scoping review of international literature on the effectiveness of alcohol warning labels, focusing particularly on how effectiveness is assessed in the literature, and the design characteristics that influence effectiveness of alcohol warning labels. Findings from the review suggested that warning labels are not an effective strategy for reducing alcohol-related harm.

In Phase 2, I conducted focus groups to examine how Australian adults responded to alcohol-related cancer messages. This research comprised of focus groups with people who self-identified as light-to-moderate alcohol consumers, and people who perceived themselves as having an increased risk of cancer compared with the general public. The findings are reported in three research papers. The first paper explored the social and

cultural significance of consuming alcohol and the ways in which participants resisted any implied need to alter personal alcohol consumption to reduce the risk of cancer. In the second paper, I illustrated how participants challenged both the legitimacy of alcohol-related cancer messages and the entities responsible for disseminating health information. The findings highlight the role alcohol plays within an Australian culture and the likely opposition to 'alcohol causes cancer' warnings. In the third paper, I investigated how participants used their experiences with smoking-related cancer risk to understand and negotiate warnings of alcohol-related cancer risk. These findings suggested that campaigns warning of cancer risk for a popular commodity like alcohol may benefit from applying the strategies proven to be successful in anti-tobacco campaigning.

Findings in this thesis provide public health advocates with information about relevant factors associated with current public health messaging, and considerations for future public health campaigns. The research findings are also relevant for policy makers and their efforts to reduce alcohol-related harms—including cancer.

Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Olivia Hawkins

November 2021

Publications contributing to this thesis

For personal reasons, I have changed my name to Olivia Hawkins. Publications relating to this thesis have been published in my previous name, Natalie May.

- May N, McDonough J, Braunack-Mayer A, Crabb S, Miller E, Eliott J. Factors that influence the effectiveness of alcohol warning labels: A scoping review. BMC Public Health. 2021;(Under Review).

- May N, Eliott J, Crabb S, Braunack-Mayer A. Australian community perspectives on alcohol, tobacco, and cancer: the legacy of the successful tobacco control program. Australian and New Zealand Journal of Public Health. 2021;(Under Review).

- May N, Eliott J, Crabb S. 'Alcohol causes cancer': a difficult message for Australians to swallow. Health Promotion International. 2021:1-11.

- May N, Eliott J, Crabb S, Miller E, Braunack-Mayer A. Alcohol warning labels to reduce alcohol-related harm: a systematic scoping review protocol. JBI Evidence Synthesis. 2020;18(1):186-93.

- May N, Eliott J, Crabb S. 'Everything causes cancer': How Australians respond to the message that alcohol causes cancer. Critical Public Health. 2017;27(4):419-29.

Conference/Symposium presentations during candidature

- May N, Eliott J, Crabb S, Braunack-Mayer A. Australian community perspectives on alcohol, smoking, and cancer: the legacy of the successful tobacco control program. The 3rd International Conference on Public Health; 2017 27-29 July; Kuala Lumpur, Malaysia.

- May N, Eliott J, Crabb S. Public responses to the message that alcohol causes cancer. 5th Biennial New Zealand Discourse Conference; 2015 7-9 December; Auckland, New Zealand.

- May N, Eliott J, Crabb S. Yes, Alcohol does cause cancer (unfortunately). Health Psychology Research Day; 2015 4 December; Massey University, Albany Campus, Auckland, New Zealand.

- May N, Eliott J, Crabb S. 'Everything causes cancer!' Public responses to the message that alcohol causes cancer. SANDAS 2014 Conference: Creating a Leadership Culture in the SA AOD Sector; 2014, 23 October; Stamford Grand, Glenelg, South Australia, Australia.

- May N, Eliott J, Crabb S. 'Everything causes cancer!' Public responses to the message that alcohol causes cancer. Florey International Postgraduate Research Conference; 2014 25 September; Adelaide Wine Centre, Adelaide, South Australia, Australia.

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1 Introduction and rationale for the research

Ethanol, the form of alcohol contained in beverages including beer, wine and spirits, is a Class 1 carcinogen—the highest category for cancer risk.[1-3] Globally, it is reported that up to 25% of cancers are attributable to alcohol consumption[4] and current estimates suggest that alcohol-attributable cancers make up 5.8% of all cancer deaths.[5] In Australia, over 5000 cases of cancer each year are associated with chronic alcohol use,[6, 7] with approximately 1400 of these reportedly resulting in death.[8] Epidemiological and biological research has established that alcohol consumption can cause cancer of the mouth, pharynx, larynx, oesophagus, liver, colorectum, and female breast[9] and there is increasing evidence that alcohol contributes to numerous other cancers.[10]

Some reports have suggested that light-to-moderate alcohol consumption (specifically of red wine) is associated with lower mortality and reductions in heart-disease.[11] However, research has shown that alcohol is not similarly protective for other conditions, such as cancer.[12-14] Furthermore, it has recently been suggested that cessation or reduction of even light-to-moderate alcohol consumption is beneficial for heart health.[15] Thus, the net health effect of alcohol is considered to be detrimental.[16-19] Further, there is no evidence to suggest that there is any difference between the types of alcohol consumed, for example between red wine or beer[3, 16] or that there is a safe limit of alcohol consumption for avoiding cancer.[6] Some research has shown that regular consumption of as little as 5g (equivalent to less than one standard drink) of alcohol daily can result in modest increases in cancer risk.[16, 20-22] Other findings have suggested that there is a linear dose-response relationship between chronic alcohol consumption and the risk of attributable death which starts at zero (i.e. the more alcohol that is consumed, the higher the risk).[23] Indeed, the risk for breast cancer increases significantly with as little as

one drink per day.[9, 24] In December 2019, the National Health and Medical Research Council (NHMRC) in Australia revised the guidelines for safe alcohol consumption to state that 'healthy men and women reduce the risk of harm by drinking no more than 10 standard drinks per week and no more than 4 standard drinks on any one day.'[25] Notwithstanding these guideline changes, the Cancer Council Australia has reported that there is no safe level of alcohol consumption.[8]

Despite this well-established link between alcohol consumption and cancer risk, public understanding of this risk is poor.[26, 27] Evidence suggests that individuals have a good understanding of other risks, or negative health-related consequences, of consuming alcohol (for instance, liver cirrhosis), but few are aware of the risk of cancer.[26-28] It has been reported that, generally, people do not consider alcohol to be a carcinogen[29] and they view alcohol as less harmful than tobacco and other substances.[30]

With increasing evidence of alcohol-related cancer risk, there have been appeals by advocacy agencies[31] for governments to mandate labels that display 'alcohol causes cancer' risk messages. Industry response to labelling in Australia, and the role of the industry and industry self-regulation in preventing the implementation of effective labelling is discussed in the next section.

1.1 The alcohol industry and stakeholders

In Australia, despite the vast evidence of alcohol-related cancer risk, governments, the alcohol industry, regulators, and the public continue to overlook the risks posed by alcohol consumption. There are several population-level control measures (e.g. increased alcohol pricing and taxation, reductions in availability, and restrictions on marketing and advertising) that are cost-effective and have the strongest evidence for reducing alcohol-related harms, including cancer.[32-34] Introducing policies such as these, however, is often

met with resistance from the public and alcohol industry lobby groups or Social Aspects/Public Relations Organisations (SAPROs).[35-37]

SAPROs are a deliberate assembly of stakeholders established to represent risk industries (e.g. tobacco, gambling, sugar and alcohol industries).[37] Though they depict themselves as "independent and benevolent organisations formed to mitigate the negative social aspects of potentially harmful products"[37 (p. 2)], they are considered by many (particularly public health agencies[38-41]) to be a corporate public relations tactic to thwart harm minimisation strategies and campaigns.[41-44] There is evidence to suggest that SAPROs advocate for their funding industries,[37, 45] and rather than seek out ways to reduce harms, their goal is to evade government regulation and maintain industry self-regulation.[37] SAPROs tend to adopt a neoliberal agenda and work to protect commercial pursuits over the health and safety of the community,[37] positioning freedom as an overarching social value and rejecting industry regulation and high taxation.[46] In this sense, neoliberalism imagines that a strong government is only required to facilitate global commerce, protect private property through law enforcement and maintain military and defense services.[46]

DrinkWise, an Australian alcohol SAPRO, was established in 2005 in response to negative media coverage of the societal impact of alcohol-related harms.[47] The Australian Government, in support of a neoliberal market, matched the alcohol industry's contribution of $5 million to form the organisation.[47] The stated goal of DrinkWise was to avoid government regulation of the market and demonstrate the industry's ability to facilitate a market solution to a social issue.[48] The then DrinkWise Director, Noel Turnbull, contended that a market approach should be adopted as government interference creates stagnation, waste and inefficiency, and the short-sightedness of governments causes governments to direct social marketing to the wrong targets stating:

"There are alternatives available which treat people as citizens capable of changing behavior without draconian regulation and punitive taxation"[49 paragraph 4]

The market approach was promoted as a way to protect the freedom of the individual and supported neoliberal ideologies.[37] Since late 2009, DrinkWise has been entirely funded by alcohol producers, distributors and retailers, and is described as an independent, not-for-profit organisation.[50]

In 2011, Australia's former health minister, Neal Blewett, published his recommendation that generic warnings stating the health risks of alcohol consumption should be displayed on all alcohol containers, and labels warnings of consuming alcohol while pregnant to be mandated.[51] Subsequently, DrinkWise researched and developed four warning labels for the alcohol industry, including pregnancy warnings.[52] These labels do not specifically warn of alcohol-related cancer risk and the information presented has been highly criticised for its ambiguity and indifference,[51] but nonetheless provide the consumer with warning information. The inclusion of these labels enabled industry to claim that people who consume alcohol have made informed and free choices with knowledge of the potential associated risks.[53]

In late 2011, the Australian Commonwealth, State and Territory and New Zealand Ministers decided that drinking alcohol while pregnant warnings should be pursued and allowed the alcohol industry two years to adopt the voluntary labelling scheme before regulating this change.[54] In 2016, it was determined by Health Ministers that the uptake of voluntary labelling was encouraging and the Legislative and Governance Forum on Food Regulation (FoFR) agreed to extend the probationary period for label uptake for a further two years.[54] In October 2018, the Australian and New Zealand governments announced its policy that alcoholic beverage containers must be labelled with text and

pictogram warnings about the risks of drinking alcohol during pregnancy.[55, 56] To date, this is the only mandated warning label in Australia and New Zealand.[55, 56]

Though DrinkWise claim to be invested in promoting a healthier and safer drinking culture in Australia, there is a consensus among advocacy groups[31] that alcohol SAPROs fail to acknowledge the substantial burden of disease caused by alcohol products.[43, 44] Instead, efforts focus on legitimising alcohol products and the companies responsible for their production, distribution, and promotion to avoid restrictive alcohol policies which can threaten industry's profitability.[57]

One approach SAPROs use that works to mitigate the message that alcohol causes cancer is to provide a combination of accurate and misleading or distracting information.[43, 44] An analysis conducted by Petticrew, et al. (2018)[43, 44] found inaccurate statements in SAPRO information sheets for example:

> 'Light to moderate drinking is associated with minimally increased risk of overall cancer. For men who have never smoked, risk of alcohol related cancers is not appreciably increased for light and moderate drinking (up to two drinks per day')[43, 44]

The researchers highlight the extensive misrepresentation of evidence by SAPROs about the alcohol-related risk of cancer.[43, 44] Through such strategies, such organisations are able to shape both professional and public interpretation of the scientific research findings and promote the benefits of moderate drinking.[57] By selectively presenting available evidence, SAPROs, like DrinkWise, are deemed to be upholding corporate social responsibility (CSR) goals to educate the public about responsible drinking.[50]

'Responsible drinking' campaigns emerged in the early 1970s ostensibly as a way to address hazardous drinking and help young people make responsible decisions about their drinking.[58] There is considerable debate, however, as to whether these industry-generated

campaigns are designed to reduce hazardous drinking or if they are designed to avoid government regulation and even increase sales through the promotion of 'responsible drinking'.[59] Indeed, SAPROs commonly disseminate health information with the intention of encouraging consumers to 'drink responsibly',[43, 44] and DrinkWise carefully design their campaigns to look like government sponsored messages to reinforce the legitimacy of their campaign.[60] Moreover, what constitutes 'responsible drinking' is largely unknown.[58] 'Responsible drinking' is generally defined as a variable or outcome and not characterised or defined, therefore 'drink responsibly' campaigns often result in public misunderstandings due to the vague, inconsistent and counterintuitive nature of these messages.[58]

To understand the impact of 'responsible drinking' public health messages, research is needed to determine the manner in which individuals interpret, perceive, and practice responsible drinking.[58, 61, 62] 'Responsible drinking' messages not only align with the responsible decision-making model and place blame on the user for alcohol abuse,[63] they also give permission to drink heavily as long as underage and driving is not involved. These messages also shift responsibility to others, supporting binge drinking as personal choice,[64] making risk perception and risk management important considerations in the decision-making process.[65]

Risk perception, and consequently risk management, require a decision-making process that is based on an individual's frame of reference (for example personal experience, available evidence etc.) and is therefore prone to subjectivity. How people make decisions about their health and safety, and some of the strategies used to evaluate the impact of potential threats, will be discussed in the following section.

1.2 Risk perception and management

There is wide and varied literature on health risks[66-69], what constitutes a risk[69-73] and risk management,[69, 70, 74-76] but a formal definition of risk is rarely specified. Risk, and the nature of risk, are intuitive notions that can be interpreted as perceived exposure to, or perceived uncertainty of, a negative outcome.[69, 77-79] Risk contains both objective and subjective components.[80, 81] Risk is often depicted as negative and dangerous and as delving into the unknown.[73, 77] Ewald[77] however, depicts risk as a socially constructed concept, such that:

> nothing is a risk in itself; there is no risk in reality. But on the other hand, anything *can* [italics in original] be a risk; it all depends on how one analyses the danger, considers the event.[77 (p. 199)]

Furthermore, Beck (2008) writes that "without techniques of visualisation, without symbolic forms, without mass media etc., risks are nothing at all."[78 (p. 3)] These opinions suggest that risk is not simply the probability of an event occurring and severity of harm, rather it is a socially constructed phenomenon.[73, 77] Response to a predicted risk may vary depending on hazard identification (which includes making sense of available information), perceived magnitude, perceived likelihood, or perceived susceptibility. If a person has a positive association with a presented hazard, it is unlikely that they will take the same caution as a person who has a negative association.[82]

How individuals might handle knowledge and beliefs about personal risk and risk factors has been widely theorised.[83-85] Theoretical concepts such as optimistic bias,[86] unrealistic optimism[87, 88] and comparative optimism[89] posit that individuals tend to perceive the severity of harm as greater for others compared to oneself;[90, 91] in the present context, the larger the perceived control over personal alcohol intake, the greater the

perceived harm for others versus harm to self.[92] Indeed, research into alcohol and health messaging,[93, 94] has found that Australians would like more health information, education, and treatment for targeted individuals (i.e. 'others'), but disapproved of health promotion strategies likely to impact on themselves, such as a reduction in availability of alcohol through tax and price increases.[26, 95]

Although risk-taking implies the possibility of significant harm or a negative consequence, not all risk-taking need be negatively perceived. It can also be understood as beneficial for success, as a risk-taker can be seen as taking advantage of opportunities or being adventurous or carefree.[74, 96] Consequently, risky behaviour can be perceived in terms of potential benefits to be gained and as contributing to a more exciting or pleasurable lifestyle.[74, 96] Although there are pleasures that can be associated with alcohol,[97, 98] these are rarely included in prevention discourses and are undervalued as a main catalyst for alcohol consumption.[99] Messages of alcohol-related health warnings problematise the pleasures or other perceived benefits associated with an individual's consumption of alcohol and challenge the deeply entrenched cultural significance of alcohol within many countries.[100]

Despite the pleasures associated with drinking, communicating the risks associated with consuming alcohol is important. It provides information about alcohol-related cancer risk and can assist consumers to make better informed decisions about their alcohol consumption. One way to communicate these risks is through alcohol warning labelling.[101] Providing information to support consumers to make an informed choice about their alcohol consumption in light of their own values, concerns, and attitudes to risk,[102] will not necessarily mean that they make better choices, where better choices mean drinking less. Although alcohol warning labels alone may not lead to behaviour change, the provision of information is a step in creating greater awareness of the risks associated

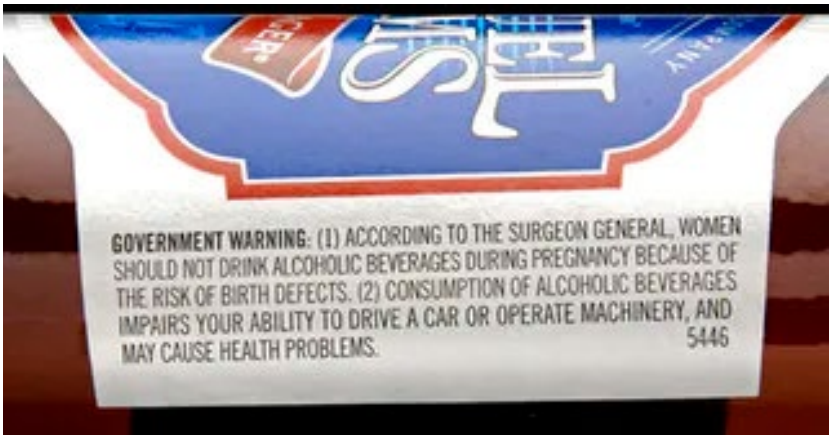
with consuming alcohol.[102] The following section explores warning labelling as a public health approach to behaviour change.

1.3 Warning labels as a public health approach

In 1989, the USA was the first country to introduce alcohol warning labels.[103] At the time of writing 46 countries or territories worldwide have sanctioned laws requiring the compulsory use of health warning labels on alcoholic beverages.[104, 105] These messages (see Table 1.1) display warnings of the risk associated with drunk driving and drinking while pregnant (see Figures 1.1 and 1.2.) Few relate to alcohol and cancer. Although these mandated warnings are intended to provide information that aids consumers in making informed choices about their health behaviours, evidence in support of their effectiveness as a public health approach to reduce alcohol-related harm is limited.[106, 107] Research has demonstrated that information provided on labels is highly criticised, and effective communication may need to consider public beliefs about, and attitudes towards, alcohol consumption.[108-114] Some evidence suggests that warning labels are associated with stimulating conversation about pregnancy and drunk driving, and deterring the latter.[115, 116] However, studies on attitudes and beliefs around alcohol have reported that consumers who enjoy drinking may become defensive and display negative attitudes towards the warning messages.[117-119] These examples demonstrate some of the complex and challenging issues associated with effective communication of health messages and the promotion of healthy lifestyle practices, particularly in relation to alcohol warning labels. A detailed account of current evidence available is presented in the scoping review (Chapter 3), wherein I investigate the effectiveness of alcohol warning labels as a population-based policy measure, and report on international literature pertaining to the factors that influence the effectiveness of alcohol warning labels.

Table 1. 1: Examples of international health warning messages on alcohol containers

COUNTRY	WARNING MESSAGES
USA	GOVERNMENT WARNING: (1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects (2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems
Brazil	Avoid the excessive consumption of alcohol
Colombia	Excess alcohol is damaging to your health
Ecuador	Warning: the excessive consumption of alcohol causes serious harm to your health and endangers your family
France	Drinking alcohol beverages during pregnancy even in small quantities can have grave/serious consequences for the health of the baby
Germany	Sale prohibited to persons under 18 years of age
South Korea	One of the below messages must be placed on alcohol beverage containers: Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer and is especially detrimental to the mental and physical health of minors OR Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer, and especially, women who drink while they are pregnant increase the risk of congenital abnormalities OR Excessive consumption of alcohol may cause liver cirrhosis or liver cancer, and consumption of alcoholic beverages impairs your ability to drive a car or operate machinery and may increase the likelihood of car accidents or accidents during work On all spirits containers: Excessive drinking may cause cirrhosis of the liver or liver cancer and increase the probability of accidents while driving or working
South Africa	One of the below messages must be placed on alcohol beverage containers: Alcohol reduces driving ability, don't drink and drive Don't drink and walk on the road, you may be killed Alcohol increases your risk to personal injuries Alcohol is a major cause of violence and crime Alcohol abuse is dangerous to your health Alcohol is addictive Drinking during pregnancy can be harmful to your unborn baby
India	Consumption of alcohol is injurious to health Be safe – don't drink and drive
Thailand	One of the messages below must be placed on alcohol beverage containers in pictures and messages: Liquor drinking may cause cirrhosis and sexual impotency Drunk driving may cause disability or death Liquor drinking may cause less consciousness and death Liquor drinking is dangerous to health and causes less consciousness Liquor drinking is harmful to you and destroys your family



GOVERNMENT WARNING: (1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects. (2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may cause health problems.

Figure 1. 1: Mandated alcohol warning label from the United States

Figure 1. 2: Mandated alcohol warning label from France

The underlying premise behind public health measures is that government has an obligation to act to limit preventable harm to the community, including through informing the public of known risks to their health, encompassing accidents and chronic illnesses.[120, 121] Health education and promotion campaigns are designed to inform the public of health risks, raise awareness and persuade people to take responsibility for their health.[122] The presentation of information regarding risk is a technique of health education that, by and large, assumes that the receiver is a rational, responsible entity who is able and willing to manage their own relationship to risk in accordance with the reported information.[123] Indeed, failure to take care of oneself may be perceived as an act of irrationality or a lack of skillfulness[124] and viewed negatively within society.[125]

Product warning labelling is one public health strategy for communicating risk information and promoting behaviour change. The inclusion of warning labels on alcoholic beverage containers can communicate information about alcohol-related health risks—including cancer, and, through this communication, support consumers to make informed decisions about their alcohol consumption.[101]

Warning labels have been utilised for behavioural change in a range of other contexts; for example, warning labels on cigarette packages have been instrumental in the reduction of smoking rates around the world.[126] In Australia, between 2001 to 2017-18, the proportion of adults smoking daily decreased from 22.4% to 13.8% and the proportion of adults reported as non-smokers increased from 71.6% to 84.9% (1989-90 to 2017-18).[127] Warning labels are generally considered one of the mechanisms by which these smoking rates were reduced.[128]

The effectiveness of these warnings, however, needs to be considered in context. Unlike most of the warnings displayed on alcoholic beverages, warnings on cigarette packages are one component of a multi-faceted anti-smoking campaign.[129] Mass media advertising of anti-smoking messages (including television, radio and print), changes in legislation regulating smoking (e.g. designation of smoke-free areas), and increases in taxation collectively constitute a comprehensive strategy that adds to the effectiveness of health promotion messages.[130] This comprehensive approach has allowed for sufficient population exposure about the negative health impact of smoking, particularly in lower socioeconomic areas[129] and has contributed to changes in the cultural norms of smoking,[128] as well as the physical environments in which smoking can occur.[131] In Australia and many other countries, the cultural and social significance of smoking has shifted to the point where smoking is now deemed socially unacceptable in many social contexts, and people who smoke are in the minority.[128, 132] As yet, there has not been similar multi-faceted campaigns around alcohol risk (especially long-term risk). There have been broader campaigns designed to target drink-driving and some of the other harmful effects of alcohol (e.g. marketing,[133] policies around blood alcohol levels, random breath testing, legal drinking age, where you can drink, and selling alcohol[134]), however, there is limited public exposure to the risk of alcohol-related cancer. Given the previous acceptability of smoking, these shifts can inform the development of strategies, or public health interventions, that facilitate changes in normative beliefs and behaviours around alcohol consumption and reduce alcohol-related cancer risk.

1.4 The purpose of this thesis

The overall objective of this thesis is to examine public perceptions and attitudes toward the message that alcohol causes cancer, and the proposed introduction of alcohol warning labels displaying such messages. There are complex and challenging implications associated with effective communication of health messages and the promotion of healthy lifestyle practices. Advocates of alcohol warning labels often cite the role that cigarette health warnings have played—alongside a suite of other policy measures—to eventually reduce tobacco consumption.[135, 136] However, the extent to which alcohol warning labels may serve as a suitable public health approach is yet to be established. The studies presented in this thesis examine how the Australian public might respond to information about the link between alcohol and cancer and the proposed introduction of alcohol warning labels.

1.4.1 The research questions

The research questions addressed in this thesis are as follows:

1) What does international research tell us about the effectiveness of alcohol warning labels?
2) How do Australian adults respond to the message that alcohol causes cancer?

1.5 Thesis outline

This dissertation is in the form of a thesis by publication and papers under review, as outlined by The University of Adelaide's Research Student Handbook.[137] The thesis presents the results of two separate phases: Phase 1 is a scoping review of international literature pertaining to the effectiveness of alcohol warning labels; and Phase 2 investigates how Australian adults respond to the message that alcohol causes cancer,

described in Parts A, B and C (Figure 1.3). Part A reports on a series of focus groups with people who self-identified as light-to-moderate alcohol consumers. Part B reports on a second series of focus groups conducted with people who considered themselves at a higher risk of cancer than the general public. In Part C, the combined focus group data (i.e. from Parts A and B) are used to examine participants' experiences with tobacco and alcohol policy.

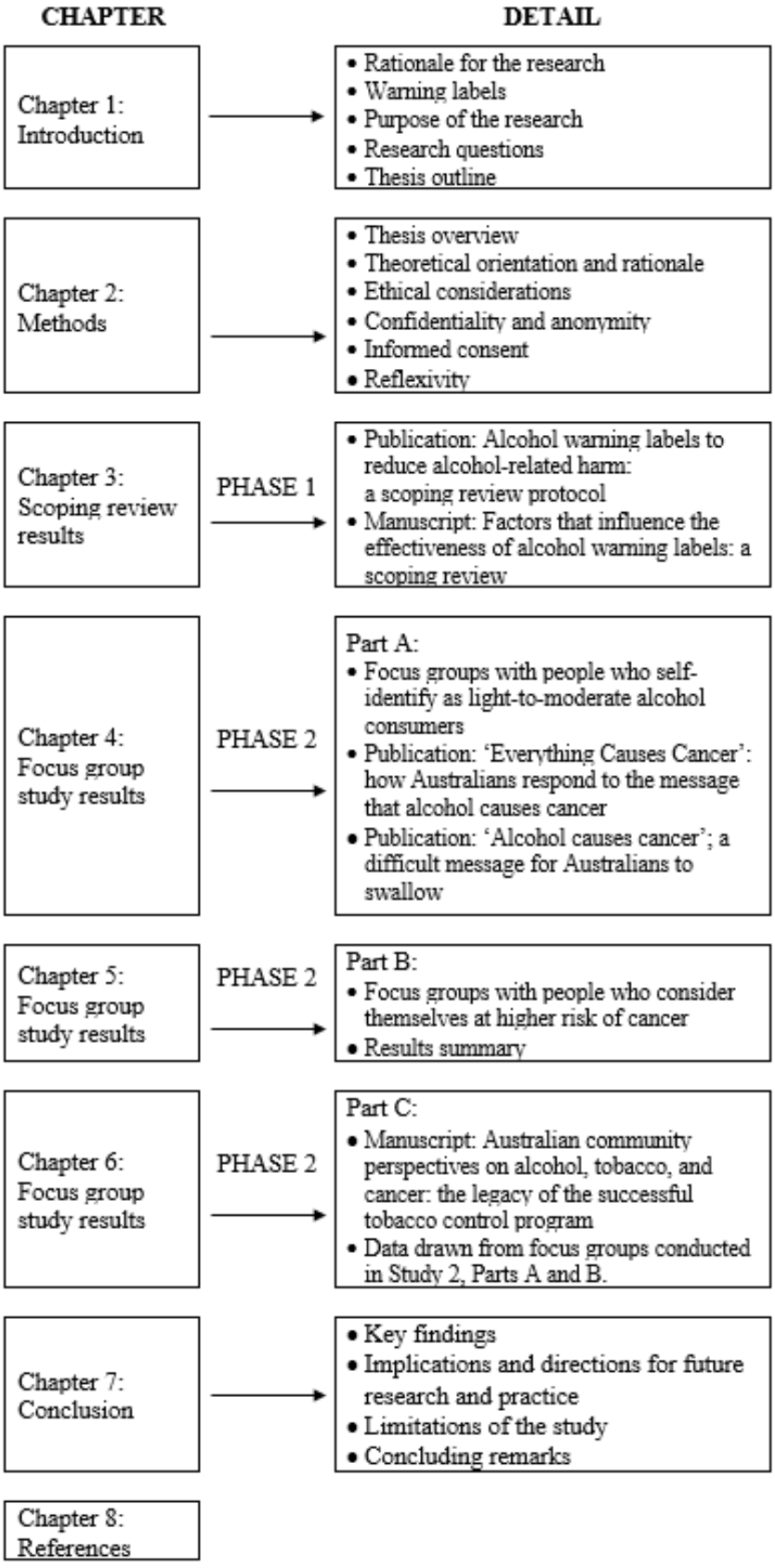


Figure 1. 3: Schematic presentation of thesis outline

The outline of the dissertation is as follows:

Chapter 1

In this chapter, I have introduced the public health issue of alcohol-related cancer risk, the purpose of this research, and the research questions that will be addressed in this thesis.

Chapter 2

The second chapter describes my research methods. I describe the theoretical orientation of this research and provide a rationale for how the research methods were conceptualised to answer each of the research questions. I then describe my data collection and analysis. Chapter 2 ends with a discussion of the ethical considerations associated with this study.

Chapter 3

Chapter 3 (Phase 1) addresses the first research question: What does international research tell us about the effectiveness of alcohol warning labels? This chapter first describes the scoping review protocol in a publication entitled: "Alcohol warning labels as an international public health approach to reduce alcohol-related harm: A systematic scoping review protocol". The second part of the chapter presents the findings on factors that influence the effectiveness of alcohol warning labels in a manuscript which has been submitted for publication.

Chapter 4

Chapter 4 (Phase 2, Part A) addresses the second research question: How do Australian adults respond to the message that alcohol causes cancer? Here, I present

findings from the first series of focus groups undertaken with Australian adults who self-identified as light-to-moderate alcohol consumers. I explored their responses to the message that alcohol causes cancer and the proposed introduction of alcohol warning labels. My co-authors and I were interested in the significance of alcohol-related risk messages within this population of alcohol consumers as there is a general understanding that alcohol-related illness is a result of alcoholism, or alcohol dependency, such that risk is only associated with heavy drinkers, and liability is attributable to personal management.[138] For this reason, light-moderate alcohol consumers may be unaware that the alcohol products they are consuming can cause serious harm to their health.[2] The findings from Part A are presented in two journal articles: ‘‘Everything causes cancer’: How Australians respond to the message that alcohol causes cancer’ published in *Critical Public Health*[139] and ‘‘Alcohol causes cancer’; a difficult message for Australians to swallow’ accepted for publication in *Health Promotion International*.

Chapter 5

Chapter 5 (Phase 2, Part B) addresses the second research question: How do Australian adults respond to the message that alcohol causes cancer? To examine how Australian adults who perceive themselves at higher risk of cancer might respond to the message that alcohol causes cancer, I conducted a second series of focus groups. Some research suggests that people who consider themselves at a higher risk of cancer engage in cancer-protective behaviours such as wearing sunscreen, eating a healthy well-balanced diet and participating in regular exercise.[140] My co-authors and I wanted to examine how this population might respond to the message that alcohol causes cancer and if they were more likely to report intentions to change their drinking behaviours as a result of the

presented risk and their perceived increased risk of cancer. In this chapter I present a brief discussion of findings.

Chapter 6

Chapter 6 (Phase 2, Part C) addresses the second research question: How do Australian adults respond to the message that alcohol causes cancer? The findings presented are drawn from a reanalysis of data collected in Part A and Part B of Phase 2 and presented in manuscript form. In this manuscript, I examine how participants discussed their experiences and understanding of smoking-related cancer in light of their responses to warnings of alcohol-related cancer risk.

Chapter 7

In the final chapter of this thesis, I revisit the research questions and summarise the findings and contributions to current academic knowledge pertaining to alcohol warning labelling. I outline the strengths and weaknesses associated with this study and consider implications of the research in terms of approaches within public health and health promotion. I conclude with recommendations for future research.

1.6 Conclusion

In this chapter I have presented the background underpinning this research thesis, including epidemiological evidence to support the link between alcohol and cancer risk. I have discussed some of the complexities associated with risk perception, management and communication. I summarised the purpose of this thesis—including the research questions to be addressed in this thesis—and included an outline of the thesis chapters. I finished Chapter 1 with a brief overview of the aims of this research.

In the next chapter, I outline the theoretical orientation of my research and data collection, including the approaches I have adopted. Chapter 2 ends with a discussion of the ethical considerations associated with this study.

2 Methods

The aim of this chapter is to present the methodological and theoretical background to the research in this dissertation. First, I provide an overview of the two phases undertaken for this thesis. Second, I discuss the theoretical orientation of my research and how the research methods I used were conceptualised to answer the research questions. I then present the ethical considerations of the research. A detailed account of the specific methods undertaken for each phase will be presented in the relevant analytic chapter. To avoid repetition, the goal here is to present the methodological approaches that underpin the research thesis overall. Throughout this chapter, I reflect on my role in the research process. Specifically, I acknowledge how my personal perspectives and experiences may have influenced the formulation of the research question, and the collection and analysis of data presented in this thesis.

2.1 Thesis context and overview

The research in this thesis was developed as part of an Australian Research Council (ARC) Linkage Project, 2013-2017 (LP120200175), in partnership with the Cancer Council Australia, and Drug and Alcohol Services South Australia. The project was entitled 'Public and ethical responses to mandated alcohol warning labels about increased long-term risk of cancer.'[141] As described in Chapter 1, my research took the form of two phases: Phase 1, a scoping review, and Phase 2, focus group research.

My contribution to the Linkage Project included the following studies:

- **Scoping review protocol**: Alcohol warning labels as an international public health approach to reduce alcohol-related harm: A systematic scoping review protocol (Phase 1)

- **Scoping review**: Factors that influence the effectiveness of alcohol warning labels: A scoping review (Phase 1)

- **Focus group research**: 'Everything Causes Cancer': how Australians respond to the message that alcohol causes cancer (Phase 2, Part A)

- **Focus group research**: 'Alcohol causes cancer'; a difficult message for Australians to swallow (Phase 2, Part A)

- **Focus group research**: Australian community perspectives on alcohol, tobacco, and cancer: the legacy of the successful tobacco control program (Phase 2, Part C)

2.2 Theoretical orientation and rationale

In this section, I discuss the theoretical orientation of my research, and how the research methods I used were conceptualised to answer the research questions. Briefly, Phase 1 (the scoping review) consolidates research underpinned by both positivist[142, 143] and constructionist[144, 145] research paradigms. Phase 2, however, is grounded in the principles of social constructionism: the epistemological view that

> all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context.[146 (p. 42)]

Phase 1 was developed to answer the first research question: "What does international research tell us about the effectiveness of alcohol warning labels?" Evaluating effectiveness is complex. The most reliable assessment of labelling effectiveness is behavioural compliance; however, ethical considerations restrict how we

measure compliance—particularly in relation to alcohol consumption.[147] I conducted a scoping review to examine how effectiveness was measured in the research, and to identify factors that were understood to influence the effectiveness of alcohol warning labels. In Chapter 3, I present an overview of the available evidence.

The scoping review included quantitative and qualitative study designs and, as such, encompassed positivist[142, 143] and constructionist[144, 145] research paradigms. Though these two approaches are very different epistemologically, integrating quantitative and qualitative methods within the scoping review provided an opportunity to provide a more complete story than either method would alone.

Within a positivist paradigm, a quantitative researcher asserts that only scientific knowledge can reveal the truth about reality; that real events, based on scientific and empirical observation can be investigated, measured and analysed free from interest, values, purpose and psychological or social influence.[142, 148] Positivists favour quantitative research methodologies, invariably employing a standardised measure (e.g. a Likert scale[149]) to categorise varying perspectives and experiences of a target population.[150] Findings are presented in a form that is measured and summarised using quantitative statistical methodologies.[150]

Constructionists, specifically social constructionists, explore the ways individuals make meanings of their experiences and how these meanings are connected to, or intertwined with, broader social contexts.[144 151] Within a constructionist paradigm, knowledge and truth are socially located. A social constructionist recognises that we make meaning – including meanings about alcohol consumption – in the context of complex social, political and economic environments. Constructionists typically use qualitative research methodologies (e.g. interviews, focus groups, or observational

research) to seek a multitude of explanations and analyse responses in many different ways to uncover meaning.[142]

The scoping review included in this thesis synthesised findings from available published literature since the mandating of alcohol warning labels in the Unites States in 1989. It included quantitative and qualitative research with an aim to provide a comprehensive account of: public support and attitudes towards labeling; how effectiveness of labelling is reported and assessed; and considerations for the successful uptake of warning messages.

Using this combination of qualitative and quantitative literature does not necessarily mean that I ascribed to a positivist view of the world in one part of my thesis and a constructionist view in another. Rather, I would argue that social constructionists can use quantitative methods, recognizing that such methods provide one angle on phenomena. Thus, my approach was constructionist throughout, interpreting quantitative data through a constructionist frame.[146]

Phase 2 was designed to answer the question: "How do Australian adults respond to the message that alcohol causes cancer?" Given the cultural and social significance of alcohol and alcohol consumption, and complexities with communicating risk, I wanted to investigate public perceptions of and attitudes toward warnings of alcohol-related cancer risk and the possible introduction of alcohol warning labels.

Using a constructionist paradigm, I chose to use focus group methodology.[152] Further to the rationale presented above, constructionism considers the acquisition of knowledge and how individuals manage and interpret the information being presented to them, based on their past experiences, personal views and cultural background.[153] At the same time, people do not simply have an individual perspective. They also collectively

contribute to, and draw on, knowledge, beliefs and theories about the nature of the world.[154]

Examining how, and what, language is used in talk about alcohol, cancer and alcohol-related cancer risk, provides a useful approach to probe public perceptions and attitudes toward alcohol-related cancer risk. Language—incorporating written communication and speech—is central to the socially constructed process through which we understand the world and ourselves.[153, 155] The use of language does more than just describe the world, it also works to construct the world as people perceive it and has real consequences for shaping our culture and society.[155] Berger and Luckmann[156] reason that conversation is the most important means of maintaining, modifying and reconstructing subjective reality.[157] Shared meaning and understanding is produced and reproduced in language, such that concepts do not need redefining each time they are used in commonplace conversation.[156, 157]

Within social constructionism, there is a general consensus that the terms 'disease,' 'illness,' 'health' and 'risk' are understood in the context of shared judgments—that is, about what we value—and are shaped by cultural and social systems.[158] The ways various disease conditions (e.g. cancer) are defined require a series of value judgements and the assignment of appropriate terms to describe such conditions.[159] Therefore, what constitutes health and illness is not directly derived from the nature of the condition, but embedded within cultural meaning. Moreover, these cultural and social understandings shape how society responds to, and how patients experience, certain illnesses. Some illnesses are stigmatised, some are contested, some are considered disabilities, and some are none of these.[160] Some, for example, cancer, are commonly associated with negative metaphorical meanings,[161] a phenomenon that has been demonstrated to influence

people's reasoning and evaluations related to these illnesses.[162] The point here is that distinctions between health and illness are socially constructed and exist for social reasons.

For the reasons outlined above, examining how and what language is used in talk about alcohol, cancer and alcohol-related cancer risk, provides an important approach for the current research topic and aims—that is, to examine how people might respond to the message that alcohol causes cancer.

I am aware that my personal experience and familiarity with alcohol consumption, and particularly cancer, contributes to my theoretical conceptualisation of the narratives shared amongst the study participants. I also acknowledge that it is impossible to remain 'outside of' the study topic while conducting research.[163] Therefore, practicing reflexivity was a significant component of my research. As a qualitative researcher who is part of the social world in which I am studying,[163] I understand how important it is for me to reflect upon how my own position, in relation to the population group and issues under study, might have impacted the research process. I acknowledge that the topics discussed in this thesis are contentious, controversial and challenging. I am a middle-aged white female who has grown up within an Australian drinking culture and who understands the potential impact of public health messages that warn of an alcohol-related cancer risk. I also identify as someone who is value-driven, and I seek to understand public uncertainty around health and health practices. I strive to produce research that guides compelling recommendations for decision-makers and contributes to improving the health of Australians.

2.3 Ethical considerations

Given that the data for Phase 1 of this research were published papers, no ethical approval was required for this component of my thesis. Ethical approval for the research conducted in Phase 2 of this thesis was obtained from The University of Adelaide Human Research Ethics Committee (HS-2013-050; H-2016-192) (see Appendices A and B). As this research involved participants from a general, not a clinical population, I did not anticipate the participants would experience any adverse effects from the topics discussed. Participants were excluded from Phase 2 (Part A) if they, or a close friend or relative, had been diagnosed with cancer or an alcohol-related disease. Although participants in Part B perceived themselves to be at higher risk of cancer (perhaps due to their reported family history of cancer, poor diet, smoking status, unprotected sun exposure, or sedentary work), they had not received a formal cancer diagnosis.

If, however, a participant did experience a negative or emotional response that may constitute distress, I had the following action plan in place: group discussions would pause, the participant would be appropriately comforted, offered the option of withdrawal, and supported with referrals for relevant health care professionals or services (e.g. General Practitioner, Cancer Council Australia helpline, Lifeline (crisis support[164])). Additionally, all participants were advised that if any of the discussion topics raised issues either about cancer or consuming alcohol, it was recommended that they discuss these matters with their General Practitioner, or contact relevant support phone lines, including the Cancer Council Australia helpline, Al-Anon/Alateen Families of Alcoholics, Alcoholics Anonymous, or Lifeline.

To be noted are the ethical considerations which arise from recommending that people change their drinking practices. Many religious or social ceremonies and

celebrations involve the consumption of alcohol and equally, some religious doctrines forbid drinking. These cultural and religious differences are important and warrant further investigation. However, the target population for this research (Phase 2, Parts A and B) was light-to-moderate consumers of alcohol. It was essential for me to establish and maintain a respectful tone throughout the focus group discussions, as the aim of the research was not to recommend that people change their drinking practices.

It should also be noted that alcohol consumption in Indigenous communities (and strategies to reduce it) is a complex issue. I acknowledge the complexities and challenges experienced within these communities however such issues are beyond the scope of this thesis and I will not be considered.

2.3.1 Reflexivity

I am aware that the message that alcohol causes cancer may challenge current understandings and the cultural significance associated with alcohol consumption. During the focus group discussions, my intention was not to educate people on the risks of alcohol-related cancer. I am not a medical professional and do not claim to understand the biological mechanisms associated with alcohol-related cancer risk. My position within this research was to gain an understanding of the impact of alcohol-related cancer risk messages. The purpose of this enquiry was thus not to criticise any individual's current (or future) lifestyle choices or attempt to change or influence behaviour. My aim was to explore the discursive patterns that emerged within and between focus group participants.

Personally, I am intrigued that alcohol, a commodity that is so deeply entrenched in society and associated with numerous pleasurable activities, can cause disease and illness in so many people. The negative impacts and consequences related to alcohol consumption, including but not limited to cancer, are very concerning to me and I have a

strong commitment to understanding how people manage or justify their alcohol consumption in light of health warnings. My goal for this thesis was to present the pertinent opinions and understandings of the general public concerning alcohol-related cancer risk, and warnings presented on alcoholic beverage containers. These findings will help to inform the development of strategies to communicate alcohol-related cancer risk and, ultimately, reduce the burden of alcohol-related cancers in Australia.

2.3.2 Confidentiality and anonymity

The identities of the speakers who participated in Phase 2 of this study have been (and will continue to be) kept anonymous and confidential. An appropriately authorised transcription service, working with an established confidentiality agreement, had access to the original videotapes for the purposes of transcribing the focus groups. All transcription pseudonyms were assigned to protect anonymity and other identifying information was changed. Only myself and my principal investigators have access to the coded data.

Data are kept on password-protected computers and in locked filing cabinets. No single individual is identifiable in any subsequent discussion or reporting of this work.

2.3.3 Informed consent

Participation in the focus groups conducted for this research was voluntary. A Participant Information Sheet (Appendices C and D) was given to participants prior to the commencement of the study. This confirmed the nature of the task and the purpose for which the data was collected. It also outlined the opportunity for participants to withdraw from the study at any time. Participants signed a Consent Form (Appendix E) to confirm their voluntary agreement to participate in the research. Participants were also provided with an Independent Complaints Procedure form (Appendix F).

2.4 Conclusion

In this chapter, I presented the methodological and theoretical background to the research in this dissertation. First, I provided an overview of the studies undertaken for this thesis, noting that there are two phases of the research. Then, I discussed how the research methods were conceptualised to answer the research questions and I introduced the data collection methods and analysis for each of the phases. A detailed account of the specific methods undertaken for each phase will be presented in the relevant analytic chapter. Finally, I discussed the ethical considerations of the research conducted in Phase 2.

In the following chapters (3-6), I present the results of the two research phases that comprise this thesis.

3 Scoping review results

3.1 Preface

In Chapter 2, I introduced the theoretical orientation and rationale for this research. I also outlined the methods (including data collection and analysis) for each of the studies.

This chapter contains the first publications contributing to this thesis. The scoping review protocol has been published in the *JBI Database of Systematic Reviews and Implementation Reports* and the subsequent scoping review is under review in *BMC Public Health* journal. The scoping review research was designed to address the first research question:

- What does international research tell us about the effectiveness of alcohol warning labels?

The review questions published in the scoping review protocol were:

1. Who are the targeted populations being addressed in alcohol warning labelling literature?
2. What is known about public opinion towards alcohol warning labelling?
3. What characteristics of alcohol warning labels are identified in the literature for evaluating intervention efficacy?
4. What barriers and facilitators to implementing alcohol warning labels are identified in the literature?

Scoping reviews are an appropriate methodological approach of scientific enquiry to examine the breadth of a topic. They are particularly useful in areas where synthesis of large volumes of literature or information is challenging due to lack of conceptual clarity.[165] Compared to systematic reviews, scoping reviews have broader, less stringent

inclusion criteria, and they allow for the incorporation of qualitative studies and evidence that would be deemed too heterogeneous for inclusion in a systematic review.[166, 167] The scoping review undertaken as part of this thesis follows the methodology proposed by Arksey and O'Malley (2005).[168]

I undertook the scoping review searches and data collection in accordance with the published protocol,[169] however, during the data extraction process, it became evident that the scoping review protocol required two minor amendments. First, as I became more familiar with the existing literature, the co-authors and I agreed to refine the research questions that had been initially identified in order to produce a more meaningful review. The revised research questions for the scoping review were as follows:

1. How is effectiveness assessed in alcohol warning labelling literature?
2. What characteristics of warning labels influence effectiveness?

These questions were better suited to answering the overarching question of this thesis.

Second, I decided that including findings from previously published systematic reviews was not going to advance current understanding of the effectiveness of alcohol warning labelling. Many of the systematic reviews published in this area include the same (or similar) research articles and tend to draw the same conclusions from these articles. Here, my aim was to identify gaps in research and progress current understanding on the appropriateness of alcohol warning labels as a public health approach. Therefore, we only included papers which reported primary research. All other aspects of the scoping review matched those outlined in the original scoping review protocol.

3.2 Publication: Alcohol warning labels to reduce alcohol-related harm: a scoping review protocol

SYSTEMATIC REVIEW PROTOCOL

Alcohol warning labels to reduce alcohol-related harm: a scoping review protocol

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ABSTRACT

Objective: This scoping review aims to explore international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm.

Introduction: Alcohol-related harm is a global public health issue. More than 200 injuries, diseases and conditions are attributable to alcohol, and almost 6% of all global deaths are related to alcohol consumption. A common approach to raising public awareness of health hazards is product warning labels. Currently, 31 countries or territories have mandated the inclusion of alcohol warning labels on alcoholic beverages. However, research findings on the effectiveness of alcohol warning labeling to reduce alcohol-related harm are mixed and debatable.

Inclusion criteria: This review will consider studies that focus on alcohol warning labeling (in the form of alcoholic beverage containers, simulated messages displayed on a computer screen or cards shown to participants that depict alcohol warning labels on beverage containers) as a strategy to reduce alcohol-related harm (e.g. drunk driving, violence, drinking while pregnant).

Methods: PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL and JSTOR will be searched for relevant articles. The search for unpublished studies will utilise Trove and Google Scholar. Studies published in English from 1989 to the present will be considered. Retrieved papers will be screened for inclusion by at least two reviewers. Data will be extracted and presented in tabular form and a narrative summary that align with the review's objective.

Keywords Alcohol; alcohol consumption; drinking behaviours; drinking intention/s; warning labels

JBI Evid Synth 2020; 18(1):186–193.

Introduction

Alcohol-related harm is an enduring global public health issue,[1] considered as one of the main risk factors for poor health globally.[2] More than 200 injuries, diseases and conditions, including liver cirrhosis, cancers, suicide, violence and road fatalities, are attributable to alcohol.[1,3] Recent reports posit that almost 6% of all global deaths (approximately 3.3 million people) are related to alcohol consumption,[1] despite less than half the world's population (38%) consuming alcohol.[4] Moreover, consistent with current evidence-based criteria, if alcohol was proposed as a new drug it would be categorized with drugs such as morphine, dexamphetamine and gamma-hydroxybutyrate ("fantasy"), all of which are illicit substances.[5]

A wide range of effective global policies and interventions have been implemented to reduce alcohol-related harm, including drink driving and blood alcohol concentration (BAC) laws,[6] minimum legal drinking age,[7] and lockout laws that restrict alcohol access in bars and clubs.[8] Increasing awareness of health hazards through effective health promotion[9] is often presented as the most acceptable method to reduce risky behaviors and, through this, alcohol-related injury and illness. The dissemination of health knowledge through public health campaigns aims to assist individuals to make informed decisions about which risky behaviors to avoid to improve their personal health.[9] With regard to raising public awareness of health hazards,

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The authors declare no conflicts of interest.

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3.2.1 Statement of authorship

Title of Paper	Alcohol warning labels as an international public health approach to reduce alcohol-related harm: A systematic scoping review protocol
Publication Status	☑ Published ☐ Accepted for Publication ☐ Submitted for Publication ☐ Unpublished and Unsubmitted work written in manuscript style
Publication Details	JBI Database System Rev Implement Rep 2019; 17(0):1–10.
Principal Author	
Name of Principal Author (Candidate)	Olivia Hawkins
Contribution to the paper	Collected and analysed data, prepared manuscript, and acted as corresponding author
Overall percentage (%)	80
Signature	Date 21/05/2021
Co-Authors Contributions	
By signing the Statement of Authorship, each author certifies that: I. the candidate's stated contribution to the publication is accurate (as detailed above); ii. permission is granted for the candidate in include the publication in the thesis; and iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.	
Name of Co-Author	Jaklin Eliott
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 26/05/2021
Name of Co-Author	Shona Crabb
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 25/5/2021
Name of Co-Author	Emma Miller
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 6/04/2021
Name of Co-Author	Annette Braunack-Mayer
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 24th May 2021

3.2.2 Abstract

Objective: This scoping review aims to explore the international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm.

Introduction: Alcohol-related harm is a global public health issue. More than 200 injuries, diseases and conditions are attributable to alcohol and almost 6% of all global deaths are related to alcohol consumption. A common approach to raising public awareness of health hazards is product warning labels. Currently, 31 countries or territories have mandated the inclusion of alcohol warning labels on alcoholic beverages. However, research findings on the effectiveness of alcohol warning labelling to reduce alcohol-related harm are mixed and debatable.

Inclusion criteria: This review will consider studies that focus on alcohol warning labelling in the form of alcoholic beverage containers, simulated messages displayed on a computer screen or cards shown to participants that depict alcohol warning labels on beverage containers as a strategy to reduce alcohol-related harm, for example drunk driving, violence and drinking while pregnant etc.

Methods: PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL and JSTOR will be searched for relevant articles. The search for unpublished studies will utilise Trove and Google Scholar. Studies published in English from 1989 to the present will be considered. Retrieved papers will be screened for inclusion by at least two reviewers. Data will be extracted and presented in tabular form and a narrative summary that aligns with the review's objective.

Keywords Alcohol; alcohol consumption; drinking behaviours; drinking intention/s; warning label

3.2.3 Review objective/questions

The objective of the scoping review is to locate and describe the international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm. The specific review questions are:

1. Which targeted populations are being addressed in alcohol warning labelling literature?
2. What is known about public opinion towards alcohol warning labelling?
3. What characteristics of alcohol warning labels are identified in the literature for evaluating intervention efficacy?
4. What barriers and facilitators to implementing alcohol warning labels are identified in the literature?

Findings from the review will progress current understanding on the appropriateness of alcohol warning labels as a public health approach to reduce alcohol-related harm and inform future research.

3.2.4 Introduction

Alcohol-related harm is an enduring global public health issue[170]—considered as one of the main risk factors for poor health globally.[171] More than 200 injuries and disease conditions, including liver cirrhosis, cancers, suicide, violence and road fatalities are attributable to alcohol.[4, 170] Recent reports posit that almost 6% of all global deaths (approximately 3.3 million people) are related to alcohol consumption[170]—despite fewer than half the world's population (38%) consuming alcohol.[172] Moreover, consistent with current evidence-based criteria, if alcohol was proposed as a new drug it would be categorised with drugs such as morphine, dexamphetamine, and gamma-hydroxybutyrate ('Fantasy'), all illicit substances.[173]

A wide range of effective global policies and interventions have been implemented to reduce alcohol-related harm including, drink driving and blood alcohol concentration (BAC) laws,[174] minimum legal drinking age,[175] and lockout laws that restrict alcohol access in bars and clubs.[176] Increasing awareness of health hazards through effective health promotion is often presented as the most acceptable method to reduce risky behaviours and through this, alcohol-related injury and illness. The dissemination of health knowledge through public health campaigns aims to assist individuals to make informed decisions about which risky behaviours to avoid to improve their personal health.[123] With regard to raising public awareness of health hazards, a common approach[93] is the inclusion of product warning labels.[172, 177]

In 1988 the United States mandated alcohol warning labels on alcoholic beverages.[178] The Alcoholic Beverage Labelling Act of 1988 was introduced to inform the American public about the health hazards associated with alcohol consumption and to provide a clear, unambiguous and nationally regulated warning of such hazards.[179] The warning reads:

"GOVERNMENT WARNING:

(1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects.

(2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery and may cause health problems."

Currently, 31 countries or territories have mandated the inclusion of alcohol warning labels on alcoholic beverages,[4, 179] while countries such as Australia and New Zealand have voluntary agreements.[180] The messages displayed on alcohol products vary between

countries and include warnings of alcohol-related health risks associated with drink driving, consuming alcohol during pregnancy, harm to others and operating machinery.[181]

Research findings on the effectiveness of alcohol warning labelling to reduce alcohol-related harm are mixed. One study found that alcohol warning labels are associated with stimulating conversation about drunk driving and pregnancy, and deterring drunk driving.[182] However, another study examining attitudes towards alcohol warning labelling and the presented warnings, found that consumers who enjoy drinking became defensive and displayed negative attitudes towards the labels.[108] The content type and emotional valence of warnings may contribute to potential defensive reactions. Indeed, although some raise the importance of fear arousal in health warnings[183]—an approach that was successful in reducing smoking rates after the introduction of graphic cigarette warning labels[184]—fear tactics are only helpful if individuals perceive their susceptibility or vulnerability to the risk-taking behaviour.[185]

Some of the other factors thought to impact warning label effectiveness include visibility, saliency, message content and exposure. Poor visibility and saliency may result from the location of warning labels on alcoholic beverage containers.[184] Message content can elicit a defensive reaction,[185] however messages that are vague and underwhelming are unlikely to motivate behaviour change in individuals.[107] Exposure—examined through self-reported knowledge of alcohol labels and by recall of labelling content—has been shown to be greater among heavy alcohol consumers.[186, 187] Despite this, one study found no evidence of an increase in perceived alcohol-related health risks or intention to change behaviour after exposure to such labels.[188]

Research confirming the damaging effects of alcohol consumption continues to grow.[170] Although alcohol warning labelling may be a cost-effective and politically

acceptable way to educate the public about alcohol-related health hazards,[119] and cigarette health warnings have become a successful public health approach for reducing tobacco consumption,[184] the extent to which alcohol warning labels are a suitable public health approach is debatable. Therefore, the purpose of this scoping review is to locate and describe the international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm. This investigation will address the following: 1) Which targeted populations are being addressed within alcohol warning labelling literature?, 2) What is known about public opinion towards alcohol warning labelling?, 3) What characteristics of alcohol warning labels are identified in the literature for evaluating intervention efficacy?, and 4) What barriers and facilitators to implementing alcohol warning labels are identified in the literature? Investigating alcohol warning labelling as an approach to communicate alcohol-related risks to the community is vital to inform future efforts to reduce the negative health and social consequences of the harmful use of alcohol.

An initial search of the literature was conducted via the database PubMed to establish whether there are studies with findings available to answer the review questions. Though numerous reviews have been conducted in the area of alcohol warning labelling,[93, 94, 106, 107, 119, 172, 189-198] there are currently no systematic or scoping reviews, published or underway that; 1) integrate the questions proposed by this review, 2) consider both published and unpublished articles, 3) consider articles from 1989 to 2018 and 4) are not limited by language or study location. This scoping review will provide a comprehensive overview of alcohol warning labels as a public health approach for reducing alcohol-related harm.

3.2.5 Inclusion criteria

Participants

This review will consider studies that address the research questions. The studies considered for inclusion will not be limited by participants' demographic variables (e.g. age, gender, ethnicity etc.), recruitment or sampling strategies.

Concept

The concept of interest in this review is alcohol warning labelling as an approach to reduce alcohol-related harm (e.g. drunk driving, violence, and drinking while pregnant).

Context

This review will consider any international research that focuses on alcohol warning labelling as a harm reduction strategy. The studies considered for inclusion will not be limited by research setting (e.g. hospitals, shopping centres, or universities etc.). This review will consider research on the messages that are presented on alcoholic beverage containers, simulated messages displayed on a computer screen or, cards shown to participants that depict alcohol warning labels on beverage containers. Alcohol health warnings presented through media and/or online platforms for example television advertisements, Facebook, Twitter or Instagram will be not be considered for inclusion.

Types of studies

All studies published after Jan 1st 1989 will be considered for inclusion in this review, following the enactment of The Alcoholic Beverage Labelling Act in November 1988.[199] Studies published in any language will also be considered for inclusion in this review. Any non-English publications meeting the inclusion criteria will be outsourced to

an accredited translation service. An example search strategy has been appended can be viewed in section 3.3.1.

This review will consider both quantitative and qualitative study designs. Quantitative study designs will include experimental study designs, quasi-experimental designs, observational methods and survey methods. Qualitative study designs include data collected via interviews and focus group research. Systematic reviews that report on alcohol warning labelling as an effective public health measure will be considered for inclusion in this review. Grey literature will also be considered for inclusion in the review and will include government documents and reports or research conducted by advocacy groups.

Articles from magazines, newspapers, newsletters or editorials will be excluded, but relevant reports, studies or websites mentioned in these sources will be investigated and assessed for inclusion in this review.

3.2.6 Methods

The scoping review will follow the JBI Scoping Review methodology as described in the 2017 *Joanna Briggs Institute Reviewer's Manual.*[200]

Search strategy

The search strategy aims to locate both published and unpublished studies. Searches will be conducted both electronically and manually (i.e. hand-searching the reference lists of included studies for relevant articles) and follow a three-step process. First, a search will be undertaken using the following electronic databases: PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL and JSTOR. Second, the search for unpublished studies will utilise Trove and Google Scholar, together with government,

advocacy groups, or industry-related websites and documentation (particularly grey literature) that meets the review inclusion criteria. Finally, the reference lists of all identified reports and articles will be searched for additional studies.[201]

Articles located through the search strategy will be imported to an EndNote library. After the removal of duplicate studies or reports, the title and abstract of remaining articles will be assessed for inclusion based on the inclusion criteria. Full text of the articles will be retrieved if the inclusion criteria are met or if further examination is necessary before excluding the article. To determine the inclusion of ambiguous articles, co-authors' judgement will be sought. Multiple articles from the same project/research group will be linked and treated as one for the purposes of data extraction and presenting results.

Extraction of the results

The data extracted from included papers will be guided by the scoping review questions. It is anticipated that the extracted data will be tabulated according to author(s), year of publication, location, methodology, participants, targeted population, study objective, and outcomes significant to the scoping review questions. However, these categories may be redefined subject to the contents of the included articles.

Presentation of the results

A narrative summary will accompany the tabulated results and will describe how the results relate to each review question and the objectives of this protocol. Some studies may address more than one category and these studies will be included in all relevant analyses.

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Conflicts of interest

The authors declare no conflict of interest.

END OF PUBLICATION

3.3 Manuscript: Factors that influence the effectiveness of alcohol warning labels: a scoping review

3.3.1 Statement of authorship

Title of Paper	Factors that influence the effectiveness of alcohol warning labels: a scoping review
Publication Status	☐ Published ☐ Accepted for Publication ☑ Submitted for Publication ☐ Unpublished and Unsubmitted work written in manuscript style
Publication Details	BMC Public Health
Principal Author	
Name of Principal Author (Candidate)	Olivia Hawkins
Contribution to the paper	Collected and analysed data, prepared manuscript, and acted as corresponding author
Overall percentage (%)	60
Signature	Date 21/05/2021
Co-Authors Contributions	
By signing the Statement of Authorship, each author certifies that: i. the candidate's stated contribution to the publication is accurate (as detailed above); ii. permission is granted for the candidate in include the publication in the thesis; and iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.	
Name of Co-Author	Joshua McDonough
Contribution to the paper	Data extraction and analysis, prepared manuscript, and acted as corresponding author
Signature	Date 24/05/2021
Name of Co-Author	Annette Braunack-Mayer
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 24th May 2021
Name of Co-Author	Shona Crabb
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 25/5/2021
Name of Co-Author	Emma Miller
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 6/04/2021
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3.3.2 Abstract

Background: Alcohol-related illness and injury is a major public health concern. Alcohol warning labelling has been one strategy employed to inform the public of alcohol-related harm. The aim of this scoping review was to identify the characteristics of warning labels that influence their effectiveness.

Methods: A scoping review was conducted via PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL, JSTOR, Trove and Google Scholar, together with government, advocacy groups or industry-related websites and documentation. All studies published after January 1st 1989 to March 1st 2020 were considered for inclusion in this review, following the enactment of The Alcoholic Beverage Labelling Act of 1988 in the United States. To identify the factors that influence the effectiveness of alcohol warning labels, we examined: 1) how effectiveness is assessed in alcohol warning labelling literature and 2) the characteristics of warning labels that influence effectiveness.

Results: We identified 139 studies that met the inclusion criteria. Most studies were conducted in North America and Australia, and were predominantly quantitative. The included studies assessed effectiveness in the following ways: acceptability, awareness, judgement, and intention to change behaviour. Label characteristics that influence effectiveness were divided into two categories: label saliency and message content.

Conclusions: The evidence base around the effectiveness of alcohol warning labels to elicit behaviour change is weak. Current alcohol warning labels are likely ineffective as an approach to reduce alcohol-related harm. However, in conjunction with a comprehensive suite of approaches aimed at reducing alcohol-related harm, well-designed

labels based on empirical evidence may increase public awareness and knowledge. Caution is needed by policymakers regarding the introduction and implementation of alcohol warning labels as evaluation of their effectiveness is complex.

Keywords: Alcohol; alcohol consumption; drinking behaviours; drinking intention/s; warning labels

3.3.3 Background

Alcohol-related harm is one of the main risk factors for poor health globally.[171, 202-204] Over 200 injuries and disease conditions including liver cirrhosis, cancers, suicide, violence, and road fatalities are attributable to alcohol consumption.[202] In 2019, the World Health Organisation reported that more than 5% of all global deaths (approximately 3 million people) were alcohol-related, despite fewer than half the world's population (38%) consuming alcohol.[202]

Globally, a range of policies are used to reduce alcohol-related harm and promote social wellbeing.[205] Examples of these policies include regulating availability (e.g. legal drinking age, trading restrictions),[206] marketing regulations,[207] minimum alcohol pricing,[208] and enhancing the availability of information about the effects of alcohol through warning labels on packaged alcoholic beverages.[105]

In 1989, the United States became the first country to mandate alcohol warning labels, implementing The Alcoholic Beverage Labelling Act of 1988.[103] This approach was employed to inform the American public about the hazards associated with alcohol consumption, and provided a clear, unambiguous and nationally regulated warning. This warning remains the same to this day, and reads:

"GOVERNMENT WARNING:

(1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects.

(2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery and may cause health problems."

Currently, 46 countries or territories have mandated health and safety warning labels on alcoholic beverage containers; half of these (23) have a legal requirement regarding the

size of the warning label.[105] Most of the warnings (see Table 3.1) focus on drink-driving (31 countries) and underage drinking (41 countries), and only seven locations require products to display rotating warning label text.[105] Recently, the Australia New Zealand Food Standards Code was amended to require the inclusion of a pregnancy warning label on packaged alcoholic beverages sold in Australia and New Zealand.[209] Other health warnings displayed on alcoholic beverages in Australia and New Zealand remain as industry-led voluntary agreements.[210] There is a general consensus that alcoholic beverages are inconsistently labelled in terms of health warnings and, where included, messages are relatively small and difficult to notice.[211] In the absence of mandated requirements, the uptake of voluntary recommendations regarding health information is poor.

Evidence suggests that the most successful strategies for reducing alcohol consumption are price increases, availability restrictions, and decreases in alcohol advertising and marketing. These approaches, however, are often unpopular with the general public.[26] Evidence for the effectiveness of informational and educational campaigns (such as warning labels) is weaker.[212, 213] However, it has been noted that such an approach may be more acceptable to the general public,[26] can inform the public of alcohol related harms, and may change attitudes around alcohol consumption in the long term.[214]

Health warnings have been shown to be effective in other areas of public health, for example, cigarette health warnings have contributed to the success of anti-smoking campaigns and, therefore, it is plausible that alcohol warning labels could engender a similar result.

Table 3. 1: Examples of international alcohol warning labels[12, 141-143, 205, 248, 249]

Country		Warning labels
Albania	M	“Drinking can harm your unborn baby”
Argentina	M	“Drink with Moderation”; “Sale prohibited for people under 18 years of age”
Australia	V	“Get the Facts: DrinkWise.org.au”; “It is safest not to drink while pregnant”; symbol showing a diagonal line being superimposed on an image of a pregnant woman holding a glass of alcohol; “Kids and alcohol don’t mix”; “Is your drinking harming yourself or others?"
Brazil	M	“Avoid the risks of excessive alcohol consumption”
Chile	V	“CCU ask you to drink responsibly”; “Product for those 18 and older”
China	V	“Over drinking is harmful to health”; “Pregnant women and children shall not drink”
Colombia	M	“This product is harmful to the health of children and pregnant women”; “The excessive use of alcohol is harmful to your health”; “Prohibited for sale to minors”
Costa Rica	M	One of the two following messages must be placed on bottles: “Drinking liquor is harmful to your health”; “Alcohol abuse is harmful to your health”
Ecuador	M	“Warning. The excessive consumption of alcohol restricts your capacity to drive and operate machinery, may cause damage to your health, and adversely affects your family. Ministry of Public Health of Ecuador. Sale prohibited to minors under 18 years of age”
El Salvador	M	“The excessive consumption of this product is harmful to health and creates addiction. Its sale is banned to those under 18 years of age”
Ethiopia	V	“Don’t drink if you drive
France	M	“Drinking alcoholic beverages during pregnancy even in small quantities can have grave/serious consequences for the health of the baby”; the use of government-issued symbol showing a diagonal line being superimposed on an image of a pregnant woman holding a glass of alcohol
Germany	M	“Sales prohibited to persons under 18 years of age” (For ‘Alcopops’)
Guatemala	M	“The excessive consumption of this product is harmful to the consumer’s health”; “The consumption of this product causes serious harm to your health”
Honduras	M	The law states that: “Preventative legends must be displayed on all alcoholic beverage packaging”
India	M	“Consumption of liquor is injurious to health”
Japan	V	“Drinking alcohol during pregnancy or nursing may adversely affect the development of your fetus or child?” “Be careful not to drink in excess”; “Drink in moderation”
Kenya	M	“Excessive alcohol consumption impairs your judgement; do not drive or operate machinery”; “Alcohol consumption when pregnant harms your baby”; “
Mexico	M	“Excessive consumption of this product is hazardous to health”; “Abuse of this product is hazardous to your health”

Country		Warning labels
Portugal	M	"Drink alcohol in moderation"
Russian Federation	M	"Alcohol is not for children and teenagers up to age 18, pregnant & nursing women, or for persons with diseases of the central nervous system, kidneys, liver, and other digestive organs"
South Africa	M	The following health messages are listed in the regulation: "Alcohol reduces driving ability, don't drink and drive"; "Don't drink and walk on the road, you may be killed"; "Alcohol increases you risk to personal injuries"; "Alcohol is a major cause of violence and crime"; "Alcohol abuse is dangerous to your health"; "Alcohol is addictive"; "Drinking during pregnancy can be harmful to your unborn baby"
South Korea	M	One of the three following messages: "Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer and is especially detrimental to the mental and physical health of minors"; "Warning: Excessive consumption of alcohol may cause liver cirrhosis or liver cancer and, especially, women who drink while they are pregnant increase the risk of congenital anomalies"; "Excessive consumption of alcohol may cause liver cirrhosis or liver cancer, and consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and may increase the likelihood of car accidents or accidents during work" On spirits: "Excessive drinking may cause cirrhosis of the liver or liver cancer and increase the probability of accidents while driving or working"
Sweden	V	"Driving under the influence of alcohol increases the risk of accidents"; "One in two drivers killed in single accidents is intoxicated by alcohol"; "Alcohol may cause cerebral hemorrhage and caner"; "Half of people drowning have alcohol in the blood"; "Children who are served alcohol at home are more prone to binge drinking"; "Alcohol may cause damage to the nervous system and brain"
Taiwan	M	"Excessive consumption of alcohol is harmful to health" or one of the following: "To be safe, don't drink and drive"; "Excessive drinking is harmful to you and others"; "Please do not drink if you are a minor"; "Drinking alcohol leads to unconsciousness and even death"
Thailand	M	"Liquor drinking may cause cirrhosis and sexual impotency"; "Drunk driving may cause disability or death"; "Liquor drinking may cause less consciousness and death"; "Liquor drinking is harmful to you and destroys your family"
United Kingdom	V	"The Chief Medical Officer recommend men do not regularly exceed 3-4 units daily and women, 2-3 units daily"; "Know Your Limits"; "Enjoy Responsibly"; "Drink Responsibly"
United States	M	"GOVERNMENT WARNING: (1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects. (2) Consumption of alcohol impairs your ability to drive a car or operate machinery and may cause health problems."
Uzbekistan	M	Beverage alcohol containers must include a medical warning occupying not less than 40% of the basic area of the label in the form of text and/or images
Venezuela	M	One of the following warning statements or something similar is required: "The abuse of alcohol beverages can damage the health"; "Excessive consumption can be harmful to health"
Zimbabwe	M	"Alcohol may be hazardous to health if consumed to excess."; "Operation of machinery or driving after the consumption of alcohol is not advisable."

M: Mandated; V: Voluntary

Though alcohol consumption and cigarette smoking have comparable harms, the social and cultural significance of alcohol in Australia is such that tourism and hospitality industries rely heavily on the sale and consumption of alcohol, in both domestic and international contexts.[215] This complicates public health approaches to reduce alcohol-related harm.

Evaluating the effectiveness of alcohol warning labels is complex. Behavioural compliance is the most reliable assessment of labelling effectiveness; however, ethical considerations restrict how we assess compliance—particularly related to alcohol consumption.[147] Thus, research on the effectiveness of alcohol warning labelling typically examines label characteristics and contextual factors. Examples of label characteristics that have been examined to determine effectiveness include content, textual salience, shape salience, location of the warning, and use of images.[10, 101, 216] Contextual factors thought to impact warning label effectiveness include frequency of exposure and social influence,[217-219] among others.

This review sought to identify factors that influence the effectiveness of alcohol warning labels. The aim here is to describe how effectiveness is assessed in the literature and the characteristic of labels considered to impact the effectiveness of the labels. Specifically, we address the following:

1) How is effectiveness assessed in alcohol warning labelling literature?

2) What characteristics of warning labels influence effectiveness?

Based on these findings, we summarise the relationship between label characteristics and indicators of effectiveness.

3.3.4 Methods

Study design

This scoping review follows the approach described in the 2017 Joanna Briggs Institute Reviewer's Manual,[200] providing the structure to investigate the research questions listed above. Unlike a systematic review, scoping studies do not seek to assess the quality of the research; consequently, a broader range of literature, including government documents and reports, qualitative and quantitative methodologies, and research conducted by advocacy groups can be described.[168]

Search strategy

We searched the following databases: PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL, JSTOR, Trove and Google Scholar, together with government, advocacy groups, or industry-related websites and documentation. Articles published from January 1st 1989 to March 1st 2020, following the enactment of The Alcoholic Beverage Labelling Act of 1988 in the United States,[199] were considered for inclusion. The search terms used are outlined in Table 3.2 and reflect the scope of the research and the breadth of the categories. The reference lists of all identified reports and articles were also searched for additional studies.[201]

Inclusion and exclusion criteria

We included articles that reported data on factors that influence the effectiveness of alcohol warning labels published between 1990 and 2020 inclusive. Journal articles, reports, or theses using quantitative (e.g. observational and survey methodologies), qualitative (e.g. interviews and focus group data), or mixed methods study designs were considered for inclusion (see Appendix G).

Table 3. 2: PubMed systematic review search terms (variations used to suit each database)

	AND	NOT
Drinking Behavio* OR	Drug Labelling OR	Open-label OR
Alcohol Drinking* OR	Label* NEAR/10 warning* OR	Off-label OR
Alcohol Consumption OR	Product Labelling OR	Rat OR
Alcoholic Beverage* OR	Product Warning OR	Rats OR
Alcohol Control OR	Government Regulat*	Mice OR
Alcoholi* OR		Porcine OR
Binge Drinking OR		Canine OR
Wine OR		Murine OR
Beer OR		Bovine OR
Spirits OR		Ovine
Liquor OR		
Drinking Intention* OR		
Fetal Alcohol Syndrome OR		
Drink Driv* OR		
Foetal Alcohol Syndrome OR		
DUI OR		
Drunk Driv* OR		
(Drive* AND Influence) OR		
Alcohol W/5 Control*		

We excluded reviews, conference proceedings, opinion pieces, articles from magazines, newspapers, newsletters, and editorials, but relevant reports, studies or websites mentioned in these sources were investigated and assessed for inclusion in this review (see Appendix G).

A PCC (Population, Concept, Context) framework[220] was used to determine the eligibility of the identified studies, as shown in Table 3.3. Studies were not limited by participants' demographic variables (e.g. age, gender, ethnicity etc.), recruitment or sampling strategies. No restrictions were placed on the quality or location of the study. We only included studies reported in the English language (see Appendix G).

Table 3. 3: Framework for determining eligibility for the scoping review study

Population	Concept	Context
Participants of any age, gender or ethnicity	Factors that influence the effectiveness of alcohol warning labels	Labels presented on alcoholic beverage containers International research All research settings (hospitals, universities etc.)

Study selection

Two researchers (NM, JM) independently screened titles and abstracts to eliminate studies that did not meet the inclusion criteria. Remaining studies were retrieved for full text review. The review team independently examined the full text of retrieved articles for eligibility, and a third reviewer was consulted to resolve any disagreements related to inclusion of articles. Studies excluded following full text reviews and reasons for exclusion were documented.

Data extraction

For all included studies, data were extracted by two reviewers (NM, JM) and included: author(s), year of publication, location, publication type, aims, study design, methodology, target population, sample size, and findings significant to the scoping review questions.

3.3.5 Results

The search strategy retrieved 4,922 records from the ten databases searched. After removal of duplicates and excluding articles that did not meet the inclusion criteria based on title and abstract screening, 304 potentially eligible abstracts remained. These were assessed against the inclusion criteria using the full-text article. An additional 38 articles were added for full text screening: 19 were identified through searching reference lists, and 19 were government or industry related documents, identified through searching

advocacy and government websites. Of the 342 articles identified, 139 articles met the inclusion criteria. Figure 3.1 outlines the screening process of article inclusion.

Study characteristics

The characteristics of the included studies are reported in Appendix H. All included articles were published between 1989 and 2020. Most studies (n = 81) were conducted in North America, followed by Australia and New Zealand (n = 31). The remaining study origins were Europe (n = 11), the United Kingdom (n = 14), Asia (n = 2), and Israel (n = 1). Most included studies were published as journal articles (n = 121), with the remaining publications types being reports (n = 16), and theses (n = 3). Studies predominantly used quantitative methods (n = 128), followed by qualitative methods (n = 7), and mixed methods (n = 5).

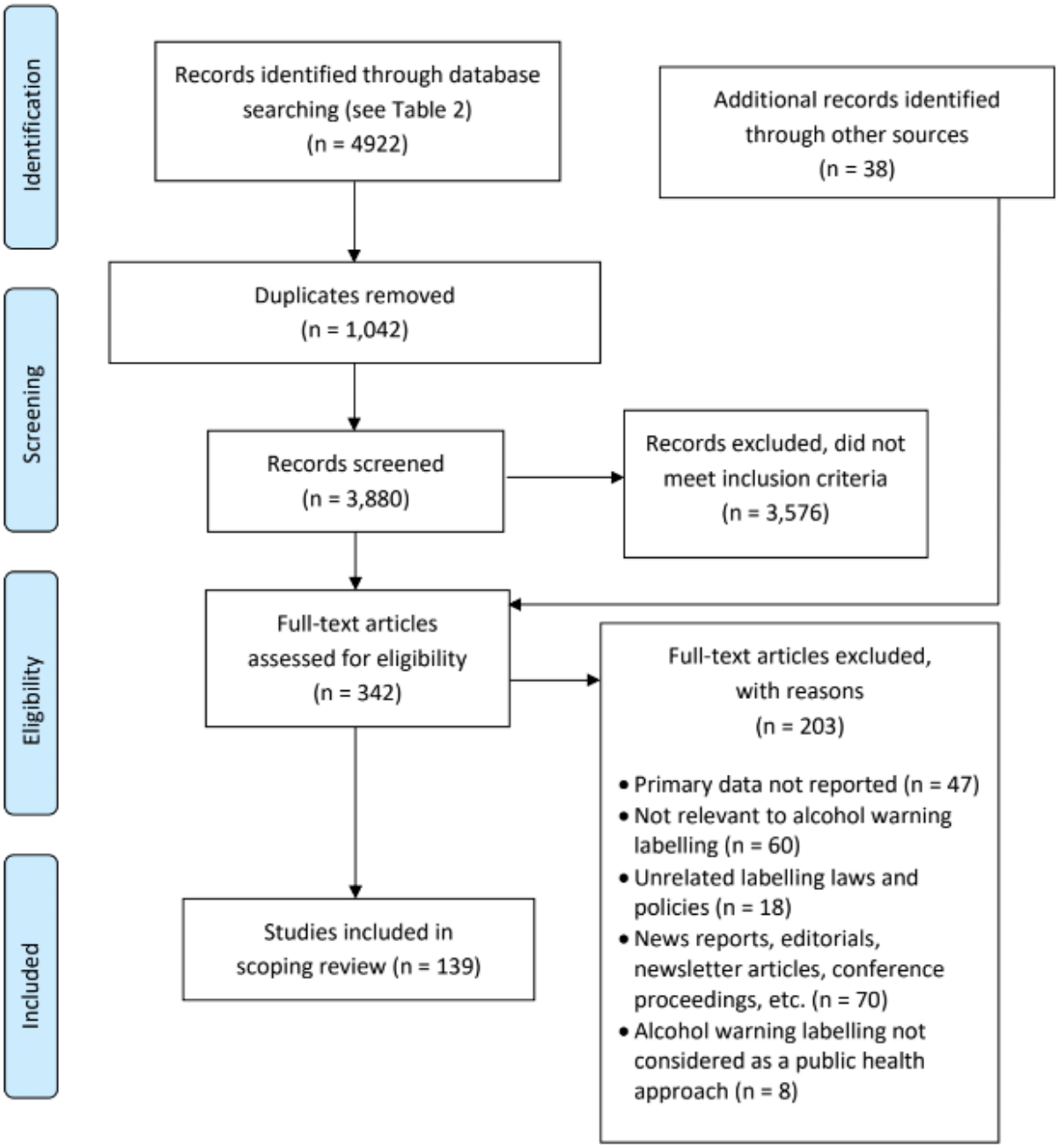

Figure 3. 1: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram representing the process of identifying relevant studies for inclusion[221]

1. How is effectiveness assessed in alcohol warning labelling literature?

We identified four categories through which alcohol warning label effectiveness is assessed in the literature: acceptability, awareness, judgement, and intention to change behaviour. These four categories and examples of articles that use these categories to demonstrate effectiveness are presented in Table 3.4. In this section we describe the effectiveness of warning labels under these categories and then describe the characteristics of warning labels that influence effectiveness.

Acceptability

Acceptability was assessed through public opinion and support for alcohol warning labels. Thirty-six of the 139 included studies addressed public support for warning labelling as a public health initiative. Of those 36 studies, 31 provided quantitative assessments of public levels of support for warning labels on alcoholic beverage containers as a policy measure.[26, 53, 192, 198, 222-249] Detailed findings were available for studies in the United States, Canada, and Australia. Overall, public support for warning labels was high, with all reported rates of support above 50%, and remained relatively consistent over time (Figure 3.2).[138, 215-218, 222, 225, 226] Additionally, support for warning labels was consistently higher than support for other policy interventions, such as increasing taxation and government-led health promotion campaigns.[26, 192, 224, 230, 232, 233, 236, 239, 240, 242, 250] Levels of support varied (see Table 3.5) depending on gender[222, 224, 226, 235, 244] and drinking status (e.g. abstainers, light-to-moderate or heavy consumers).[53, 223-226, 241, 244, 246] The strongest levels of support for alcohol warning labels were among women[222, 224, 226, 235, 244] and non-drinkers.[225, 226, 241, 244] Females were consistently more likely than males to support health warning labels,[222, 224, 226, 235, 244] and the more people consumed alcohol, the less likely they were to support warning labels.[53, 222, 224-226, 241, 244, 246] No apparent pattern was identified with respect to age[224] or education level.[222, 244]

Table 3. 4: Summary of the four categories identified in the literature for effectiveness of alcohol warning labelling

Categories	Description	Example Studies
Acceptability	Public opinion and support for alcohol warning labels	Alcohol Education and Rehabilitation Foundation (2011)[226] Anglin et al. (2001)[246] Annunziata et al. (2016)[227] Annunziata et al. (2016)[228] Annunziata et al. (2016)[229] Bates et al. (2018)[248] Buykx et al. (2015)[26] Christiansen et cl. (2019)[251] Coomber et al. (2017)[222] Foundation for Alcohol Research and Education (FARE) (2011) [53] FARE (2012)[230] FARE (2013)[250] FARE (2014)[232] FARE (2015)[233] FARE (2019)[247] Giesbrecht et al. (1999)[234] Giesbrecht et al. (2005)[235] Giesbrecht et al. (2007)[192] Giesbrecht et al. (2001)[236] Giesbrecht et al.(1999)[237] Greenfield et al. (2014)[238] Greenfield et al. (2007)[239] Greenfield et al. (2007)[240] Hilton et al. (1991)[241] Ialomiteanu et al. (2010)[224] Kaskutas et al. (1993)[242] Martin et al. (1991)[225] Maynard et al. (2018)[223] Pendleton et al. (1990)[243] Room et al (1995)[244] Thomson et al. (2012)[198] Vallance et al. (2018)[120] Vallance et al. (2020)[249] Victorian Health Promotion Foundation (2009)[252] Weerasinghe et al. (2020)[253] Weiss et al. (1997)[245]
Awareness	Awareness of alcohol warning labels, cued and free recall of message content	Barrett et al (1993)[254] Blume et al. (2007)[255] Coomber et al. (2015)[213] Coomber et al. (2017)[256] Critchlow et al. (2019)[257] Dossou et al. (2017)[217] Glasscoff et al. (1994)[258] Graves (1993)[259] Greenfield et al (1993)[260] Greenfield et al (1999)[182] Greenfield et al (1998) [261] Dumas et al. (2018)[262] Hankin (1998)[263] Hankin et al. (1996)[264] Hankin et al (1993)[265] Hobin et al. (2020)[266] Kaskutas et al. (1992)[267] Kaskutas et al. (1997)[268] Kaskutas et al. (1998)[269] MacKinnon (1993)[270] Marin (1994)[187] Marin (1997)[271] Marin et al. (1997)[272] Mayer et al. (1991)[177] Mazis et al. (1991)[273] Mazis et al. (1996)[274] Nohre (1999)[275] Ohtsu et al. (2010)[276] Parker et al. (1994)[277] Parsons et al. (1993)[278] Scammon et al. (1991)[279] Tam et al. (2010)[115]
Judgement	Believability, attitude, hazard perception, risk assessment, impact on behaviour	Al-hamdani et al. (2015)[280] Andrews et al. (1990)[108] Andrews et al. 91991)[281] Andrews et al. (1993)[282] Annunziata et al. (2017)[283] Creyer et al. (2002)[284] Hilton et al. (1991)[241] Jones et al. (2010)[285] Kaskutas (1993)[286] Kaskutas et al. (1994)[287] Kaskutas et al. (1998)[269] Kozup (2001)[112] MacKinnon et al. (1998)[288] MacKinnon et al. (2000)[109] Mayer et al. (1991)[177] Mazis et al. (1991)[273] Miller et al. (2016)[289] Nowak et al. (2004)[113] Tam et al. (2010)[115]
Intention to change behaviour	Purchase intention, intention/no intention to alter alcohol consumption	Armitage et al. (2016)[290] Blackwell et al. (2018)[291] Coomber et al. (2018)[212] Glock et al. (2013)[292] Jongenelis et al. (2018)[293] Kersbergen et al. (2017)[294] Krischler et al. (2015)[295] May et al. (2017)[139] Maynard et al. (2018)[223] Noordink et al. (2013)[296] Rim (2013)[114] Roderique-Davies et al. (2020)[297] Sillero-Rejon et al. (2018)[219] Wigg et al. (2016)[298]

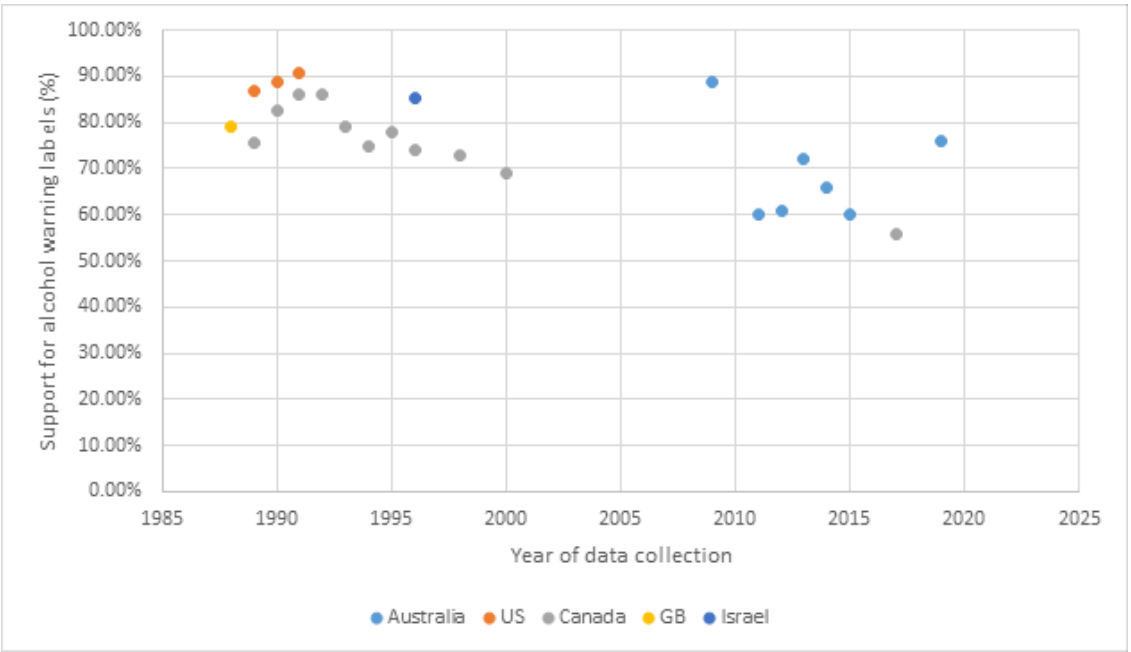

Figure 3. 2: Public support for warning labels on alcoholic beverage as a policy measure over time by year

Table 3. 5: Average level of support for warning labels on alcoholic beverage containers by characteristics in Australia, the United States, and Canada. Results are presented in percentages as 'mean (lowest results-highest results)

		Australia	US	Canada
Gender	Male	57.7 (52.0-66.7)	84.5 (82.0-88.0)	71.5 (60.6-82.0)
	Female	67.6 (63.0-77.1)	92.5 (91.0-94.0)	83.5 (77.0-91.0)
Age	<30	60.0 (53.0-69.7)	90.5 (88.0-93.0)	76.2 (65.1-87.0)
	≥30	63.6 (60.0-72.7)	87.7 (86.3-89.5)	78.6 (70.7-87.0)
Drinking status	Non-drinker	77.2 (71.0-87.0)	95.5 (95.0-96.0)	89.5 (83.0-97.0)
	Low-risk drinkers*	60.1 (52.0-67.0)	89.0 (86.0-91.0)	79.2 (69.0-88.0)
	High-risk drinkers*	48.8 (46.0-53.0)	78.5 (71.0-82.0)	65.6 (52.9-77.0)
Educational Level	Primary school	72.6†	91.3 (90.0-93.0)	84.4 (78.0-92.0)
	High school	69.5†	88.0 (85.0-91.0)	77.5 (70.0-86.0)
	Tertiary education	75.9†	86.3 (85.0-89.0)	73.1 (62.9-85.0)
Overall support		62.9 (58.0-72.0)	88.55 (87.0-90.8)	77.76 (69.2-86.2)

*Based on National Health and Medical Research Council guidelines suggesting drinking no more than two standard drinks per day, and no more than four standard drinks on a single occasion.

†Results are based on one reference value.

Support for warning labels varied depending on individual knowledge of alcohol-related harms and message content. Some findings suggested that support for alcohol warning labelling increased once participants were exposed to information about the causative relationship between alcohol and cancer.[26, 248, 253] Additionally, participants demonstrated support for warning labels that included health information (e.g. health effects of over-consumption),[223, 227-229, 251] daily guidelines for low risk drinking, consequences of high-risk drinking, drink driving, and targeted advice for specific groups (e.g. drinking while pregnant or underage drinking).[223, 252]

Despite the reported high levels of support for alcohol warning labels, participants reported that such labels would be ineffective at eliciting behaviour change.[223, 227] Some findings suggested that warning labels might be effective in raising awareness and initiating conversations[267] (for example, alcohol-related cancer risk[299]) but, given the saturation of warning messages in the current social environment, others suggested that the alcohol warnings would be overlooked.[223, 241]

Awareness

Thirty-two of the 139 included studies explored awareness as an indicator of alcohol warning label effectiveness (see Table 3.4). Here, effectiveness was assessed through participants' reported awareness and recall of alcohol warning messages. Studies also documented changes in awareness over time.[259-261, 264]

Of these thirty-two studies, only one used qualitative research methods.[217] The majority of studies were conducted in the United States,[115, 177, 182, 187, 255, 258-261, 263-265, 267-275, 277-279] with two studies conducted in each of Australia,[213, 256] Canada,[259, 266] France,[217, 262] and one each in Japan,[276] Singapore[254] and the United Kingdom.[257]

Twenty-one studies examined reported awareness of alcohol warning labels,[177, 182, 187, 256-261, 264, 265, 267-269, 271-273, 275, 276, 278, 279] twelve studies surveyed participant recall of

message content,[115, 182, 213, 217, 254, 255, 257, 263, 266, 270, 274, 277] and nine studies included longitudinal data to examine changes in awareness over time.[177, 182, 259-261, 264, 269, 271, 272] Of the nine longitudinal studies, all reported an increase in awareness over time.[177, 182, 259-261, 264, 269, 271, 272] Some studies, however, suggested that awareness may have reached its upper limit,[260, 261, 264, 269] with reported awareness of labels plateauing in populations of heavy drinkers[261] and pregnant or post-natal women.[264, 269]

Heavier drinkers,[213, 257, 260, 261, 264] younger drinkers[177, 213, 261, 264] and current drinkers compared with non-drinkers[257] were more likely to report awareness of alcohol warning labels. Evidence also suggested that heavier drinkers,[263, 268, 273, 274, 277] younger people[182, 213, 256, 260, 263, 268, 273] and males[182, 260, 261] as well as people with good English language skills[255] are most likely to correctly recall message content.

The most recalled messages were messages about drinking responsibly,[257, 260] drink driving,[182, 277] and warnings of drinking during pregnancy.[182, 257] Warnings of birth defects as a result of consuming alcohol were more readily recalled than drink driving messages.[182, 257, 277]

Judgement

Judgement relates to the conclusions drawn by the recipient of a message conveyed via alcohol warning labels. In this category, effectiveness was assessed through reported believability of,[108, 281, 282] and attitudes toward[108, 112, 282, 283] the warnings displayed on alcoholic beverages, changes in risk or hazard perception as a result of exposure to warning labels,[113, 280] and the potential impact the warnings have on behaviour.[109, 115, 241, 269, 273, 284-289] Sixteen of the 19 studies included in this category were conducted in the United States,[108, 109, 112, 113, 115, 177, 241, 269, 273, 280-282, 284, 286-288] two in Australia[285, 289] and one in Italy.[283] All of the included studies except Jones et al.[285] were quantitative.

Believability was presented as an indicator of message effectiveness and appeared to be influenced by a person's attitude toward alcohol[108, 282, 283] and alcohol consumption.[108, 282, 283] In some studies believability was examined alongside attitudes toward alcohol (e.g. good-bad, harmful-beneficial etc.).[108, 282] People with positive attitudes towards alcohol consumption perceived alcohol warning messages as less believable.[108, 282] Messages about birth defects and drinking impairment warnings were perceived as significantly more believable than the other alcohol warning messages.[108]

There was little evidence to suggest changes in risk and hazard perception as a result of exposure to alcohol warning labels.[109, 177, 273, 284, 288] Within a population of pregnant or post-partum women in France, almost all who had noticed alcohol warning labelling thought that they encouraged abstinence (98.6%).[262] Many, though, believed that beer or wine was less dangerous than spirits, even though the warning label was present on every type of alcohol container, including wine and beer, and around 9% of participants thought the drinking beer was recommended for lactation.[262] Other studies found that consumers viewed wine labels presenting a health claim as an endorsement for wine consumption.[112] In one study, youths perceived that the inclusion of a warning statement (compared with no statement) demonstrated the manufacturers' concern for society; however, this study also found that labels had no impact on attitudes toward alcohol, brand, disease risk or believability.[113]

Research that examined attitudes towards alcohol warning labels and their impact on drinking behaviours produced mixed results.[109, 241, 273, 284, 285, 288, 289] Some studies found that participants believed warning labels had the potential to change behaviours related to alcohol consumption,[115, 241, 285, 286, 289] for example drink driving.[115] However, in other studies, participants reported that they did not believe warning labels would change

behaviour.[109, 273, 284, 288] Other findings suggested that warning labels might prompt conversations around alcohol-related harms.[269, 287, 289]

Intention to change behaviour

The final category, intention to change behaviour, assessed the effectiveness of alcohol warning labels through participants' reported intention to alter their alcohol consumption after exposure to such labels. Fifteen studies explored intentions to alter drinking behaviours.[113, 114, 139, 212, 219, 223, 290-298] Twelve of these studies used quantitative research methods,[113, 114, 219, 223, 290-298] and two, qualitative methodologies.[139, 212] Most of the research in this area was conducted in the United Kingdom[219, 223, 290, 291, 294, 297] and Australia,[139, 212, 293] with Germany,[292, 295] Canada,[298] Korea[114] and the Netherlands[296] adding research contributions.

In eight of these fourteen studies, participants reported positive intentions to reduce or alter their alcohol consumption as a result of exposure to alcohol warning labels.[114, 219, 223, 290-293, 298] In four studies, participants reported no intention to alter their alcohol consumption,[139, 212, 294, 295] and in two recent studies, participants' purchase intentions did not change after seeing alcohol warning labels.[113, 297]

Intention to change behaviour was mediated by a number of factors relating to message content, for example: specificity and relatability toward the warning messages, message framing, fear appeal, the use of qualifiers and signal words, and varying or rotating messages. These factors relate to the characteristics of labels will be discussed in the following section.

2. What characteristics of warning labels influence effectiveness?

As mentioned in the previous section, warning labelling literature assessed effectiveness of warning labels through acceptability, awareness, judgement, and intention to change behaviour. In this section, we examine how acceptability, awareness, judgement, and intention to change behaviour are influenced by the characteristics of a label. We do this in two parts: First, we group the key characteristics that influence their effectiveness. Results from this scoping review identified multiple characteristics of warning labels that appear to influence their effectiveness. We have divided these characteristics into two groups: label salience (which includes the design features, the inclusion of images, text colour, and label location etc.), and message content (e.g. specificity and relatability, message framing, and fear appeal etc.) (see Table 3.6). Second, we outline the relationship between these characteristics and the indicators of effectiveness identified in question one.

Table 3. 6: Characteristics of warning labels that influence effectiveness

Characteristics	Description	Example Studies
Label salience	Warning location and design features (e.g. borders, picture or other images, location, colour, plain packaging, warning size, text salience), method of exposure	Al-hamdani, et al. (2015)[280] Al-hamdani, et al. (2017)[300] Centre for Science in the Public Interest (2001)[301] Coomber, et al. (2017)[302] Coomber, et al. (2018)[212] deTurck, et al. (1995)[303] Dossou, et al. (2017)[217] Jones, et al. (2010)[285] Laughery, et al. (1993)[304] Petticrew, et al. (2016)[305] Pham, et al. (2018)[306] Tinawi, et al. (2018)[216] Wigg, et al. (2016)[298] Zhao, et al. (2020)[10]
Message content	Specificity and relatability, message framing, fear appeal, qualifiers and signal words; varying or rotating messages	Andrews, et al. (1990)[108] Annunziata, et al. (2016)[228] Armitage, et al. (2016)[290] Barry, et al. (2017)[307] Bensley, et al. (1991)[308] Coomber, et al. (2018)[212] Cvetkovich, et al. (1995)[309] deTurck, et al. (1992) [111] Dossou, et al. (2017)[217] Foundation for Alcohol Research & Education (2011)[310] Glock, et al. (2013)[292] Jarvis, et al. (2013)[311] Jones, et al. (2010)[285] Krischler, et al. (2015)[295] Laughery, et al. (1993)[304] MacKinnon (1993)[312] MacKinnon, et al. (1994)[313] Maynard, et al. (2018)[223] Noordink, (2013)[296] Sillero-Rejon, et al. (2018)[219] Stafford, et al. (2017)[218]

Label saliency

The design features of warning labels focus on text salience (colour and size), labelling location, borders and the use of pictures or graphics. Such features have been shown to influence awareness (noticeability and recall) and judgement (believability and risk assessment).[107, 296, 303] Indeed, there is limited opportunity for alcohol warning labelling to be useful if it is not noticeable.[301, 304]

Warning location

Several factors, including the placement of the warning (e.g. vertical versus horizontal, front or back of the container), colour, text size and the use of pictorials and icons, influenced noticeability.[294, 304] Prominent placement, on the front of the bottle near the brand name,[314] along with increasing the size and contrast of warning labelling, was shown to increase message noticeability and recall.[120, 306, 314] Additionally, obscure placement of a small warning on the back of the bottle decreased noticeability. [217]

Design features

The design of alcohol warning labels also influenced product judgement. Red font was determined to be more effective in lowering a consumer's desire to drink due to perception of intoxication levels,[304] while using green in the label was considered confusing as it is commonly associated with positive outcomes, which contradict the purpose of the warning label.[315] The colour red and colours that contrast with the design of the beverage container label also improved the noticeability of the warning.[304] Al-hamdani (2017) found plain packaging and warning size (similar to the graphic warnings on cigarette packages) increased the likelihood of noticing a warning label.[280] Warning labels that included pictures improved arousal, improved awareness,[315] and increased fear perception.[280] Respondents reported that the inclusion of imagery helped them to read the

accompanying text and the images highlighted the importance of the warnings.[120, 302] Text or image warnings presented on a plain bottle improved recognition.[280] Additionally, combined text and image/pictorial warnings appeared to lead participants to view the product less favourably.[298, 304]

Method of exposure

Glance (2017)[316] examined differences in exposure modality by comparing the attention time of an alcohol warning presented on an alcoholic container to other modes of information delivery. The researchers found that participants spent more time attending to the message delivered by a doctor and in a newspaper simulation than the message presented on the alcohol bottle label; however, participants attended to the alcohol bottle warning longer than a bus-stop advertisement.[316]

Message content

A large (and varied) collection of studies investigated the impact of message content on acceptability, judgement, and intention to change behaviour. Message specificity (clarity of statement), relatability (the extent to which an individual can relate the information presented to their own experience), framing (positively or negatively framed, and self-affirming messages), appealing to fear, use of qualifiers (e.g. 'may,' 'can'), signal and high threat words, and rotating warning information impacted the receivers' response to the warning message.

Specificity and relatability

In the context of alcohol warning labels, specificity relates to the clarity of statement about the harms associated with alcohol consumption, and relatability concerns the extent to which the content communicates a message that resonates with the targeted population (e.g. pregnant women, young people, or all people etc.). The primary reason why

specificity and relatability are important is that they can influence perceived risk, which impacts judgement (e.g. believability, brand and product attitude etc.), and intentions to change behaviour. When warning labels do not provide specific information for the target audience, consumers tend to draw upon personal experiences and the experiences of friends and family (which may be contrary to health warning content) to undermine the warning information.[139]

Specificity and relatability were important factors when communicating the risks associated with consuming alcohol to target groups. Warning labels targeting pregnant women were deemed to have the greatest potential to reduce alcohol consumption,[53] particularly when the messages reported specific levels of risk.[110] Similarly, participants presented with alcohol-related cancer warning statements that mentioned specific forms of cancer reported the messages to be believable, convincing and personally relatable.[293, 317, 318] University students in a focus group setting suggested that warning labels might be more effective if they were more personal or included more detailed information that resonated on a personal level.[285] Another study, in which warning labels were designed by university students to target peers (e.g. 'How does a criminal record look on your resume? Don't drink and drive'), supported this suggestion.[319] Moreover, warnings mentioning health-related consequences,[296] instructions,[296] or quantified information for specific groups of people[198] were favoured[198] as they were considered as more likely to deter alcohol consumption.[319] The use of varying and rotating warning statements on alcohol products was also associated with increased intentions to change drinking behaviours.[293]

Message framing

Message framing refers to the way an issue is described.[320-322] In a number of studies, the use of different terms or descriptions (e.g. positive or negative outcomes[311]),

as well as presenting messages either as a question or statement,[295] was shown to influence effectiveness.

Positively and negatively framed messages were explored in a choice-based experiment[323] and focus group research.[311, 317] Alcohol products displaying negatively framed messages (e.g. 'Every drink of alcohol harms your brain') were perceived less favourably than positively framed health messages (e.g. 'Keep your brain healthy, lower your alcohol intake').[311, 317] Zahra et al. investigated the impact of imagery containing negative or positive content on intentions to curb alcohol misuse.[324] They found that pictorial images displaying negative outcomes did not improve reasoning about alcohol-related warnings, suggesting that there was no benefit in framing health warnings in overly negative ways.

Several studies presented messages designed to challenge the perceived benefits of consuming alcohol. A German study challenging the perceived social benefits of alcohol consumption (e.g. 'Do you really want alcohol to help you meet new people?' or 'Yes, alcohol helps you meet new people') found that participants demonstrated a better understanding of the negative effects of alcohol consumption.[295] Despite this, there was no change in perceived benefits of alcohol consumption or intentions to change drinking behaviours.[295] In another study, participants exposed to warnings that stated 'Alcohol is a Drug' were more likely to view alcohol consumption negatively.[284] Similarly, when exposed to either a health-related warning (e.g. 'alcohol damages your brain'), or warnings designed to contradict positive expectancies related to alcohol consumption (e.g. 'alcohol leads to problems with other people'), results demonstrated fewer positive attitudes toward alcohol consumption after exposure to message that contradict positive expectancies.[292] Finally, Noordink (2013) found that warning labels designed to include

some of the consequences associated with drink driving were able to elicit intentions to consume less alcohol after participants read the warning.[296]

Fear appeal

Similar to message framing, fear appeal describes a strategy for motivating people to take a particular action by arousing fear.[325] Warnings designed to target fear appeal have demonstrated mixed results. In one study, when presented with labels displaying fear-based messages ('Alcohol causes irreversible brain damage'), coping messages ('Do not finish your drink all at once, enjoy in moderation'), and fear-based combined with coping messages ('Alcohol causes irreversible brain damage; do not finish your drink all at once, enjoy in moderation'), participants rated the fear-based, and fear-based combined with coping messages as more effective in influencing intentions to consume less alcohol.[326] Similar results were demonstrated when messages such as 'If I feel threatened or anxious, then I will think about the things that are important to me' were added to the standard U.K. government information about alcohol intake.[290] Other studies have demonstrate that fear-arousing pictorial or text only health-warning labels can decrease the speed in which alcohol is consumed.[218, 298] In another study, researchers examined the response of participants asked to either recall fear warning messages or form an attitude toward an alcoholic product displaying either low or moderate fear warnings.[111] There was no difference in product perception after viewing the low fear warning compared with the moderate fear warning in the group asked to recall the warning information. However, those asked to form an attitude toward the alcoholic product viewed the one displaying a moderate fear warning more negatively than the one displaying a low fear warning.[111]

Qualifiers, signals and high-threat messages

In the context of health warning labels, qualifier, signal and high-threat words are generally used to communicate risk to an audience. Warning messages that included qualifier words, such as *may* (e.g. "Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery, and *may* cause health problems") were compared with messages that did not include such words.[312] In choice-based experiments, products bearing messages that included qualifier words were deemed more acceptable than those without qualifier words.[312, 313]

Warnings that contained signal and high-threat words such as *poison*, *cancer* or *warning* were shown to elicit avoidance responses,[312, 327] and in some instances arouse psychological reactions resulting in greater subsequent alcohol consumption.[308] Similar effects were observed for labels that included the words *toxic* and *causes cancer*.[312] In one study, participants indicated that including the word *danger* in warnings was too strong and had the potential to undermine the message; this message was considered less credible within the context of the positive health benefits reported from alcohol consumption.[309] Interestingly, though, people who do not perceive themselves to be at risk of alcohol-related harm stated that very severe warning labels would be effective in motivating those who are at risk to drink less.[219]

Some studies have reported a boomerang effect after exposure to alcohol warning labels.[118, 288] In these studies there was evidence to suggest that exposure to freedom-threatening or other cautionary alcohol prevention messages led to higher subsequent substance use, compared to low or non-threatening messages.[112, 288, 308, 328] Furthermore, the presence of warnings on alcoholic beverage containers elicited more favourable attitudes towards alcohol products.[112] These findings were strongest for male heavy drinkers[308] and wine consumers.[112]

In all, the inclusion of a variety of signal words was shown to improve the time people spent looking at warning labels.[329] Here, findings suggested that signal words and icons were able to increase people's ability to identify warning labels compared to an absence of such.[303, 329]

Relationship between labelling characteristics and indicators of effectiveness

Findings from this review show that: 1) there are four ways effectiveness is assessed in warning label literature: acceptability, awareness, judgement, and intention to change behaviour and 2) label characteristics that are reported to influence effectiveness can be categorised by label salience and message content. In this section, we examine the relationship between label characteristics and indicators of effectiveness to determine the factors that influence the effectiveness of alcohol warning labels.

Label characteristics can be divided into two categories: label salience and message content. The first category, label salience, includes warning label location and design features (e.g. borders, picture or other images, location, colour, plain packaging, warning size, text salience). These characteristics were shown to influence awareness and judgement (see Figure 3.3). Warning location (e.g. vertical versus horizontal, front or back of the container) and specific design features of an alcohol warning label impact the noticeability of warnings[120, 306, 314] and therefore, awareness. Warning size,[280] the inclusion of pictures,[315] text on plain bottles[280] and red font colour[304] contributed to increases in awareness. The use of red font shifted product judgement as it altered the consumers' perception of intoxication levels.[304] The inclusion of pictures increased fear perception,[280] improved awareness of alcohol-related harm[120, 302] and changed product judgement.[298, 304]

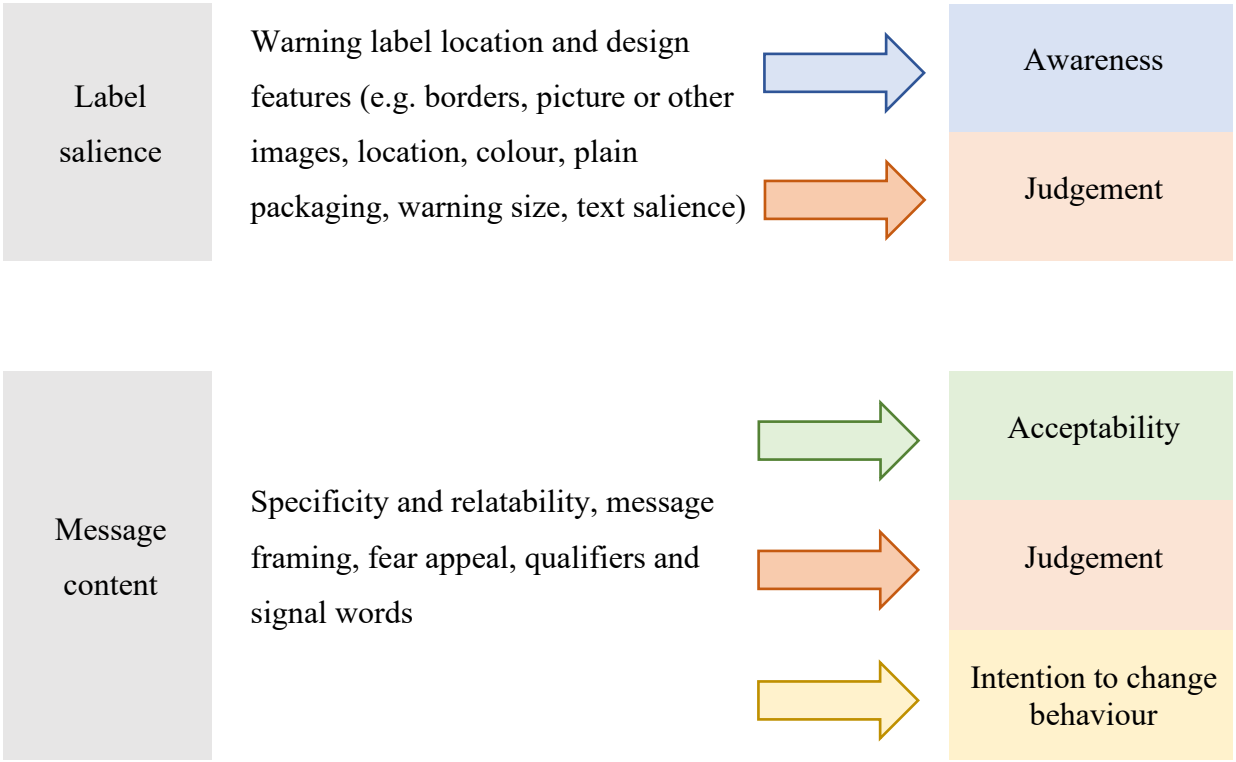

Figure 3. 3: Relationship between labelling characteristics and indicators of effectiveness

The second category, message content, was associated with changes in acceptability, judgement, and intention to change behaviour (Figure 3.3). Specificity and relatability impacted judgement such that labels presented with specific alcohol-related harms (e.g. cancer risk,[291, 293, 317, 318] birth defects etc.[108, 223]) influenced message believability,[108, 281, 282, 293] attitudes toward the warnings[108, 112, 223, 282, 283] and changes in risk perception.[113, 223, 280] These factors contributed to reported intentions to change behaviour.[223, 293] Some evidence suggested that messages framed positively or negatively,[114, 291, 311, 317] or those designed to challenge positive expectancies related to alcohol consumption,[284, 292, 295, 296] including the use of fear-based messages,[24, 111, 218, 219, 290, 298, 326] influenced acceptability,[270, 276] judgement,[111, 284, 291, 292, 295] and intentions to change behaviour.[114, 219, 290-292, 296, 298] The use of high threat words such as *poison*, *cancer* or *warning*, however,

were shown to negatively impact acceptability[271, 286] and judgement[112, 309] such that they were perceived less believable,[309] and led to higher subsequent substance use, compared to low or non-threatening messages.[112, 288, 308, 328] The use of qualifiers improved the acceptability of warning labels.[312, 313]

Additional findings

We found six studies that audited the presence of warning labels displayed on alcohol containers.[211, 216, 305, 307, 315, 330] Three of these studies were conducted in Australia,[211, 315, 330] two in New Zealand[216, 307] and one in the United Kingdom.[305] Overall, findings suggested that alcoholic beverages were inconsistently labelled,[307] and the information provided fell short of best practice when compared with other products that had similar hazards.[305] It was commonly reported that the uptake of voluntary recommendations is inadequate.[211, 216, 305]

3.3.6 Discussion

In this scoping review we examined how the effectiveness of warning labels is assessed in the literature and the characteristics of warning labels that are considered more effective. The findings presented in this review demonstrate that research examining the effectiveness of alcohol warning labelling assessed effectiveness through four dimensions: acceptability, awareness, judgement, and intention to change behaviour. Behavioural change was rarely an outcome measure.

Based on information synthesised in this review, there are a number of label features (here, categories such as label salience and message content) which may contribute to effectiveness. For example, the warning label will need to have a prominent placement on the front of the bottle, be surrounded by a border and distinct from the packaging, be relatively large in size, use the colour red, and combine text and pictorials. These design

features all contribute to noticeability and bring consumer attention to the warnings. Positive messages, specific to alcohol-related harms, with clear and decisive language and suitable signal words are also more likely to be effective. Warnings (texts and pictures) should be displayed on a rotating basis to increase the likelihood of consumer attention and understanding,[293] reduce the levelling-off effect, and provide the best chance of reaching target audiences. [331] The combination of these elements may improve the noticeability and believability of the message content and increase awareness.

Acceptability or support for alcohol warning labelling as a public health measure was high.[138, 215-218, 222, 225, 226] Some sub-populations (e.g. females and non-drinkers) were more likely to support alcohol warning labelling, while males and heavier drinkers were most likely to oppose such measures.[53, 223-226, 241, 244, 246] One reason suggested for the high level of support is the non-invasiveness of such an approach (particularly when compared to taxation or supply reduction strategies) and the fact that they are targeted to a small segment of the drinking population—specifically problem drinkers. For this reason, consumers can dismiss the messages presented and believe that the warnings are aimed at how others should behave, rather than viewing their own behaviour as problematic.[332] Thus, it is important to consider that wider introduction of alcohol warning labels may further distance at-risk populations from the health messages that are targeted at them.

Awareness of alcohol warning labels was more likely in younger age groups, among males, and those who were heavier drinkers—these groups were also more likely to correctly recall the messages displayed on alcohol warning labels. The most recalled messages were drink driving messages and those warning or the risk of consuming alcohol while pregnant. Interestingly, these warnings also target specific populations (e.g. pregnant women and those who drink drive) and are more easily dismissed by the larger drinking population.

The category of judgement in this study related to attitudes toward alcohol and alcohol consumption and the changes in believability, risk or hazard perception after exposure to alcohol warning labels, as well as whether participants thought such labels could change public drinking behaviours. Prior beliefs or understandings related to alcohol consumption were shown to mediate the effects of attitudes and believability toward the labels and the warnings presented.[304] The negative outcomes cited in warning messages may conflict with personal understanding[333] or beliefs,[255] and any positive experiences related to alcohol consumption.[334] Resistance towards alcohol-related health warnings, and scepticism concerning the messages presented, was particularly common in heavy consumers, young people, and pregnant women—those (generally) considered to be most in need of changing behaviour.[108, 219, 281, 282] Indeed, some studies reported that frequent alcohol consumers found labels significantly less believable and less favourable than occasional or non-consumers of alcohol.[108, 281, 282]

Of the outcomes assessed in the studies reported in this review, intention to change behaviour is the most important because reported intention might lead to actual behavior change. At the least, it suggests that consumers may re-consider their behaviours around alcohol consumption. Only around ten percent of the studies included in this review asked participants about their intention to change their alcohol consumption because of viewing alcohol warning labels. In the majority of studies, results suggested that participants intended to change their alcohol consumption by reducing their intake.[114, 219, 223, 290-293, 298] Nearly half of these studies, though, focused on implicit changes in attitude toward alcohol consumption through the manipulation of self-affirmation[219, 290] or other psychological factors.[292] These characteristics naturally impact the effectiveness of alcohol warning labels, but the generalisability of these findings is problematic. Moreover, most studies reporting intentions to change alcohol consumption were collected

via online surveys or questionnaires,[223, 293] making it difficult to translate these results into a real-world context.

Overall, we found that there is limited evidence to suggest that alcohol warning labels are effective in changing behaviours around alcohol consumption. Some evidence suggested that antenatal drinking among a sample of inner city African American women fell slightly after mandating alcohol warning labelling in the United States,[265, 335-338] and strong health warnings influenced the drinking rate of female university students aged between 18 and 25 years.[218] Other research found that exposure to alcohol warning labels had little to no impact on drinking behaviours,[121, 132, 158, 197, 199-204] even among those who reported wanting to cut down on their alcohol consumption.[294]

Based on current available literature, there is a consensus that alcohol warning labels alone are unlikely to have an impact on drinking behaviours. There are broader social and cultural factors that impact how alcohol-related health warnings are received by the public and which interact with and lessen the impact of warning labels. These factors include the cultural significance of consuming alcohol,[339] the competing positive health benefits reported from alcohol consumption (e.g. red wine and reducing heart-disease[11]), economic benefits, and the lack of government efforts to reduce alcohol-related harm.[217] In addition, policy measures designed to reduce the prevalence and consumption of alcohol are met with strong opposition from the alcohol industry, which has employed tactics to resist policy that would restrict sale locations and advertising.[340]

Research also suggests that there is concern that people have been over-saturated with, or overexposed to, warning labels and have become resistant to the messages they carry.[139] Some research posits that alcohol warning labels could potentially generate an attitude among consumers that everything is dangerous,[139] and, therefore, attempting to manage or reduce risk through warning labelling is unproductive.[341] Others believe that

the inclusion of warning labels is not about telling people what they can and cannot drink; it is about giving consumers all of the facts, so they are able to make informed decisions.[342] Regardless, the evidence presented in this review suggests that, while alcohol warning labels may be effective in raising awareness and knowledge, behaviour change is unlikely. The success of anti-smoking campaigns was largely due to the multifaceted approach which included: raising awareness and knowledge through public education, changing social norms, taxation and other accessibility measures.[130, 343-345]

A key strength of this scoping review is the inclusion of studies from a broad range of literature, including government documents and reports, and qualitative and quantitative methodologies. Studies were not limited by participants' demographic variables, recruitment or sampling strategies, quality or location of the study. Moreover, studies spanning a 30-year period were considered for inclusion allowing us to present a comprehensive summary of all available research in the area of alcohol waring labelling.

Limitations

The limitations present in this study are consistent with those inherent in conducting scoping review research. Due to the substantial heterogeneity in research design, participant demographics, and reported outcomes, the information presented in this paper is synthesised broadly by topic, includes varying study design, and does not include critical appraisal.

Furthermore, this review is limited by the data included within it. We were unable to include definitive experimental data that measures behaviour change as a result of exposure to alcohol warning labels, as the nature of the research dictates that this is not possible.

3.3.7 Conclusion

The findings presented in this review suggest that alcohol warning labels are unlikely to change behaviour. However, if the purpose of the label is to raise awareness of the dangers associated with alcohol consumption, or to act as a reminder of alcohol-related harms, then alcohol warning labels may be a cost-effective, passive, educational tool.[346] Used thus, alcohol warning labels may form part of an integrated health promotion strategy that supports broader modes of education and opportunities for people to reduce their alcohol consumption.

END OF PUBLICATION

4 Focus group study results (Part A: Light-to-moderate alcohol consumers)

4.1 Preface

Findings from the scoping review demonstrated the lack of utility for alcohol warning labelling to elicit behavioural change. Results showed that there is a high level of public support for alcohol warning labels, yet few studies found evidence to suggest that warning of alcohol-related harms resulted in changes in behaviour—particularly in at-risk populations. Understanding why alcohol consumers are resistant to change their drinking behaviours after exposure to alcohol warning labels is important when considering public health approaches to reduce alcohol-related harm.

This chapter contains the second and third publications contributing to this thesis. The two publications present the analysis of the first series of focus groups, conducted with people who self-identify as light-to-moderate alcohol consumers. The results address the following research question:

- How do Australian adults respond to the message that alcohol causes cancer?

To guide the focus group conversations, I developed a set of topic questions (see Appendix I). These questions were designed to guide and promote discussion about specific topics and not intended to be asked verbatim. I also designed some alcohol warning labels to be placed on alcohol beverage containers (see Figure 4.1). These were passed among the focus group participants (details of the participants will be provided in the publications below), to provide a tangible example of how alcohol warning labels might appear on containers. The initial design stated, 'Alcohol Causes Cancer' and included logos for The Australian Government, the Cancer Council, and FARE (the Foundation of Alcohol Research and Education). Findings from the first focus group,

however, led me to develop warnings that displayed more information about specific cancer types and the associated risk criteria, for example: 'Two or more drinks a day can increase your risk of mouth and throat cancer by over 60%' and '1 in 5 cancers are caused by alcohol' (Figure 4.1).

Figure 4. 1: Mock alcohol warning labels presented to focus group participants

As the facilitator of the focus groups, it was my goal to create a safe and judgement-free environment whereby participants felt comfortable disclosing their thoughts and responses to the proposed introduction of alcohol warning labels carrying cancer-risk messages. I began each session by asking the participants to introduce themselves and share why they had chosen to join the focus group research. I then followed by asking them what they knew about the link between alcohol and cancer, their knowledge of alcohol warning labels and so on. When I observed a natural lull in the discussion, or talk

was beginning to move in an unrelated direction, I introduced a new topic question to redirect the conversation.

To ensure I was capturing essential information, my primary supervisor (JE) observed the first focus group session from a viewing room. Once complete, JE and I conferred to see if there were points that needed following up in subsequent focus groups. We were confident that the current topic question guide was effective; however, the introduction of more detailed warning labels (as mentioned above) was necessary to provide participants more information about alcohol-related cancer risk.

As anticipated, the focus group discussions lasted between 60 to 90 minutes. Throughout the discussions, participants were given the opportunity to initiate and discuss any issues that they considered relevant to the topic. In this way, shared meanings were created and negotiated by the participants during the course of their interactions.[347]

Naturally, my role and actions as the researcher also impacted on how the participants interacted and thus on the meanings that they shared in their conversations. Creating shared meanings is not the same as having agreement among research participants. What participants say to each other, and to us, develops through the linking of content; sharing and comparing content to what has previously been said.[347] For this reason, it was important for me to listen to the discussions, establish mutual trust and rapport within the groups and, where necessary, ask probing questions that match the goals of the research.

The first publication, *'Everything Causes Cancer': how Australians respond to the message that alcohol causes cancer,*[139] examines the discursive construction of resistance to the message that 'alcohol causes cancer' and any implied need to alter personal alcohol consumption to reduce the risk of cancer.

The second publication, *'Alcohol causes cancer'; a difficult message for Australians to swallow,*[348] examines responses to alcohol warning labels that present messages of alcohol-related cancer risk.

4.2 Publication: 'Everything Causes Cancer': how Australians respond to the message that alcohol causes cancer

Taylor & Francis

Critical Public Health

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'Everything causes cancer': how Australians respond to the message that alcohol causes cancer

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Published online: 30 Sep 2016.

4.2.1 Statement of authorship

Title of Paper	'Everything Causes Cancer': how Australians respond to the message that alcohol causes cancer
Publication Status	☑ Published ☐ Accepted for Publication ☐ Submitted for Publication ☐ Unpublished and Unsubmitted work written in manuscript style
Publication Details	May N, Eliott J, Crabb S. 'Everything causes cancer': how Australians respond to the message that alcohol causes cancer. Critical Public Health. 2017; 27:419-29.
Principal Author	
Name of Principal Author (Candidate)	Olivia Hawkins
Contribution to the paper	Collected and analysed data, prepared manuscript, and acted as corresponding author
Overall percentage (%)	80
Signature	Date 21/05/2021
Co-Authors Contributions	
By signing the Statement of Authorship, each author certifies that: i. the candidate's stated contribution to the publication is accurate (as detailed above); ii. permission is granted for the candidate in include the publication in the thesis; and iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.	
Name of Co-Author	Jaklin Eliott
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 26/5/2021
Name of Co-Author	Shona Crabb
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 25/5/2021

4.2.2 Abstract

Over 5000 Australians are diagnosed with alcohol-related cancers annually, with growing evidence that low-levels of chronic alcohol consumption significantly increases cancer risk. Public knowledge of the link between alcohol and cancer is limited and therefore, alcohol consumers may be inadvertently putting themselves at increased risk of developing cancer. Informing the community of alcohol-related cancer risk is important to reduce the burden of disease. However, the message that alcohol causes cancer may challenge current understanding of the risks and benefits associated with alcohol consumption. We examine how Australian adults who self-identify as light-to-moderate alcohol consumers respond to the message that alcohol causes cancer. Seven focus-groups with males and females aged between 18 and 65 years of age were audio-visually recorded, with transcripts thematically analysed within a social constructionist epistemology informed by critical realism. Cancer was represented as an inevitable part of life and something over which participants had no control. Consequently, altering alcohol consumption to reduce cancer risk was not justifiable. Participants worked to present themselves as 'normal' consumers of alcohol by recounting personal experiences and depicting an obligation to uphold societal expectations to consume alcohol. Through the construction of cancer as an inescapable disease and their own alcohol consumption as unproblematic and socially sanctioned, participants were able to resist the message that alcohol causes cancer and, any implied need to alter personal alcohol consumption to reduce the risk of cancer.

Keywords: Alcohol, cancer, warning labels, Australia, qualitative analysis

4.2.3 Introduction

Cancer is one of the leading causes of death worldwide,[349] yet nearly one third of all cancers can be attributed to modifiable lifestyle factors[18] and thus, are in principle, avoidable.[350] The World Cancer Research Fund has reported that 2.8 million cases of cancer globally could be eliminated by improving lifestyle practices.[351]

One modifiable lifestyle choice is consumption of alcohol. Alcohol is a Group-1 carcinogen[170] and one of the largest risk factors for disease burden.[352] In Australia, it is estimated that over 5000 cases of cancer can be attributed to chronic alcohol use each year,[7] with 1400 of these resulting in death.[342] Light-to-moderate consumption of alcohol has been associated with the following cancers: mouth and oropharyngeal, pharynx, larynx, oesophageal, liver, bowel, breast (in women), and prostate (in men).[353]

Despite clear evidence of harm, the health effects of alcohol consumption are contested. Some have suggested that consumption of red wine is associated with lower mortality and reduction in heart-disease.[13] Others, however, have asserted that the reported benefits of red wine are specific to cardiovascular disease and consuming red wine does not protect for other conditions, including cancer.[12] With regard to cancer, there is no evidence to suggest that risk differs with the types of alcohol consumed, for example between red wine or beer,[16] or that there is a safe limit of alcohol consumption for avoiding cancer.[353] Some researchers have argued that regular consumption of as little as 5g of alcohol daily can result in modest increases in cancer risk,[16] and that there is a linear dose-response relationship between chronic alcohol consumption and the risk of attributable death, which starts at zero.[7]

Awareness that alcohol is a harmful substance is not new; alcohol-related health problems have been internationally recognised for decades.[354] Many hazards associated with alcohol consumption (e.g. drink driving, drinking during pregnancy and violence),

are well publicised through health promotion campaigns[299] and public knowledge and awareness of other alcohol-related health risks (e.g. liver cirrhosis, brain damage etc.) is high.[198] Knowledge of the link between alcohol and cancer however, is poor and therefore, consumers may be inadvertently putting themselves at risk.[355] Public health campaigns may be one way to inform the public that alcohol causes cancer and warning labels are deemed to be a cost-effective strategy that has a high level of public and political support.[119] In Australia there is impetus to introduce mandated warning labels on alcohol bottles and containers that include information about the risk of cancer.[51] However, several factors may impact the acceptability and efficacy of such messages.

One factor is the cultural and social significance of alcohol within society.[339] Alcohol is one of the most widely used drugs in Australia, with over 80% of the population reporting to consume alcohol,[95] which, compared to world standards, is high.[4] The ubiquity of alcohol is such that in Australian vernacular, 'drinking' is synonymous with alcohol consumption.[356] People consume alcohol for a variety of complex and diverse reasons. For example, to celebrate (births, marriages), and commiserate (death, war), to be sociable, because of peer pressure, for cultural or religious participation, to become intoxicated or, due to addiction.[357] Moreover, exposure to alcohol advertising through multiple media and social platforms (e.g. television, Facebook, Twitter, etc.), contributes to the cultural construction and consolidation of social norms around drinking.[134, 358] The alcohol industry promotes positive associations with drinking through media, television, sponsorship of music festivals, sporting events, and so on,[359] and which are known to have an inauspicious influence on young people's drinking behaviours.[360] With alcohol embedded in these cultural and social rituals, disseminating health information that warns of the risk of alcohol-related cancer may challenge some perceived benefits and cultural experiences associated with alcohol consumption.

Additionally, health campaigns that are designed to alter community awareness of harmful lifestyle choices may influence knowledge and attitudes, but have limited impact on behaviour.[361] Somewhat problematically, this method of communicating health information (though cost-effective and far-reaching), anticipates that the recipient has the skills, capacity, resources, and autonomy necessary to promote and protect personal health.[4, 362] Furthermore, negotiating risk, given the abundance of health information available, is often challenging.[363, 364] Finally, the community may perceive any government intervention as 'nanny statist' and an unnecessary invasion into people's lives.[365]

Investigation is needed to explore perceptions of the Australian public about the benefits and risks of consuming alcohol and how the message that alcohol causes cancer is interpreted and understood. A comprehensive analysis of the impact that information warning of alcohol-related cancer is best achieved through the use of qualitative research methods[94] that facilitate analysis of the complexity of concepts, or social processes, pertaining to alcohol and cancer.

In this article we examine how Australian males and females, aged between 18 and 65, respond to the information that alcohol causes cancer. Focus group data (38 participants) were thematically analysed within a social constructionism epistemology,[366] informed by ideas from critical realism.[367] This methodology allowed for acknowledgment that there may be a reality, that is alcohol has a biological effect, but what can be known about the reality is socially constructed through language.[368] Here, we consider the role that language plays in the production (and reproduction) of alcohol consumption, cancer and how health messages are understood.[369]

4.2.4 Method

Based on our purposive sampling strategy (i.e. stratified by age and gender), thirty-eight participants who self-identified as light-to-moderate consumers of alcohol were recruited via a professional market research agency in Adelaide, South Australia. Database members were contacted by telephone and invited to partake in a group discussion about alcohol-related cancer and the proposed introduction of warning labels on alcoholic beverages. Additional information (which included location of the study, privacy of information, remuneration for time and associated costs, etc.), was then sent to potential participants by post. All personal details such as names and contact details were not made available to the investigators.

Research has suggested that alcohol consumption,[370, 371] as well as attitudes toward both alcohol[372] and cancer,[373, 374] may differ according to gender and age. Therefore, homogeneous groups (i.e. two all-male, and two all-female groups with individuals aged 25 to 35 years old; one all-male, and one all-female group with people aged 55 to 65 years old; and one mixed gender group of 18 to 24 year olds) were created to explore any common threads within and between these two demographic characteristics.[375]

The audio and visually recorded sessions lasted approximately 90 minutes. Focus-group recordings were orthographically transcribed and entered into the qualitative computer program NVIVO-10.[376] We used qualitative analytic techniques[377] to examine the discursive construction of resistance[378, 379] to the message that alcohol causes cancer, and any implied need to alter personal alcohol consumption to reduce the risk of cancer. The extracts presented in this paper were selected as the most relevant and concise examples of the primary themes, illustrating discursive strategies used by focus-group participants.

4.2.5 Results

Thematic Analysis, within a social constructionist paradigm[380] informed by critical realist ideologies,[366] was employed to investigate repeated patterns of meaning, and identify two dominant themes within the data: (a) the uncontrollability of cancer and (b) the normalising of alcohol consumption. The following analysis is presented in two sections. The first focuses on respondents' construction of cancer as unavoidable, thereby rendering behaviour change as futile. The second, on how focus-group members provided accounts of their own drinking practices that worked to 'normalise' these practices within society.

Cancer is unavoidable: therefore, behaviour change is futile

In each focus-group, participants described cancer as an unavoidable disease and implied the futility of efforts to avoid cancer.

Extract 1 (Females 25-35)

Madison: I would say over time, any alcohol would do it, but I'm a big anything causes cancer type of person (laughs)

Kirsten: But then in the society everything causes cancer, so...

Extract 2 (Females 25-35)

Jenny: I guess I'm in denial about a lot of health warnings I mean you see them on everything but, and because cancer's thrown around as so many things causing cancer, um,

Gabby: People are desensitised to it and oh it's just another thing that causes cancer

Kirsten: It's like mobile phones and this and that and everything else

Extract 3 (Males 55-65)

Craig: So [it] came as news to me, but when you think about it well everything causes cancer no matter what you eat or drink or breathe

Extract 4 (Males & Females 18-24)

Usher I think yet another one to add to the list

Rhys Then again what doesn't cause cancer, coffee causes cancer, sunscreen causes cancer, probably taking a bath causes cancer

Victoria Everything can cause cancer

Participants commonly stated that, '*everything' or 'anything'* 'causes, cancer' (e.g. Extract 1), and '(alcohol is) *just another thing*' that causes cancer' (Extract 2). These statements typically followed the question, 'What is the first thing that comes to mind when I say alcohol causes cancer?' The frequency of these responses suggests that this type of counterargument is readily available and may be indicative of a dominant perception about cancer. Other features of their conversation also support this interpretation.

Using phrases such as '*everything* causing cancer' and '*anything* causes cancer', has enabled participants to draw upon elements of a previously used grammatical construction (i.e. in the question) to create a new meaning. This rhetorical strategy, known as *parallelism*,[381] is the act of repeating or mimicking syntactic sentence structure and is argued to be one way that people 'draw attention to preferred meanings,[381] or make a message 'sound different.'[368] Moreover, replacing 'alcohol' with '*everything'* or '*anything'* facilitates the discursive use of vagueness: 'alcohol' is a specific description of a cancer-causing product, whereas 'everything' is a vague description.[382] Thus, whilst the

message that alcohol causes cancer is prescriptive, and implies that consumption could be modified to reduce the risk of cancer, changing the meaning to '*everything*' or '*anything*' causes cancer, alters the focus of what causes cancer, and challenges the rationale of changing one's behaviour, when all behaviours cause cancer.

In addition, broadening the message to infer that '*everything'* or '*anything'* causes cancer might have aided in weakening the alcohol causes cancer message through creating ambiguity; an ambiguous or vague message (or account) can be more easily undermined or ridiculed, and less easily challenged by specific facts or information.[368] Potter (1996)[368] has argued that rhetorical vagueness can be used in situations where someone is withholding support or agreement. Indeed, there were many occasions where participants talk worked to resist the message that alcohol causes cancer.

Such resistance was achieved in part through the use of *extreme case formulations* (ECF),[383] and *hyperboles* and *metaphors*.[384] For example, the inclusion of the extreme descriptors of 'e*verything'* and '*anything'* in this context, is rhetorically constructive in quantifying the enormity of the things that cause cancer. Here, it is not merely that *some* things cause cancer—*everything* or *anything* does, which enables the respondent to maintain the position that cancer is inescapable, and therefore attempts to avoid it, futile.

Some participants used hyperboles and metaphors to make inappropriate and exaggerated analogies to the alcohol causes cancer message,[384] again weakening the impact of this message. For example:

Extract 5 (Group 1 – Females 25-35)

Danielle It's to me it's like <u>really</u>? The alcohol this time, are you gonna tell me eating a toothpick's gonna cause cancer?

Extract 6 (Group 5 – Males 25-35)

Harry my boss turns around and goes, oh next water will be creating cancer ….Oh and the other the other comment that I got at work was and when are they putting a label on the sun?

By offering a list of banal things that are unlikely to cause cancer (e.g. water, air, toothpick, coffee, etc.; see also Extracts 3 & 4) and representing them as being unsafe, respondents essentially put forth a straw-man argument.[385] The use of these flawed, extreme, responses work to weaken the intended message and resist any implied need for change.

The hyperboles and metaphors used by participants were often incorporated into a *three-part list* to 'emphasis(e) the generality of something.'[368] Craig, for example, presented a position that '…everything causes cancer no matter what you eat or drink or breathe' (Extract 3). Similarly, Rhys (Extract 4), claims that coffee, sunscreen, and 'probably taking a bath causes cancer.' The use of a three-part list thus facilitated the construction of normal and necessary activities as possible causes of cancer. Such language works both to buttress their assertions that '*everything* causes cancer', and the use of a straw-man argument.[385] Kirsten (Extract 1) also employed a three-part list use of—'this and that and everything else.' In addition to providing an endorsement of Madison's contention that 'anything causes cancer,' the vagueness of her description of cancer-causing agents, works to avert criticism for providing incorrect information.

Overall, within these participants' speech, the theme that *cancer is unavoidable* works to establish resistance to the message that alcohol causes cancer, and any implied need to change drinking behaviours. In this context, it functioned to position the individual such that even if they wanted to change their behaviour to avoid cancer, this would not be possible due to the enormity and uncertainty of what causes cancer. As a

consequence, the individual can discursively excuse themselves from taking action to reduce the risk of cancer and thereby, not modify alcohol consumption to heed the warning.

The normalisation of alcohol consumption to justify drinking practices

To further demonstrate the impracticality of altering alcohol intake to reduce cancer risk, participants worked to normalise both personal alcohol consumption, and alcohol in society. This was achieved, first, by depicting drinking as a normal and necessary part of life; and second, through the presentation of self as a prototypical and responsible consumer of alcohol.

Extract 7 (Males & Females 18-24)

Willow There's certain people in my friendship group that I'm only friends with because they drink

……. in this last month I've had something on every single weekend like whether it be weddings, birthdays, engagements, everything. And with my family and the friends, like friends that have I've got, its, it's kind of like a given, you have to drink um so I think in the last month I reckon I've got drunk every weekend and it sounds really bad, sounds really terrible

Extract 8 (Females 25-35)

Danielle …and I'm not doubting it at all, um, but like, I drink probably also a bit differently, like my work involves, not really drinking, but networking, and it's during the day as well, and I am not saying you have to have a drink, but at lunch time, when you are out at dinner, like at a formal

table, and everyone's drinking, it does a) ease the conversation, and b) yea we just do do it generally, so yea

Extract 9 (Females 55-65)

Theresa I did drink, so um, but not every night, just at weekends socially and everything, and when you sorta start cutting back, there's a lot of peer pressure, they're going 'oh, go on, have one' and so I sort of realised that I'd have to pour a drink and pretend I was drinking it, like, as long as they saw a glass in front of me they were happy, but then if I didn't have it, they were think I wasn't being very sociable

Participants' talk here illustrates the implicit social obligations associated with alcohol consumption. Danielle describes drinking alcohol as a necessary part of her job – and as 'not really drinking, but networking' (Extract 8). Others reported the same obligations when attending social events and expressed some of the problematic consequences of not drinking, for example, criticism for being unsociable. Here, alcohol consumption is being normalised as a necessary and required part of participants' life, with no 'choice' but to drink. Such talk works to position individuals as prototypical in-group members with shared ideologies, such that their alcohol consumption is necessary for them to meet their in-group responsibilities.[386] Danielle does not explicitly state that there is no alternative but to consume alcohol, rather, asserting 'I'm not saying that you have to drink', but she has carefully negotiated her speech in order for it to be inferred. In all, people within this focus-group setting were working to problematise the position of *not* drinking and to portray the out-group position (i.e. someone who does not participate in 'normalised' drinking practices), as undesired.

Furthermore, participants' accounts of past drinking behaviours worked to normalise both former alcohol consumption and current practices. Following the prompt question "How much do you drink?" participants' responses typically included an explanation that their current alcohol consumption was much less than it had been in the past.

Extract 10 (Group 5 – Males 25-35)

Harry I am not a big drinker um I used to be when I was younger um but you know I've got kids and a wife and all that kind of stuff and you just don't go out and get drunk

Extract 11 (Group 7 – Males & Females 18-24)

Xanthia …..I used to drink a lot more when I was younger

Participants, regardless of age, declared that they drank 'a lot' more when they were younger than they do now. This talk facilitated their positioning as prototypical in-group members, by implicitly constructing 'others' (i.e. youth) as behaving recklessly, in contrast to themselves (i.e. adults), who drink responsibly.[387] Stereotypically, youth was depicted as a time for going out and getting drunk[387] and heavy alcohol consumption was often presented as part of growing up, as a rite-of-passage.[388] Nearly all participants reported that their drinking practices had changed over time, either with age and maturity, or due to family/parental responsibilities. Through establishing a contrast with a past undesirable behaviour, their current alcohol consumption was normalised and presented as unproblematic.

The unproblematic, responsible, nature of participants' current drinking was further expressed through the use of the phrase, '*everything* in moderation.' This served a similar rhetorical function to the phrase '*everything* causes cancer', but here, '*everything´* is an extreme case formulation[383] that works to justify the position that any behaviour

(including alcohol consumption) is 'okay', if carried out in a moderate fashion (Extract 8). For example:

Extract 12 (Females 55-65)

Rhonda I think everything in moderation

Sue And I think that's the thing, um that you know it's, it's having the occasional glass is okay, but when you get that um the alcoholic, the excessive person, um that that continues, and you know has that potential to do the damage to the liver

Extract 13 (Males 55-65)

Alex I live by the rule that everything's okay in moderation, and as long as you do it in moderation

David Yep

Alex There is a risk with everything you do you just do it in moderation

The trope '*everything* in moderation' construes extreme behaviour as a cause for concern, but approaching all things (whether healthy or unhealthy) in a moderate way, as being ideal. It is thus implied that a moderate amount of alcohol is acceptable. However here, what constitutes moderate alcohol consumption is left inherently unclear and subjectively determined. This talk works a) as a normalisation technique, to 'establish the norm,'[389] and to avoid defining or endorsing precisely what particular behaviour is deemed 'moderate'; b) to further dismiss, or resist, the message that alcohol causes cancer, but in such a way that enabled the speaker to take up the publicly preferred position of being a responsible, health conscious individual.[390]

Additionally, moderation is linked with ideas of 'health transgression' such that a 'little of what you fancy does you good' and 'a healthy lifestyle might be the death of you.'[391, 392] These lay concepts of moderation are considered 'common-sense' and therefore, likely to be resisted if health promotion advice is perceived to challenge these widely held beliefs. Notably, in the context of our focus group discussions, the importance of moderation was only affirmed by people aged 55 to 65 years old, which could suggest a generational attitude or maturity toward any behaviour.[378] Here, the 55 to 65 year olds presented death and illness as effecting those who were careless or undisciplined with personal health. By contrast, individuals who behaved in a responsible and moral manner are understood to have the right to continue with their (perceived) moderate alcohol consumption.[378]

4.2.6 Discussion

Our analysis of the language used by focus-group participants identified two distinct themes that together, demonstrate participants' discursive resistance to the 'alcohol causes cancer' message: a) cancer is unavoidable, therefore behaviour change is futile, and b) the normalisation of alcohol consumption to justify drinking practices.

Participants collectively constructed cancer as an inevitable disease, rendering any effort to avoid cancer through behavioural change as pointless. Respondents used a number of discursive strategies. For example, extreme case formulations and hyperboles, to claim that no matter what they did they were going to get cancer. The dominant response that '*everything'* and '*anything'* 'causes cancer', served a number of discursive functions. Specifically, in the context of these focus-groups, where participants were asked what came to mind when they were told that alcohol causes cancer, the participants generally said '*everything* causes cancer' in ways that demonstrated a discursive

resistance, not only towards the message, but ultimately to changing behaviour in order to heed to the warning.

Participants were prompted to provide accounts of their drinking practices. However, in doing so, responses typically included language that worked to establish the normality of these practices. Consuming alcohol was constructed as a necessary part of life (i.e. professional networking or maintaining friendships), and participants negotiated their drinking practices to portray themselves as just doing what they had to do, rather than what they wanted to do. Participants provided practical reasons for drinking (e.g. increase confidence, reduce anxiety, networking etc.), and few reported drinking because they wanted to, or because they liked drinking. This is consistent with previous research which demonstrated that although pleasure has an obvious association with alcohol,[97, 98] it is rarely included in prevention discourses, being undervalued as a primary catalyst for alcohol consumption.[99] People often report enjoyment from drinking,[387] yet discourse around alcohol consumption nearly always includes a practical justification, for example to reward a hard day's work or, to celebrate special occasions.[393] Providing a practical rationalisation for personal alcohol consumption may work to resist being positioned as an irresponsible or risky drinker, something considered undesirable in many cultures. These representations work to resist the alcohol causes cancer message and remove accountability for any adverse health consequences (here cancer), resulting from their alcohol consumption.

There are three final points to conclude: First, the response, '*everything* causes cancer', could be considered to be part of a co-constructed interaction[394] and therefore, a limitation of the research. The structure of the initial question 'What is the first thing that comes to mind when I say alcohol causes cancer?' may have primed or facilitated the response that *'everything* causes cancer' or '*anything* causes cancer.' Warnings and

messages stating that 'smoking causes cancer' are prolific, making it a very recognisable, easily accessible phrase[395] that is culturally meaningful.[394] Framing the focus-group questions differently may have prompted different initial responses.

Second, these resistant responses may be a consequence of the vast, perhaps overwhelming, amount of health information available within the Australian culture.[89] Several participants spoke of conflicting health information,[364] expressing scepticism regarding the reliability of the information. Media's role in shaping public perceptions and propagating confusion is well noted, as the interminable supply of health information is often misrepresented or over-reported.[89] Furthermore, the growth of the internet has enabled information about health and disease to become readily accessible, yet much of this information is inaccurate and of low quality.[396] The weight of alcohol advertisements, particularly during sporting competitions sponsored by alcohol companies,[285] and pro-drinking messages on social media,[358, 397] may also serve to counter messages of alcohol-related harm. Nevertheless, as the amount of information available increases to the point of overload, decision-making abilities decrease, making it difficult to process information.[398] Thus, people may become confused, ignore the information, and do nothing.

Our analysis further suggests that the 'alcohol causes cancer' message is competing with, and undermined by, current health information about safe levels of alcohol consumption and any associated health benefits. Our participants self-identified as light-to-moderate consumers of alcohol, thus meeting the National Health and Medical Research Council (NHMRC) guidelines of no more than two standard drinks daily.[399] Accordingly, they may consider their current alcohol consumption as safe. As there is no safe level of alcohol consumption with regard to cancer,[342] further efforts may be needed

to deliver accurate, consistent information to reduce confusion, and improve awareness of alcohol-related cancer risk.

Finally, the message that 'alcohol causes cancer', and the way this information is disseminated, requires further consideration. First, it seems plausible that alcohol-warning labels stating 'Alcohol Causes Cancer' will prompt precisely the same resistance as reported here. Although participants had no knowledge of alcohol-related cancer risk prior to taking part in the study, and therefore some of the questions raised may have been prevented with the provision of more information. Labels that provide specific health information (e.g. 'One in five breast cancers are caused by alcohol'), may be less likely to prompt this resistance, but more research is needed to determine this. There is some evidence to suggest that positively framed messages are less likely to be met with resistance,[91] so labels that highlight positive aspects of reducing alcohol consumption might be more effective in eliciting behavioural change. Second, alternative methods for communicating health risk information (e.g. television advertising or media campaigns) may be more effective than alcohol warning labels in raising awareness of alcohol-related cancer risk.[400] Even so, alcohol warning labels, in conjunction with other public health initiatives, may strengthen the validity of this health message in a similar way to warnings on cigarette packaging.[401] Certainly, labels may be part of changing the attitude towards alcohol[102] and, there is some evidence of a shift in the perceptions of alcohol as being harmful.[402, 403] Nonetheless, further research is needed to fully understand the impact of this relatively new health message and how alcohol warning labels might effectively communicate this information.

4.2.7 Conclusion

Alcohol consumption significantly increases the risk of several types of cancers, including two of the most common – breast and bowel cancer.[404] Reducing alcohol consumption is an important, yet understated, cancer prevention strategy, particularly compared with strategies such as screening, anti-tobacco campaigns, or genetic testing. The introduction of cancer-related alcohol warning labels may be one strategy to raise awareness of the risks. However, the message that 'alcohol causes cancer' alone, is likely to be met with resistance and therefore, unlikely to elicit behavioural change. This study builds upon previous research[94] to provide a more nuanced account of public perceptions and attitudes toward alcohol warning labels and alcohol-related cancer risk messages, identifying specific points of resistance and how these are re-produced in conversation. The authors suggest that further research is needed to fully understand the impact of the message that alcohol causes cancer and how, at individual-and population–level, to reduce the national cancer burden through a reduction in alcohol consumption.

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END OF PUBLICATION

4.3 Publication: 'Alcohol causes cancer'; a difficult message for Australians to swallow

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'Alcohol causes cancer': a difficult message for Australians to swallow

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Summary

Alcohol is a modifiable risk factor for cancer. Public awareness of the link between alcohol and cancer risk is poor; thus, alcohol consumers may be unknowingly putting themselves at increased risk of cancer. One way to raise awareness of alcohol-related cancer is through placing labels warning of cancer risk on alcoholic beverage containers; however, little is known about the impact of such labels. We conducted seven focus groups, comprising participants who self-identified as low-to-moderate alcohol consumers, to gauge public attitudes towards the labels and messages relating to alcohol-related cancer risk. Transcripts of discussions were coded to identify emergent themes. Participants expressed a negative response to the alcohol warning labels, and their talk worked to challenge the legitimacy of alcohol-related cancer messages, and the entities responsible for disseminating the information. These responses functioned to counter any implied recommendation for reduction in speakers' alcohol consumption. These findings illustrate how the general population make sense of information about health risks, using this knowledge to make decisions about personal behaviour. In combination with other public health initiatives, alcohol-warning labels have the potential to increase awareness of cancer risk and help in the fight against cancer, but any messaging will need to account for probable consumer resistance.

Key words: alcohol, warning labels, cancer, thematic analysis, discursive analysis

BACKGROUND

Most cancers result from exposure to environmental, lifestyle or behavioural risk factors (Stewart and Wild, 2015). Tobacco and asbestos are well recognized as carcinogens by the public, but ethanol—the key element of alcoholic beverages—is not (Hobin *et al.*, 2020; Stockwell *et al.*, 2020). Some research suggests that alcohol is the most popular psychoactive drug in the world (Jankowski and Hoffmann, 2016), as well as one of the most addictive and harmful drugs (Nutt *et al.*, 2010). Alcohol is consumed by ~80% of Australians aged 15 years and over(Australian Institute of Health & Welfare, 2016), andaccording to the National Health and Medical Research Council (NHMRC) guidelines (NHMRC, 2016), a substantial proportion of drinkers consume alcohol at a level that is considered to increase their risk of alcohol-related harm (Australian Bureau of Statistics, 2018). On a typical occasion, 49% of Australians report consuming 1–2 standard drinks, 49% report 3 or more standard drinks and 2% are unsure of how much they typically consume (Australian Bureau of Statistics, 2018). Moderate alcohol consumption is

4.3.1 Statement of authorship

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Name of Principal Author (Candidate)	Olivia Hawkins
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Name of Co-Author	Jaklin Eliott
Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 26/5/2021
Name of Co-Author	Shona Crabb
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4.3.2 Abstract

Alcohol is a modifiable risk factor for cancer. Public awareness of the link between alcohol and cancer risk is poor; thus, alcohol consumers may be unknowingly putting themselves at increased risk of cancer. One way to raise awareness of alcohol-related cancer is through placing labels warning of cancer risk on alcoholic beverage containers. However, little is known about the impact of such labels. We conducted seven focus groups, comprising participants who self-identified as light-to-moderate alcohol consumers to gauge public attitudes toward the labels and messages relating to alcohol-related cancer risk. Transcripts of discussions were coded to identify emergent themes. Participants expressed a negative response to the alcohol warning labels and their talk worked to challenge the legitimacy of alcohol-related cancer messages, and the entities responsible for disseminating the information. These responses functioned to counter any implied recommendation for reduction in speakers' alcohol consumption. These findings illustrate how the general population make sense of information about health risks, using this knowledge to make decisions about personal behaviour. In combination with other public health initiatives, alcohol-warning labels have the potential to increase awareness of cancer risk and help in the fight against cancer, but any messaging will need to account for probable consumer resistance.

Keywords: Alcohol; warning labels; cancer; thematic analysis; discursive analysis

4.3.3 Background

Most cancers result from exposure to environmental, lifestyle, or behavioural risk factors.[405] Tobacco and asbestos are well recognised as carcinogens by the public, but ethanol—the key element of alcoholic beverages—is not.[31, 266] Some research suggests that alcohol is the most popular psychoactive drug in the world,[406] as well as one of the most addictive and harmful drugs.[407] Alcohol is consumed by approximately 80% of Australians aged 15 years and over[408, 409] and, according to the National Health and Medical Research Council (NHMRC) guidelines NHMRC, [410] a substantial proportion of drinkers consume alcohol at a level that is considered to increase their risk of alcohol-related harm Australian Bureau of Statistics (ABS), [411] On a typical occasion, 49% of Australians report consuming 1-2 standard drinks, 49% report 3 or more standard drinks, and 2% are unsure of how much they typically consume[411] Moderate alcohol consumption is classified as up to one drink per day for women and up to two drinks per day for men,[412] and there is considerable evidence that light-to-moderate chronic alcohol consumption is linked to a significant increase in cancer risk.[7, 404, 413]

There are three main ways alcohol can cause cancer.[414] First, ethanol in the body is broken down in the liver by an enzyme called alcohol dehydrogenase (ADH), which transforms ethanol into a toxic compound called acetaldehyde (CH3CHO), a known carcinogen.[414] Acetaldehyde can cause cancer by damaging DNA and stopping our cells from repairing this damage.[414] Second, alcohol consumption can increase the levels of some hormones (such as oestrogen and insulin), which can modify how cells grow and divide.[3] These changes can alter the structural development of mammary glands and cause breast cancer in women.[415, 416] Third, alcohol can alter the cells in the pharynx and larynx, which may make it easier for other carcinogens (such as tobacco) to be more readily absorbed and which lead to cancers of the mouth and throat.[3, 414] Epidemiological

evidence can support the determination that alcohol causes cancer of the oropharynx, larynx, oesophagus, liver, colon, bowel and breast (in women).[1, 417, 418]

As an individual's consumption of alcohol increases, so does the risk of cancer.[9, 418, 419] Though there is limited (longitudinal) evidence demonstrating that a reduction in alcohol will reduce cancer risk, there is sufficient evidence to indicate that increasing alcohol consumption does increase risk. Therefore, it is reasonable to infer that reducing alcohol consumption will reduce alcohol-related cancer risk. Recent studies conclude that individuals who consume alcohol—even at low levels—have an increased risk of developing cancers of the oesophagus, mouth, throat, and breast (in women), compared with those who do not consume alcohol at all.[418, 420] Additional findings suggest that the risk of alcohol-related cancers may decrease in people who stop drinking alcohol. However, for the risk to reach levels similar to those who have never consumed alcohol, it can take many years.[5, 418]

Information about the link between alcohol and cancer is available in mainstream media (a common source of health information), but may be obscured or challenged by competing health messages.[403] Alcohol consumers, therefore, may be making ill-informed decisions about alcohol consumption and their health. Awareness of the other risks or health-related consequences (e.g. birth defects, car accidents, etc.) associated with alcohol consumption is high.[356, 421] This awareness is possibly due to extensive media coverage[422] and the current use of warning labels on alcoholic beverage containers that communicate these risks.[119, 184] In Australia, warning labels that display cancer risk messages have been proposed to improve consumer knowledge of the risks associated with alcohol consumption and cancer[51, 357] and thus, facilitate autonomous decision-making.

It has been argued that alcohol warning labels serve as a far-reaching, cost-effective method to communicate health information,[423] with a high-level of public and political

support.[247, 266] This strategy, unlike other government-led reforms or interventions (e.g. taxes or price increases), does not restrict the availability of alcohol products[424] and, therefore, is less likely to be deemed 'nanny statist' or an act to restrict freedom of choice.[365, 383] Rather, this approach is presented as enhancing autonomous, informed decision-making,[425] leaving responsibility for healthcare choices and behaviours firmly with the consumer.[426]

This approach however, rests on the assumptions that each individual has the skills, capacity, resources, and autonomy necessary to promote and protect personal health[362, 427] and, is able to discriminate between competing risk messages and decide on 'appropriate' personal conduct to minimise risk of disease or illness.[428] To date, evidence to demonstrate that the inclusion of alcohol warning labels increases awareness of alcohol-related risk is mixed.[194, 213, 234] Moreover there is little evidence that increased awareness influences changes to alcohol consumption.[119, 338, 429] This may be, in part, because of the social and cultural significance of alcohol consumption.[339, 430]

From a public health perspective, the social and cultural significance of alcohol consumption is generally understood by the amount of alcohol consumed, drinking patterns and intoxication within the community.[431] The emphasis is on risky or harmful use of consuming alcohol and, primarily focuses on individual behaviours and responsibilities.[431, 432] The problem here is that this rhetoric obscures some of the culturally significant practices (e.g. celebrations, religious occasions, etc.[433, 434]) and associations (e.g. pleasure, social connection, intimacy, cultural belonging, etc.[98, 339, 435]) with alcohol use. The social and cultural significance of alcohol consumption in many countries is such that any attempt to advocate for a change of behaviour—namely reduction—in alcohol consumption, is likely to engender resistance.[436, 437]

Beyond the cultural significance of alcohol, changing any health-behaviour is difficult, as many factors contribute to the likelihood of adopting and maintaining a healthy lifestyle.[438, 439] Placing safety warnings on a product may make a "symbolic statement concerning the nature of that substance"[429] and thus, could contribute to changing the culture of harmful drinking in Australia and internationally.[440] To date, however, there is uncertainty concerning the effectiveness of health warnings on alcoholic products,[93] as some messages appear to challenge some of the perceived benefits and cultural experiences associated with alcohol consumption and stimulate a negative response.[436, 437]

In this article, we describe how working Australian men and women (aged between 18 and 65) responded to alcohol warning labels displaying cancer risk messages. Our approach to purposive sampling helped to ensure we captured any gender and age differences in alcohol consumption,[371] attitudes toward alcohol,[372] and views around cancer.[373, 374]

We aim to gain an understanding of how the Australian public might make sense of information about alcohol-related cancer risk, and how this knowledge might be used to make decisions about personal behaviour. To the authors' knowledge, this is the first research of its kind to explore public response to such messages. Research findings may be used to inform the construction of public health messages that avoid any potentially negative response and thus increase the uptake and efficacy of such messages.

This study was approved by the University of Adelaide Ethics Committee) HS-2013-050 (Appendix A).

4.3.4 Methods

We used a market research agency to recruit men and women aged between 18 and 65 years of age, who 1) self-identified as light-to-moderate alcohol consumers, and 2) did not have a prior cancer diagnosis, or family member diagnosed with cancer, to participate in focus group discussions (i.e. to limit any potentially adverse effects from the topics discussed). This method of participant recruitment was employed to ensure the focus groups included participants who met these inclusion criteria.[441]

Based on our criteria, the market research agency contacted potential participants using their established database, distributed information sheets and gained consent from each respondent prior their participation in the focus group. Participation in the research was voluntary and participants' personal details were masked from the researcher to ensure complete anonymity. Participants were compensated with a standard honorarium of $50 for partaking in the focus group research, which included any reimbursement for any travel or car parking expenses, as well as a remuneration for their time.

Using this purposive sampling strategy, seven focus groups (totalling 38 participants) were comprised as follows: two male only groups aged 25 to 35 years, two female only groups aged 25 to 35 years, two groups of 55 to 65 year olds (one male only, one female only), and one mixed gender group aged 18 and 24 years. As mentioned above, these groups were created given gender and age differences in alcohol consumption,[371] attitudes toward alcohol,[372] and views around cancer.[373, 374]

Focus group discussions facilitated by the first author were guided by pre-designed questions/topics to elicit conversation among research participants about their knowledge and experiences with alcohol, cancer, and the message that alcohol causes cancer. Alcoholic beverage containers (i.e. bottles and cans) included a visual representation of possible alcohol warning labels. These included messages based on current statistics of

the harmful effects of alcohol:'1 in 5 breast cancers are caused by alcohol'; '6% of all cancers are caused by alcohol'; 'Alcohol causes cancer'; 'Three drinks a day increases your risk of bowel cancer by 20%'; 'Two or more drinks a day can increase your risk of mouth and throat cancer by over 50%'; and 'Drinking alcohol increases your risk of developing cancers.' [442] The audio-visually recorded sessions lasted approximately 90 minutes and were orthographically transcribed by the first author. All personal information was anonymised prior to being entered into the qualitative computer program NVIVO-10.[376]

Data were thematically analysed within a social constructionist framework[443] to explore patterns in talk and meaning, as described by Braun and Clarke.[444, 445] Specifically, the data were thematically analysed at a latent (or interpretive) level, such that underlying ideas and ideologies were examined and developed into themes, as opposed to a manifest style of analysis which involves the development of categories.[444, 446]

To minimise coding bias, themes were identified using a collaborative, open coding process guided by the first author. This process involved the first author coding common themes across the seven focus groups (using NVIVO) and presenting the data to the co-authors. Interpretation of this data was then discussed among the research team. Any differences of opinion were resolved through consultation with the original interview data. Data collection ceased once data saturation was achieved.[447] Two key assumptions underpin our analysis. First, that the cultural and social significance of alcohol is socially produced and reproduced through language[448] and therefore, shared social experiences are drawn upon to re-construct (not just describe) social reality.[157, 368] Second, the meaning of language is context-specific and interpretations will vary depending on the nature of the discussion.[449] The extracts presented in this article represent the most relevant and

concise examples of the primary theme, illustrating some discursive strategies used by participants. To improve readability, talk that does not contribute to the meaning or analytical usefulness of the information has been omitted. Our results and discussion are presented together. Thus, important concepts are raised and discussed in context.[450]

4.3.5 Results and discussion

The primary theme identified within participant responses was 'motivated scepticism.'[451] Motivated scepticism describes the way motivational factors influence personal judgement, and the tendency for individuals to respond critically to information that they do not wish to receive.[451] Throughout the focus group discussions, motivated scepticism was exhibited through the way participants challenged the legitimacy of alcohol-related cancer messages and the entities responsible for disseminating these messages. Participants achieved this in three ways, presented here as subthemes: (1) Undermining the scientific validity and legitimacy of the alcohol-cancer link; (2) Offering anecdotal evidence as a counter-argument; and (3) Scrutinising current public health messages and rationalisation in the form of excuses. These responses worked to defend a speaker's position as an alcohol consumer and present plausible reasons for action (or inaction) in relation to alcohol consumption, by discrediting the message that alcohol causes cancer.

(1) Undermining scientific validity and legitimacy

The first way in which participants exhibited motivated scepticism was to undermine the scientific validity and legitimacy of the alcohol-cancer link. In discussing the example labels presented during the focus group discussions, participants often spoke about the (perceived) contradictory nature of available health information, including information around alcohol consumption. Though contradictions of this nature are not

necessarily present in current health guidelines, this strategy worked to both undermine and challenge the legitimacy and source of the *alcohol causes cancer* message.

Extract 1 (Women 55-65)

Olive It's confusing, it really is confusing. … one minute they say you can have a glass of red wine a day, a few weeks later, oh you'd better not do that.

Extract 2 (Women 25-35)

Kirsten They're also saying it's good to have a couple of drinks a night and then they're saying no don't because it causes cancer. … there's no real set guide saying yes, it's a definite thing that it causes cancer.

As suggested by Olive, receiving conflicting information causes confusion; previous researchers have asserted that this confusion results in scepticism toward further information and the validity of the scientific research that produces said information.[452, 453] Essentially, this talk works to undermine legitimacy by questioning the appropriateness of the alcohol-cancer warning.

This de-legitimisation was typically performed through the reporting of irregularities in health information. For example, our focus group members drew attention to contradictory reports about red wine consumption (see Extract 1 and 2), and other commodities, such as milk and Brazil nuts (see Extract 3). Furthermore, in the context of a focus group about alcohol, Eli's talk (Extract 3) works to establish alcohol as an 'ordinary' commodity, comparable with milk and nuts,[339] separating alcohol from other known cancer causing products such as tobacco.[454]

Extract 3 (Men 55-65)

Eli One minute milk's good for you, the next it's bad for you, then it's good for you

David Exactly, and then they're sayin' [eat] brazil nuts … and now they're saying that brazil nuts aren't healthy for you. I mean huh?

Commonly, consumer product information (including benefits or hazards) is communicated through multiple media platforms[455] and, although there is a high level of public interest in science and scientific discovery,[456, 457] the ability of the public to apply appropriate reasoning strategies to scientific issues, is limited.[458] Moreover, the nature of science is such that what is known, and what is able to be known, is subject to change.[459] This changeability means that scientific knowledge is always contestable and therefore, both the source and content of scientific knowledge is always open to be construed as unreliable.[460] Here, participant talk thus articulates a dilemma contingent upon changeable assessments, perhaps as a result of technological advancements. Conveying this quandary works to justify a position that the unreliability of available information makes establishing appropriate health-protective behaviours (or following recommendations) difficult—if not impossible—and potentially, a waste of time if further technological advancements then reveal the benefits of consuming a product that was once considered hazardous.

De-legitimisation was also performed by presenting arguments and value judgments that worked to undermine or marginalise the credibility of the entity perceived to be accountable for the information.[461] Participants, however, rarely referred to a specific entity, rather speaking of an undefined 'they' (e.g. Extracts 1-3). As demonstrated in Extracts 1-3, the use of 'they' appeared to reference an entity who had been afforded the

right to speak about health promoting behaviours, either an institution (e.g. government) or individual (e.g. scientist). In this context, 'they' worked as a constructive strategy[462] to build and establish two distinct groups: focus group participants ('we') and authorities ('they'). Whilst it is possible that the lack of specificity expressed by respondents may demonstrate a deficit in scientific literacy and uncertainty of research practices.[456] In this context, avoiding reference to specific facts or details enables the respondent to deflect challenges regarding their scientific knowledge.[377]

(2) Anecdotal evidence

The second way in which participants' motivated scepticism was demonstrated was through the use of anecdotal evidence. Participants presented personal evidence to counter the claims of alcohol-related cancer and contest personal risk.

Extract 4 (Women 25-35)

Chelsea I think the only way to make someone actually see it, is if it did cause cancer in someone close to them, and then they saw, with their own two eyes, the effects of it.

Elise [like] with smoking you can directly link someone who's died after being a smoker, … but people will probably look in their own personal circumstances and think, blah, blah drank like a fish and was fine. I think people will try and match up with somebody in their lives, and if they can't see it they might just dismiss it.

Extract 5 (Men 25-35)

Isaac There's someone, that would be late 80s, and is a heavy, heavy drinker but yet, is as fit as a fiddle, he still drives, he still plays golf, he's still healthy. But he'd probably drink a bottle of vodka a day. … and you think how's this guy doin' what he's doin' with no health [effects]

Here, participants presented evidence that is currently available and readily accessible through personal knowledge and experience, rather than conveyed via an independent authority. This talk had three functions: First, to call into question the lack of tangible proof to support the alleged risk of cancer.[463] Second, given talk discrediting authorities, allowed participants to offer logical alternatives based on their own 'evidence,'[464] and third, participants used an active voice to confirm that other individuals would also resist the alcohol causes cancer message.[465] Essentially, participants presented justifications for their own and others' (in)action, and bolstered their argument by exposing scientific knowledge as both visibly fallible (as no one has seen it 'with their own two eyes'), and imperialistic, (as it dismisses personal experience).[463] Additionally, anecdotal evidence is often more difficult to evaluate than statistical evidence as personal stories create emotional attachments, which in turn, influence the way we think.[464]

(3) Scrutinisation and excuses

The third way in which motivated scepticism was displayed was through participants' scrutinisation of current public health messages and using rationalisation in the form of excuses. Although alcohol consumption is considered socially and culturally acceptable,[339] ignoring health warnings, such as *alcohol causes cancer*, typically is not.[428, 466] As participants self-identified as light-to-moderate alcohol consumers (study criteria), many engaged in conversation that worked to mitigate responsibility for personal alcohol

consumption after hearing the risk of alcohol-related cancer. This third strategy—scrutinising current public health messages—was often exhibited through the use of accounts. Accounts are socially approved vocabulary used whenever an action does not align with personal or cultural expectations and there is a need to deflect potential criticism or neutralise one's actions.[467, 468] In our data, one type of account, that is, *excuses*,[469] were often employed by participants when discussing either a lack in risk communication, or misinformation.

Two forms of excuses—*appealing to defeasibility* and *scapegoating*[469]—allowed participants to present rational explanations for their behaviour, despite potential health hazards. Arguments that imply *defeasibility* are demonstrated through claims of misinformation, or lack of 'free will'[470]—factors that influence responsible decision-making.[471] *Scapegoating* works as a discrediting strategy whereby the speaker shifts blame or responsibility away from themselves to a target person or group.[469]

Extract 6 (Women 55-65)

Naomi I think there are a few of us who really haven't been aware of the connection … Why hasn't it been a more widely known until now? I've heard a number of times that a glass of wine is good for the soul, it's good for the well-being.

Extract 7 (Men 25-35)

Paul After a few drinks, I don't think I would be reading the labels too much.

Naomi's talk (see Extract 6) worked to deflect any intimation of blame for personal alcohol consumption by claiming that if she had been given accurate information—and warned of the alcohol-cancer link—she might have altered her behaviour. Instead, Naomi recounts her understanding of the health benefits associated with consuming alcohol and presents herself as an individual who attends to public health messages. Additionally, Naomi is able to shift personal responsibility to those who have told her of the benefits of consuming wine. This talk represents a form of discursive manipulation, such that offering a particular version of 'facts', allows the speaker to exempt themselves of responsibility, maintain positive self-presentation and depict others as accountable for the negative situation.[472]

As demonstrated in Extract 7, Paul negated responsibility for consuming alcohol by claiming interference with his 'free will', such that when intoxicated (i.e. absence of complete consciousness), he would be unlikely to be able to read alcohol warning labels. This talk has two functions. First, Paul is able to manage personal accountability through defeasibility, and an inability to act responsibly due to impairment, (yet does not raise the possibility of reading the labels before this point). Second, Paul's talk works to cast doubt on the utility of warning labels and undermine the possibility that the messages of the alcohol-cancer link will have any real impact on reducing alcohol consumption.

In the extract below, Elise works to deflect any implied criticism of personal alcohol consumption, by appealing to defeasibility (misrepresentation of cancer-causing products) and scapegoating (government responsibility). Further, this extract also represents the way in which groups worked collectively to discredit the presentation of the 'alcohol causes cancer' message. Emphasising government-regulated restrictions on tobacco (a known cancer-causing agent) and smoking, enabled speakers to avoid appearing irresponsible for ignoring genuine public health messages.

Extract 8 (Women 25-35)

Elise I think as well, smoking has been banned in restaurants, cafés (and) bars. You can't smoke inside club(s). It's a bit of an oxymoron saying this [alcohol] will cause cancer but there are nightclubs, bars, or restaurants out there where your sole purpose is to just drink the night away. If it was so bad then the government would ban nightclubs, restaurants and bars from selling it.

Here, Elise presents an argument whereby if alcohol causes cancer (like tobacco) the government would put laws into place to protect public safety as has been done for tobacco[123] and 'ban nightclubs and bars from selling it' (Extract 8). However, as this is not the case, alcohol must be safe to consume. In querying the rationale of banning one cancer-causing activity (smoking),[344] but not the other (drinking), Elise effectively shifts the focus onto the governments' role in safeguarding public health and the wrongfulness of continuing to sell a product known to cause cancer. By doing so, Elise is able to deflect personal responsibility and thereby excuse her decision to continue consuming alcohol.

4.3.6 Conclusion

The aim of this study was to examine how participants responded to the message that alcohol causes cancer as presented on cancer-warning labels on alcohol products, and the discursive strategies employed to support their position. Our analysis illustrates how understandings of the benefits (e.g. cardiovascular benefits of red wine) of alcohol consumption are strongly embedded in public discourse, and readily available as a resource to undermine any claims that a) alcohol causes cancer, and b) this risk requires individual action to reduce alcohol consumption. Participants in our focus groups used discursive strategies to undermine the scientific validity and legitimacy of the alcohol-

cancer link and, the (perceived) contradictory nature of available health information and drinking guidelines. They used anecdotal evidence to counter the claims of alcohol-related cancer, contested personal risk, and scrutinised current public health messages. Drawing attention to incongruities within available understandings served two functions, by working to first de-legitimise the message and the entities providing the risk information, and second, to counter personal responsibility for personal alcohol consumption.

Within a focus group setting, we identified several strategies that enabled our participants to defend personal alcohol consumption in the face of the potential cancer risk argument. Though this methodology has well documented advantages in social science research,[473] it also presents certain challenges.[474] We acknowledge that these discursive strategies were produced in the specific setting of a focus group, and thus were shaped by features of that setting, such as the questions used to guide discussions. The researchers' role also involved the interpretation, generation and construction of meaning in the process of data analysis. For this reason, the data were analysed using a collaborative, open coding process guided by the first author.

Our analysis illustrates how an understanding of the benefits (e.g. cardiovascular benefits of red wine) of alcohol consumption are strongly embedded in public discourse and readily available as a resource to undermine any claims that a) alcohol causes cancer and b) this risk requires individual action to reduce alcohol consumption. Drawing attention to incongruities within available understandings served two functions. Working a) to de-legitimise the message and the entities providing the risk information and b) to counter personal responsibility for personal alcohol consumption. Health promotion necessitates the provision of risk information in an attempt to discourage unsafe or unhealthy behaviour, and enable people to increase control over their health.[475]

Nevertheless, general conceptions of health, and how personal health is achieved, are complex.[476] As Beck[78] and Lupton[74] have argued, risk has become a key concept in contemporary society such that people are bombarded with information about behaviours that should be avoided. This proliferation of health/risk information, together with the inconsistencies and/or changeability of scientific evidence, creates confusion and mistrust.[378] Our analysis demonstrates how this is actualised in conversation. Specifically, respondents expressed confusion and mistrust by presenting conflicting health information and providing examples of anecdotal evidence to invalidate warnings of alcohol-related cancer risk. Ultimately, motivated scepticism[451] was exhibited in response to risk information—alcohol causes cancer—that the focus group participants did not wish to receive.

The findings presented in this article highlight the need for a comprehensive health promotion approach to communicate alcohol-related cancer risk, in a similar way as has been achieved with anti-smoking campaigns. It is not uncommon for new public health messages or interventions (e.g. seatbelts, gun control, cigarette warning labels etc.) to generate anger and resistance before being accepted as commonplace.[361, 365, 383] However, at least so far as they elicit the negative responses documented here, warning labels alone are unlikely to be successful in changing behaviour. It is worth noting however, that some of the talk generated here appears to capture participants' responses to new health information. As the public becomes better informed about the alcohol-cancer link, these public responses may change. Certainly, support of other entities (e.g. media, government, doctors etc.) to present a united—and consistent—message about the link between alcohol and cancer, is necessary to ensure that alcohol warning labels do not simply add to the confusion and (mis)understandings around alcohol consumption.[403]

Health promotion strategies seeking to reduce alcohol consumption could also be informed by the successes and failures of cigarette warning labelling and campaigning, given the shared association with cancer risk.[184] One notable similarity between the current study and cigarette warning labelling research is the way in which smokers actively avoid or divert their attention away from cigarette health warning labels.[126, 477] The use of graphic, explicit, or overtly threatening language has been shown to elicit psychological reactance[478] and is associated with reactance resulting from freedom threat perception.[479] Further research has shown that freedom threat perceptions led to reductions in source credibility and increases in source derogation,[479, 480] findings that are consistent with the results presented in this study.

Understanding current challenges associated with reporting the link between alcohol and cancer may help identify strategies most likely to be acceptable, and/or least likely to elicit resistance within the populace, thus increasing the likelihood of prompting reduction in alcohol consumption and incidence of alcohol-related cancers.

END OF PUBLICATION

4.4 Conclusion of focus group study, Part A

Results from the first series of focus groups presented in this chapter draw attention to some of the ways in which light-to-moderate consumers of alcohol might respond to the message that alcohol causes cancer and the introduction of alcohol warning labels with such messages. Ultimately, participants within the focus groups resisted alcohol-related cancer risk messages using a number of discursive strategies.

Participants worked to present themselves as 'normal' consumers of alcohol by recounting personal experiences and depicting an obligation to uphold societal expectations to consume alcohol. They also worked to construct cancer as an inescapable disease, and their own alcohol consumption as unproblematic and socially sanctioned. When presented with alcohol warning labels depicting alcohol-related cancer risk messages, participants' talk worked to challenge the legitimacy of these messages and the entities responsible for disseminating the information. In all, these responses functioned to counter any implied recommendation for reduction in the speakers' alcohol consumption.

Considering these findings, I conducted a second series of focus groups to examine how people who consider themselves at higher risk of cancer (than the general public) might respond to the link between alcohol and cancer. This is the focus of Chapter 5.

5 Focus group study results (Part B: Perceived higher risk of cancer)

5.1 Preface

In Chapter 4, I presented the journal articles resulting from the first series of focus groups conducted in this thesis (Part A). Results from that study suggested that people who self-identify as light-to-moderate alcohol consumers will resist warnings of alcohol-related cancer risk.

Phase 2, Part B, was undertaken to explore how Australian adults who perceive themselves at higher risk of cancer respond to the message that alcohol causes cancer, and the introduction of alcohol warning labels that warn of alcohol-related cancer risk. In the findings from Phase 2, Part A, my co-authors and I found that those who self-identified as light-to-moderate consumers of alcohol, resisted the message that alcohol causes cancer and rejected any implied need to alter personal alcohol consumption. Reflecting on these findings, I chose to replicate Phase 2, Part A, using a different population sample—that is, people who considered themselves at higher risk of cancer than the general population. (Notably, we did not assess individuals for their actual risk of cancer, I was interested in their self-perceived risk of cancer). Here, I wanted to examine how this population might respond to the message that alcohol causes cancer and if they were more likely to report intentions to change their drinking behaviours as a result of the presented risk.

In this chapter, I present the findings from the second series of focus group data with people who consider themselves at higher risk of cancer than the general public. Participants were recruited based on their self-identified cancer risk (perhaps due to a family history of cancer, poor diet, smoking status, unprotected sun exposure, or sedentary employment). Potential participants were excluded if they had a prior cancer diagnosis.

The results address the following research question:

- 'How do Australian adults respond to the message that alcohol causes cancer?'

Results from this second series of focus groups are consistent with the findings presented in Chapter 4, therefore this chapter provides a relatively brief summary (in contrast to a full manuscript), given the similarities with the previous chapter.

5.2 Methods

The methods and data analysis used in this study replicate those undertaken in Phase 2, Part A, however, I will provide a brief overview here.

Ethical approval was obtained from The University of Adelaide Human Research Ethics Committee (H-2016-192). Men and women aged between 18 and 65 years of age who deemed themselves at increased risk of cancer, were recruited via a professional market research agency in Adelaide, South Australia to participate in a focus group discussion. Twenty-two participants were allocated to one of three mixed-gender focus groups based on age (i.e. 18-24, 25-35 or 55-65), given evidence of age-based differences in alcohol consumption,[371] attitudes toward alcohol,[365] and perceptions of cancer.[373, 374]

Focus group discussions were guided by a set of pre-designed questions similar to those used for Part A (see Appendix J). Alcoholic beverage containers (i.e. bottles and cans), displaying warnings based on current statistics[4] (see Figure 4.1), were introduced to provide a visual representation of possible alcohol warning labels. Discussions lasted approximately 90 minutes, were audio-visually recorded, and orthographically transcribed by an independent transcriptionist. Anonymised data were analysed using a thematic analytic technique.[380, 444]

As in Phase 2, Part A, themes were identified using a collaborative, open coding process guided by the first author. Differences in opinion were resolved through

consultation with the original interview data. Data collection ceased once data saturation was achieved,[447]—which, in the second series, was after the third focus group study.

5.3 Results

Consistent with the findings outlined in Phase 2, Part A (see Chapter 4), participants resisted the message that 'alcohol causes cancer.' Participants reported factors such as poor diet, smoking status, unprotected sun exposure, sedentary work, a family history of cancer, and exposure to electronic equipment as reasons why they considered themselves at higher risk of cancer than the general public. Alcohol consumption was justified through pointing out that they did not perceive themselves to drink at risky levels (particularly compared with other people).

Participants highlighted some of the protective strategies they have in place to reduce their risk of cancer. They spoke of increasing antioxidants by eating blueberries and other types of fruit and vegetables, reducing consumption of junk food, wearing personal protective equipment at work, and using sunscreen. By pointing out the protective strategies being undertaken to avoid cancer, participants were able to present themselves as responsible and health-conscious individuals who would avoid any perceived judgement that their behaviours were irresponsible. These findings are consistent with the normalisation of alcohol consumption through the presentation of self as a prototypical, and responsible, consumer of alcohol (section 4.2.5).

Extract 1 (Males & Females 55-65)

Alex: I don't eat anything specifically real healthy and that sort of thing although I don't eat junk food ever

Many participants considered cancer to be associated with genetic factors and thus, changes in personal behaviour were considered futile. Comments such as Extract 1 are

consistent with the findings presented in Chapter 4 (section 4.2). Participants in that study reported cancer as unavoidable and any attempts to avoid cancer through behavioural change were deemed pointless.

In further attempts to avoid any implied need to change personal alcohol consumption, participants commonly pointed out other behaviours or products that were more likely to cause cancer than alcohol. Examples of this include the carcinogenic properties of food coming in from overseas (particularly China, Vietnam and South Africa), and concerns about the perceived dangers associated with mobile phone use (via radiation emissions). Moreover, in keeping with the findings from Phase 2, Part A, participants in Part B also talked about everything causing cancer, for example Mandy (Extract 2), explains that 'everything is causing something' and she believes, without adequate research, these claims should not be trusted.

Extract 12 (Males & Females 25-35)

Mandy ……there is some research that you can't really dispute so to speak, I mean skin cancer yes particularly in Australia there has been enough research on the thing that you know spending time out in the sun, it's a higher chance of getting melanoma and smoking, research done for decades and they are pretty undisputed things. But, some of the other causes for cancer and these days everything is either causes cancer or obesity or anorexia its causing something I mean you know breathing air is now causes autism, everything causing something you start to question the research

Participants' talk worked to diminish or undermine the messages of alcohol-related cancer risk by pointing out the lack of scientific evidence, lack of public knowledge and the need for more information. As was also evident in the previous study, participants commented on the (perceived) contradictory nature of health information, including information around alcohol consumption.

Extract 3 (Males & Females 55-65)

George The only thing that I've heard about…. When you mentioned the word the cancer, cause cancer, we all know if we drink too much we are going to pickle our liver …… but other than just drinking in general will cause cancer, I have never heard that before.

5.1.4 Conclusion

Phase 2, Part B, was conducted to examine how people who perceive themselves as at risk of cancer, might respond to the message that 'alcohol causes cancer.' Results here, are consistent with Phase 2, Part A, such that alcohol-related cancer risk warnings are resisted through means of justifying personal behaviour, diminishing, or undermining potential risk and presenting behaviours or products that are more likely to cause cancer than alcohol.

One common theme that was evident in participants' conversation (both in Part A and Part B), was the knowledge and understanding of tobacco-related cancer risk displayed by participants. Participants identified numerous public health initiatives that have been successful in reducing smoking in Australia and compared these initiatives with their experiences with contradictory and unsupported information about alcohol-related cancer risk. I explore the comparisons participants made between alcohol, tobacco and cancer in Phase 2, Part C.

5.4 Conclusion

In Chapter 5, I discussed the rationale for conducting focus groups with people who perceived themselves at higher risk of cancer (Phase 2, Part B). I presented findings from the data collected in these focus groups and described similarities with the results found in Phase 2, Part A. Findings from Part B were similar to the findings in Part A, which is why data collection ceased after only three groups and the findings have not resulted in a stand-alone publication.

In the following section (Chapter 6), I present Phase 2, Part C, in which I have combined and analysed the data from Parts A and B. Here, I explored the comparisons participants made between public health initiatives to reduce smoking in Australia, with messages of alcohol-related cancer risk and the proposed introduction of alcohol warning labels.

END OF CHAPTER

6 Focus group study results (Part C: Experience with alcohol and tobacco health warnings)

6.1 Preface

This chapter contains the fifth and final publication contributing to this thesis—"Australian community perspectives on alcohol, tobacco, and cancer: the legacy of the successful tobacco control program." This article, which is currently under review in the *Australian and New Zealand Journal of Public Health*, explores the comparisons participants made between public health initiatives to reduce smoking in Australia, with messages of alcohol-related cancer risk and the proposed introduction of alcohol warning labels.

The results address the final research question for this thesis:

- 'How do Australian adults parallel their experiences and understanding of tobacco reforms with the message that alcohol causes cancer?'

The analysis presented in this publication aimed to better understand how the tobacco control approaches used in Australia can inform the development of integrated health promotion strategies for reducing alcohol-related cancer risk.

6.2 Manuscript: Australian community perspectives on alcohol, tobacco, and cancer: the legacy of the successful tobacco control program

6.2.1 Statement of authorship

Title of Paper	Australian community perspectives on alcohol, tobacco, and cancer: the legacy of the successful tobacco control program
Publication Status	☐ Published ☐ Accepted for Publication ☑ Submitted for Publication ☐ Unpublished and Unsubmitted work written in manuscript style
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Principal Author	
Name of Principal Author (Candidate)	Olivia Hawkins
Contribution to the paper	Collected and analysed data, prepared manuscript, and acted as corresponding author
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Co-Authors Contributions	
By signing the Statement of Authorship, each author certifies that: i. the candidate's stated contribution to the publication is accurate (as detailed above); ii. permission is granted for the candidate in include the publication in the thesis; and iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.	
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Contribution to the paper	Supervised development and conduct of work, and evaluated manuscript
Signature	Date 24th May 2021

6.2.2 Abstract

Objective: The International Agency for Research on Cancer classifies ethanol—the intoxicating agent found in beer, wine, and liquor—as a known human carcinogen, locating it in the same category as tobacco. Knowledge and understanding of tobacco-related cancer has been successfully communicated through numerous anti-smoking campaigns and government policy, with consequent reduction in smoking. However, alcohol-related cancer risk is relatively unrecognised by the wider community. This research examines how Australian adults understand the message that 'alcohol causes cancer' through drawing parallels with their experience and understanding of smoking-related cancer.

Methods: We thematically analysed the accounts of 60 focus group participants aged between 18 and 65, who either self-identified as light-to-moderate alcohol consumers or perceived themselves at an increased risk of developing cancer.

Results: Participants described numerous health campaigns and government reforms that have successfully contributed to building public understanding about smoking risk. They also questioned the absence of similar strategies that warn of alcohol-related cancer risk.

Conclusions and implications for public health: The success of tobacco control has permeated public understanding of cancer-related risk. Measures to reduce alcohol-related cancer that do not support behaviour change in the same manner are viewed with scepticism. Therefore, modelling from anti-smoking strategies may inform more successful promotion of behaviour change around alcohol consumption.

Key words: alcohol, cancer, tobacco, smoking, health promotion, qualitative methods

6.2.3 Introduction

Cancer is one of the leading causes of morbidity and mortality globally.[405] In 2015 there were 17.5 million cancer cases worldwide and 8.7 million deaths.[481] By 2030, it is projected that there will be approximately 26 million new cancer cases and 17 million cancer deaths per year.[482] This anticipated rise is attributable to demographic and epidemiological transitions, particularly associated with an ageing population.[481]

According to current evidence, between 30% and 50% of cancer can be prevented[417] through modifying or avoiding known lifestyle and environmental carcinogens.[1] Tobacco, alcoholic beverages, processed meats, and ultraviolet (UV) radiation through sun exposure are among the 119 substances classified by the International Agency for Research on Cancer (IARC) as carcinogenic to humans.[1] High public awareness of cancer risk associated with tobacco and sun exposure can be attributed to public health campaigns,[343] media reports,[483] government legislation[484] and personal experience.[485] Although consumption of alcohol is a modifiable risk factor for cancer, public awareness of alcohol-related cancer risk is limited, both in Australia and elsewhere.[139, 437]

Motivated by the success of anti-smoking campaigns,[126] some public health advocates have suggested that alcohol beverage containers should display messages to warn of cancer risk.[51] Indeed, alcohol consumption and cigarette smoking have comparable hazards—both are readily available, legal products that include addictive and habitual components, and risks associated with cancer.[486] Therefore, communicating health warnings through alcohol warning labelling presents as a practical strategy to warn of the alcohol-cancer link. Moreover, alcohol warning labelling is deemed a cost-effective public health approach and, when considered in the context of a range of harm-reduction strategies, attracts a high level of public and political support.[119]

To determine how such a strategy might be received by the Australian public, we conducted focus group studies in 2013 and 2016 to investigate how people respond to the message that 'alcohol causes cancer' and the potential introduction of 'alcohol causes cancer' warning labels.[139] Our results demonstrated how participants resisted alcohol-related cancer warning messages through challenging the legitimacy of the information, and constructing accounts to excuse or justify continued alcohol consumption.[139] One observation that warranted further investigation, and is therefore the focus of this paper, was the way participants repeatedly drew comparisons between alcohol warning labels and anti-smoking campaigns. Cigarette warning labels and graphic cigarette packaging were highly discussed.

In this paper, we examine how participants parallel their experiences with anti-smoking campaigns and their (in)experience with warnings of alcohol-related cancer risk, and the implications of such associations. Our objectives are to: 1) identify the reported juxtaposition between anti-smoking strategies and the message that alcohol causes cancer, and 2) examine how Australians report coming to accept the cancer risk associated with smoking. This analysis will further explore the strategies these participants deemed necessary to strengthen the public understanding and perceived credibility of the link between alcohol consumption and cancer, and measures to reduce alcohol-related cancer risk.

6.2.4 Methods

This qualitative research project used a focus group methodology and thematic analysis. We conducted two related studies to investigate public responses to the message that alcohol causes cancer. Sixty men and women aged between 18 and 65 were recruited via a professional market research agency in Adelaide, South Australia to participate in a total of 10 focus group discussions conducted in 2013 and 2016. Focus groups were

stratified based on differences in alcohol consumption,[371] attitudes toward alcohol[365] and perceptions of cancer risk.[202, 373] Ethical approval was obtained from The University of Adelaide Human Research Ethics Committee (HS-2013-050 and H-2016-192, see Appendices A and B).

An initial seven focus groups were conducted with a total of 38 participants who self-identified as light-to-moderate alcohol consumers: three male-only groups (aged 25 to 35 x 2, 55 to 65 x 1), three female-only groups (aged 25 to 35 x 2; 55 to 65 x 1), and one mixed-gender group (aged 18 to 24). Our analysis demonstrated that messages about alcohol-related cancer would likely be met with resistance within this population.[139] Therefore, we subsequently recruited people who deemed themselves at increased risk of cancer to examine how such individuals might respond to the link between alcohol and cancer. Notably, we did not assess individuals for their actual risk of cancer, as we were interested in their self-perceived risk of cancer. Our aim was to examine how people in this population might respond to the message that alcohol causes cancer and if they were more likely to report intentions to change their drinking behaviours as a result of the presented risk. We recruited twenty-two participants and allocated them to one of three mixed-gender focus groups based on age (i.e. 18-24, 25-35, or 55-65).

The focus group discussions, which lasted approximately 90 minutes, were guided by pre-designed topic questions informed by the literature and facilitated by the first author. The questions allowed participants to discuss a broad range of information and health beliefs around alcohol consumption, cancer and knowledge of alcohol-related cancer risk.

Alcoholic beverage containers (i.e. bottles and cans) displaying mocked-up illustrative examples of warnings based on current statistics (‘1 in 5 breast cancers are caused by alcohol’; ‘6% of all cancers are caused by alcohol’; ‘Alcohol causes cancer’;

‘Three drinks a day increases your risk of bowel cancer by 20%’; ‘Two or more drinks a day can increase your risk of mouth and throat cancer by over 50%’; and ‘Drinking alcohol increases your risk of developing cancers’22), were introduced to provide a visual representation of possible alcohol labels.

Discussions were audio-visually recorded, orthographically transcribed and anonymised before being entered into the qualitative computer program NVIVO-10.[376] Transcribed data were read and re-read, and the recordings listened to several times. This process enabled familiarity with the data through immersion and generation of meaningful lists of recurring ideas and key issues that accurately represented participants’ views.[487] These data were thematically analysed to explore patterns in talk and meaning between and across the focus groups.[380]

In this paper, we analyse how participants spoke of their experience with anti-smoking campaigns or controls and specifically the evidence cited to question the absence of similar messages that warn of alcohol-related cancer risk. The extracts provided represent the most relevant and concise examples of the identified themes. Data from the initial seven focus groups are identified as ‘a’ and the subsequent three focus groups with participants who characterise themselves to be at higher risk of cancer as ‘b.’ Talk that does not add meaning to the data, or analysis, has been removed to improve readability.

6.2.5 Results

Participants, in the absence of direct prompting, invariably associated the ‘alcohol causes cancer’ message with their knowledge and experience around smoking-related cancer risk. Discussions reflected a diverse range of participant experience with anti-smoking strategies and highlighted their lack of similar experiences with alcohol-related cancer risk. Some observations shared by participants suggested confusion and uncertainty regarding the link between alcohol and cancer. Discussion of personal

experience, contradictory information (e.g. the cardiovascular benefits of red wine) and the inherent use of alcohol within Australian culture, enabled participants to draw attention to the plausibility of the two cancer messages.

We identified four themes in the data: *social marketing campaigns; consumer guidelines and support services; environmental and social planning*; and *taxation*. These themes represent factors that have contributed to the fifth theme we will discuss, *cultural shift*, ultimately leading to the successful reduction of tobacco smoking rates in Australia[488] (see Figure 6.1). Participants drew upon these themes as they debated complexities associated with warnings about alcohol-related cancer risk by comparing their past and present experiences, with anti-smoking strategies employed to reduce cigarette consumption and, tobacco-related cancer. Each theme will be discussed separately.

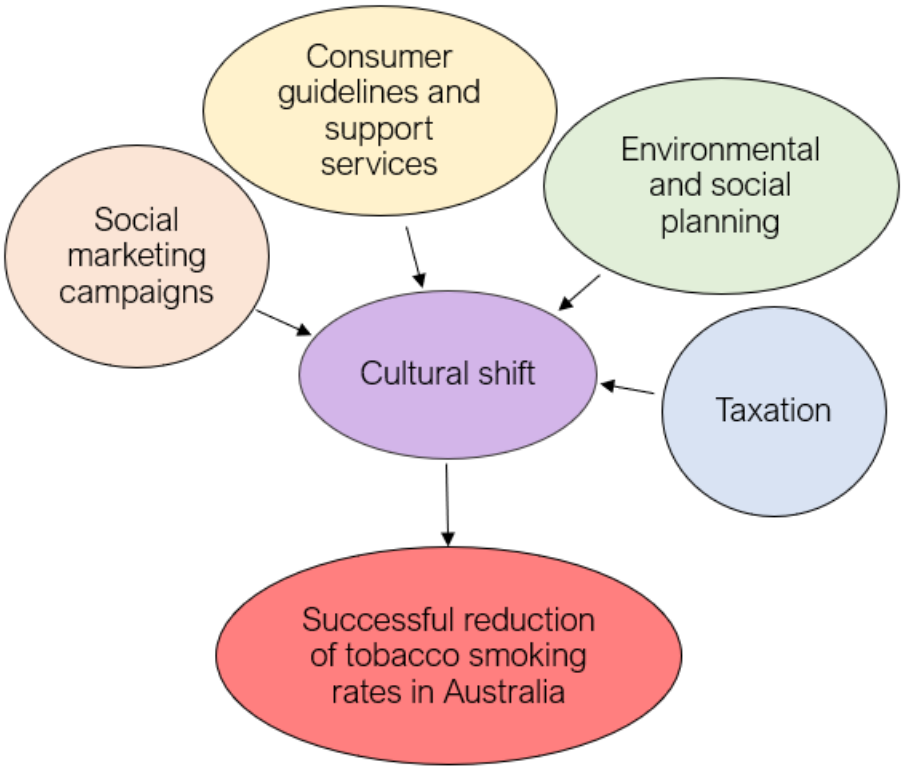

Figure 6. 1: Conceptual map of factors influencing the reduction of tobacco smoking in Australia

Social marketing campaigns

Participants consistently demonstrated that they were well-informed of the dangers associated with tobacco smoking, but not with alcohol-related cancer risk. There was discussion around their repeated exposure to anti-tobacco advertisements and campaigns (through cigarette packaging and television advertisements) and the impact this regularity has had on their experience with smoking. For example, Georgie and Bob (below) noted that as a result of high levels of advertising, individuals were more equipped to make informed decisions about health practices. This opinion was commonly voiced and participants recounted many instances where friends, family or work colleagues, had quit smoking as a result of consistent warnings.

Georgie: With smoking, I think there has been a lot of advertising and I think everyone is aware, and then they can make an informed choice about whatever they do. (18-24, b)

Bob: I did a survey once with the guys from our lunchroom, there was 20 of us, 19 had given up smoking - that was 25 years ago. Yea, so the message gets across smoking. (55-65, a)

Participants also repeatedly discussed the impact of anti-smoking advertisements designed to invoke an emotional response in viewers. The general sentiment voiced was that these types of advertisements were personally relatable. In some cases, participants reported that their children, after viewing emotive anti-tobacco advertisements, spoke of never wanting to smoke and expressed concern for family members who were smokers. Those who identified as parents or grandparents also spoke about school programs that educated children on the effects of smoking and their effectiveness in communicating risk.

Mitch: Smoking ads showing the people how are we going to tell the kids, that hits the heartstrings. (25-35, b)

Kirsten: My daughter is adamant she'll never ever smoke because she sees the adverts where the dad's sitting in the hospital bed, you know dying, and seeing my mum, she's constantly telling my mum to quit smoking, [and says] 'nanny, I don't like it.' (25-35, a)

Fraser: My kids are horrified to see anyone smoking, 'agh they're smoking.' That's how they were brought through school. (55-65, a)

This talk demonstrates participants' awareness of the broad reach of anti-smoking campaigns and their capacity to inform and promote behaviour change. It also worked to draw comparisons between the two risk messages and highlight the absence of campaigns that warn of alcohol-related cancer risk. The following excerpts illustrate how, when presented with the message that alcohol causes cancer, participants cited anti-smoking campaigns to defend their unfamiliarity with the risks associated with alcohol consumption and cancer. Particular attention was drawn to warning labelling.

Miriam: Why haven't they got those pictures on the bottle of wine? I haven't seen the word anywhere on the bottles of wine about cancer. (55-65, b)

Amy: On the smoking packets you've got all that horrific gums, and dead babies and stuff—there is none of that here. (25-35, a)

Consumer guidelines and support services

Though participants demonstrated limited knowledge of alcohol-related cancer risk, they exhibited a good understanding of guidelines around smoking risk. Group members presented smoking-related cancer as indisputable given the availability of research and personal experience with illnesses related to cigarette smoking. Michelle (below) reports of not smoking because of the known health risk and Elise (below) talks about anti-smoking messages being 'drummed' into them. For these reasons, David and Belinda (also below) voiced negative judgement on others' behaviours when it was deemed that recommendations were ignored.

Michelle: I don't smoke because there is such a knowing [of the] risk for cancers and other health issues. (25-35, b)

Elise: The smoking [message] was like drum, drum, drum, drum, drummed [into us]. (25-35, a)

David: There's a lady at my work, she is now 7 months pregnant and she smokes about 4 smokes a day I mean you feel like saying 'you silly bitch.' (55-65, a)

Belinda: Both of our grandparents died of emphysema and lung cancer, yet my idiot brother still smokes. (25-35, a)

Through presenting smoking guidelines unproblematically and judging others' behaviour against them, participants arguably displayed some confidence in anti-smoking guidelines. In contrast, participants reported being confused about the recommended guidelines for alcohol consumption in relation to cancer risk. This confusion was largely

expressed when participants described their experience with, and understanding of, information about the health benefits of consuming red wine.

Adam: I guess the problem is they are saying there is an increased risk of cancer, but then they say drink[ing] two glasses of alcohol reduces [heart disease], so they are sort of throwing things against each other, and so, you know, it's either heart disease or it's cancer. (25-35, b)

Louise: Yes, [they say] have a bit of red wine every now and again cos it's supposed to be good for you, but then if you drink too much you get cancer. What do you do? (25-35, a)

Sue: And in this book, this woman still says that red wine is an antioxidant and is good for you. (55-65, a)

Similarly, there were instances where participants cited health professionals' failure to engage in conversations with their patients about the link between alcohol and cancer, as they do with cigarette smoking, as a reason to question the validity of the that link. For example, Kym's excerpt (below) represents an oft-espoused belief within our focus groups that if the risk of alcohol-related cancer was firmly established, General Practitioners would be required to impart guidelines or recommendations to their patients. In this respect, participants assigned responsibility for their health and their alcohol consumption to medical providers or GPs. Similarly, Pipa spoke of the relatively recent inclusion of wine and beer options to some hospital menus.[489] Given that smoking has not been permitted in South Australian hospitals since 2006 because of the known risks to self and others,[350] the provision of alcoholic beverages in a healthcare setting such as this, appears to undermine claims of alcohol-related cancer risk.

Kym: When you sit down with a doctor and he does your health assessment and they go so what's your risk factors [has] someone in your family had a heart attack? or do you smoke? and you go no. I don't think I got asked that question about alcohol by my doctor. (55-65, b)

Pipa: It's also interesting, these days and probably for the last 10 years, if you're a patient in a hospital you can now have a glass of wine. (55-65, a)

Environmental and social planning

Participants provided many instances where smoke-free legislation has been implemented to prevent the negative consequences of tobacco smoking. Indeed, banning smoking in public areas, such as bars, clubs, restaurants, movie theatres, bus stops, office spaces and aeroplanes, was noted as crucial in changing the acceptance of cigarette smoking and reducing tobacco-related harm.

Craig: As a youth [I'd] go into a picture theatre and you could see the projector light through all the cigarette smoke you know. And now it would be unthinkable to light a cigarette in a movie theatre. (55-65, a)

Belinda: You can't even smoke at bus stops anymore. (25-35, a)

Rhonda: I can remember working in an office and people smoked in the office. (55-65, a)

Pipa: [I remember] sitting on the plane and they're all smoking away. (55-65, a)

Regulating the availability of cigarettes was also described as an important influencing factor in changing smoking behaviours.

Craig: I used to get on my bike and ride to the shop and get cigarettes for my dad, you try doing that now. (55-65, a)

This reduction in accessibility, through restricting the availability or accessibility of cigarettes, appeared to signal the seriousness of risks associated with tobacco smoking. Comparisons were also drawn between tobacco smoking restrictions and the absence of similar actions to reduce alcohol-related cancer. Participants reasoned that if alcohol did in fact cause cancer, availability would be restricted and under similar legislation as tobacco.

Fraser: Especially when they say it's no good and it can cause cancer and they let them open the clubs until 5 in the morning. (55-65, a)

Elise: If [alcohol] was so bad then the government would ban nightclubs, restaurants and bars from selling it. Smoking has been banned in public places whereas drinking hasn't. (25-35, a)

Rhys: [the] thing is if it was that much of a health concern would it be banned. (18-25, a)

Taxation

Taxation was raised in relation to both tobacco and alcohol products. When discussing quitting smoking, many participants gave personal accounts or knew of someone who gave up smoking due to the increasing financial burden of purchasing cigarettes.

> Amy: I gave up smoking because it was expensive. It wasn't to do with cancer. (25-35, a)

Discussion around alcohol taxation in Australia was more complicated and there was consensus that it was not necessarily aimed at reducing alcohol consumption or alcohol-related harm. Additionally, participants projected that some Australians would suspect the government of revenue raising, instead of improving alcohol-related health outcomes.

> Kyle: If you put an excise on it, people will go it's just the government trying to raise revenue rather than trying to reduce consumption. (25-35, a)

These findings suggest that alcohol pricing might be an effective means to shape alcohol consumption, a method that has been useful in the alcopop market.[490] Despite this, recent research conducted in Australia shows a drop in support for increasing the tax on alcohol.[27, 491]

Cultural shift

Changes around the culture of tobacco smoking in Australia were evident in the way older participants compared their smoking experiences with that of their children (also

displayed in talk presented in the social marketing campaigns theme). They spoke of a past time when smoking was popular and of the (negative) social consequences of not smoking, often observing that in the present, their children displayed abhorrence toward cigarettes and those who smoke. Naomi's remarks (below) further demonstrate the negative attitudes presented by focus group participants regarding smoking behaviours. Many described smoking as disgusting and here, Naomi states that she elects not to associate with individuals who smoke.

Eli: Back in the day if you didn't smoke there was something wrong with you. (55-65, a)

Naomi: I don't know anyone who smokes these days. I've got no friends who smoke ah I knew people who smoked years ago, but I guess I moved in different circles. I wouldn't choose to be involved with anyone who was a smoker. (55-65, a)

Kirsten: My daughter doesn't like smoking because it is disgusting. (25-35, a)

Eli's description above of the cultural significance of tobacco smoking and the unconventionality of not smoking in the past mirrored the sentiments expressed by Amy and Danielle (below) regarding alcohol consumption currently. Both examples illustrate societal pressures to conform with cultural expectations and avoid experiencing stigmatisation.[436]

Amy: I, personally, would be quite embarrassed to say that I'm not drinking. I feel there is definitely pressure to drink if you're at the pub or something like that. (25-35, a)

Danielle: I just don't see going to the pub and saying, 'I'm not having a drink cause I'm avoiding cancer.' (25-35, a)

6.2.6 Discussion

Smoking continues to be one of the largest causes of death and disease internationally.[492] However, the cultural significance of tobacco smoking in Australia has shifted markedly over the past 40 years.[493] This cultural shift was apparent in the focus group data examined here, such that the well-established link between smoking and cancer impacted how participants understood another (potentially) cancer-causing consumable—alcohol.

We identified four themes in the data that contributed to the cultural shift in tobacco consumption in Australia: social marketing campaigns, consumer guidelines and support services, environmental and social planning, and taxation. These themes demonstrate the comprehensiveness of tobacco control approaches and, together with personal experience, made the link between tobacco and cancer difficult for participants to ignore.[345] Associating these approaches with personal understanding about alcohol consumption and the risk of cancer appeared to be an accessible step for participants.[494]

The results detailed above highlight some important findings about how the Australian public understand healthcare in Australia. It was particularly clear that people expect to be provided with information and choices about their health and, more specifically, in terms of public health messaging, to have an opportunity to make informed decisions. In this study, this was typified by the noted lack of warnings about alcohol-related cancer risk and, therefore, an inability to translate this knowledge into behavioural change.

Two population-based anti-tobacco campaigns were regularly discussed by our focus group participants: cigarette packaging (including labels and plain packaging) and

television advertisements. The campaigns described were typically designed to provoke fear and/or an emotional response and, although there are well-recognised limitations associated with fear-provoking public health messaging (e.g. boomerang effects),[495] participants appeared to connect with the messages. More specifically, participants described being disgusted by the graphic images displayed on cigarette packages and moved by television advertisements showing people dying from smoking-related cancer, which suggests that such techniques served to establish the legitimacy of the messages.

In asserting the lack of warnings on alcoholic beverages, participants overlooked the current DrinkWise 'information labels' that are utilised within Australia.[496] DrinkWise Australia (an industry-funded organisation) voluntarily introduced 'consumer information' labels in 2011.[496] These labels do not specifically warn of alcohol-related cancer risk and the information presented has been highly criticised for its ambiguity and indifference,[51] but nonetheless provide the consumer with warning information. The inclusion of these labels has enabled industry to claim that people who consume alcohol have made informed and free choices with knowledge of the potential associated risks. However, there is little evidence that this information has improved consumer knowledge or translated into behaviour.[53]

Furthermore, in Australia, compared with anti-smoking television advertisements, there are very few alcohol harm reduction campaigns,[497] and even fewer that warn of cancer risk.[498] Since 2010, the Western Australian Drug and Alcohol office in conjunction with the Cancer Council Victoria, have periodically broadcast two graphic advertisements that warn of the link between alcohol and cancer to encourage people to limit the amount of alcohol they consume.[350] A study conducted in Western Australia in 2011, with women aged 25-54, demonstrated that as a result of these advertisements, there

was an increased awareness of the link between alcohol and cancer, and positive impacts on drinking attitudes and intentions.[498]

A key finding of our study is the confusion that participants reported from receiving either contradictory information when it comes to consuming alcohol (e.g. the benefit of red wine consumption in comparison with the cancer risks), or inadequate information (e.g. no warnings of alcohol-related cancer risk). There are several interrelated reasons why public understandings of alcohol-related cancer risk might be limited or unclear, including strategies adopted by the alcohol industry, media coverage of the health risks and how general practitioners (GPs), or other health professionals, communicate information about alcohol and cancer risk.

The alcohol industry is on the defensive after challenges to the appeal of their products and the alcohol-related cancer link, not unlike efforts made by the tobacco industry.[499] One strategy used by industry to respond to these challenges is to cast doubt in the minds of consumers.[499] Presenting information that exposes flaws in scientific findings or criticism of damning evidence, allows an industry to undermine the individual's ability to understand potential hazards and make an informed choice.[499]

Mass media is an important outlet for disseminating health information and the 'agenda setting' function of news media is well recognised.[500, 501] Setting the 'agenda' for a campaign means the media can give salience to stories that are deemed more newsworthy and frame these stories in ways that influence how these issues are to be perceived by the public.[500, 501] The process of framing typically involves highlighting some aspects of an issue and downplaying others, which may ultimately lead to the reporting of information that is incomplete, unclear, or misrepresented.[500] This can result in confusing and contradictory public health messages,[502] particularly if industries (e.g. tobacco and alcohol companies) or stakeholders, are contributing to the reported

information.[503] Research providing a content analysis of Australian newspaper media (2005-2013) found that over the nine years an average of three articles per week reported the link between alcohol and cancer and of these articles, 95% included a claim that alcohol causes cancer.[403] The alcohol-cancer link however, did not feature in headlines and was generally not discussed in the early sections of the article.[403] Moreover, articles reporting that alcohol prevents or does not cause cancer, often also reported the (supposed) beneficial effects of wine consumption, a finding that is consistent with previous research.[402] The overall findings suggested that the link between alcohol and cancer was typically hidden or overshadowed by other health-related stories.[403] There is little doubt that news media can influence public understanding of health and medicine. Therefore, the influence of news media should particularly be considered when stories are driven by industries and stakeholders that stand to that benefit, or not, as a result of the campaign agenda.

Participants also appeared to assign responsibility for their health, and decisions about their health behaviours, to medical providers or GPs and the health information provided by these professionals. Medical providers were presented as knowledgeable and genuinely interested in the well-being of their patients. Consequently, any health concerns around alcohol consumption would have been addressed by their GPs.[504, 505] Indeed, in Australia, primary healthcare services are designed to provide community-based, person-centred care and assist in the prevention and management of chronic health conditions.[506, 507] Research, however, has found that some GPs experience difficulties in discussing alcohol consumption with their patients.[299, 508, 509] Further research is needed to better understand the barriers and facilitators experienced by GPs and other health professionals in discussing alcohol-related cancer with their patients.

Although an increase in tax on wine has the potential to reduce alcohol consumption,[510] and participants acknowledged the influence of this kind of policy on smoking cessation, participants also predicted that some Australians would suspect the government of revenue raising instead of attempting to improve alcohol-related health outcomes. Australia's alcohol taxation approach is complex.[511] Excise on wine is not based on alcohol content, but the sales value of the product. Therefore, cheaper wine is taxed less. Other alcoholic products are taxed based on alcohol content.[512] Recent evidence has suggested that alcohol industries are using similar strategies to that of the tobacco industry to influence legislation and regulation relevant to taxation and thus, indirectly, pricing (i.e. hard power—building financial and institutional relationships, and soft power—influence of culture, ideas and cognitions of individuals, advocates and scientists).[513] This is unsurprising considering the economic gain that alcoholic beverage sales generate in Australia, through exportation[512] and tourism.[512]

Finally, participants talked about the cultural significance of drinking alcohol in Australia and the barriers associated with reducing consumption. Certainly, in Australian culture, drinking alcohol is ideologically significant and the choice to drink represents personal autonomy and establishment of personal power.[514] As represented in our dataset, the values and attitudes characteristic of the Australian drinking culture strongly influence the social and societal norms of drinking behaviour. As highlighted by some participants however, these values and attitudes were once also associated with cigarette smoking. The cultural shift and declining social acceptability of smoking in the community can be attributed to a myriad of public health measures that range from the replacement of cigarette lighters as a standard fixture in new vehicles, differential insurance premiums for smokers, and the specification of non-smokers in singles advertisements, to taxation, policy and advertising bans.[515] Some of these changes may be more subtle in their effect,

but collectively have contributed the de-normalisation of smoking in Australia. Importantly, the array of public health measures identified by participants, and the de-normalisation of smoking represented in their talk, indicate the need for similar measures if reducing alcohol-related harms, such as cancer, is the goal.

6.2.7 Conclusion

Changing any behaviour is difficult and complex and the importance of alcohol in Australian culture is widely recognised.[436] The success of tobacco control has permeated public understanding of cancer-related risk and measures to reduce alcohol-related cancer risk that do not support behavioural change in a similar way are unlikely to be successful. Results from this study suggest that modelling from the tobacco control approaches used in Australia is a key step in raising awareness and acceptance of alcohol-related cancer risk; without that, Australians will continue to question the legitimacy of the argument that alcohol does cause cancer.

Acknowledgements

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END OF MANUSCRIPT

6.3 Conclusion

Results from Study 4 highlight the success of tobacco control in Australia and the need for similar strategies to reduce the impact of alcohol-related cancer. Focus group participants in Studies 2 and 3 frequently paralleled their understanding of tobacco-related cancer (and the controls used to reduce smoking) with their understanding of alcohol-related cancer risk to highlight perceived lack of consistency in health messaging.

Current measures to reduce alcohol-related cancer were considered inadequate and viewed with scepticism. Therefore, modelling from anti-smoking approaches may aid in the development of a cohesive strategy to convey consistent and reliable health information about alcohol and cancer risk to encourage and support behaviour change.

7 Findings and conclusion

With increasing evidence of alcohol-related cancer risk, there have been appeals by advocacy agencies[31] for governments to mandate labels that display 'alcohol causes cancer' risk messages. Little is understood about how the Australian public might respond to such messages. This thesis sought to gain an understanding of public perceptions and attitudes about the message 'alcohol causes cancer' and the possible introduction of alcohol warning labels.

I conducted a scoping review and focus group research to address these gaps in knowledge. The scoping review consolidated information within the international literature spanning over 30 years, on factors that influence the effectiveness of alcohol warning labels. The qualitative component of this thesis explored how the Australian public might respond to alcohol warning labels. I conducted focus group discussions with self-identified light-to-moderate alcohol consumers and those who consider themselves at higher risk of cancer than the general public.

This concluding chapter draws together the findings from the series of studies presented in this thesis. I begin by providing a review of the key findings. Next, I address some of the limitations of this work, the implications of the findings in terms of policy and practice, as well as directions for future research. Finally, I end my thesis with concluding remarks.

7.1 Key findings

The research questions addressed in this thesis and the key findings are summarised in Figure 7.1. In this section, I will reiterate these findings before discussing some of the limitations of the study.

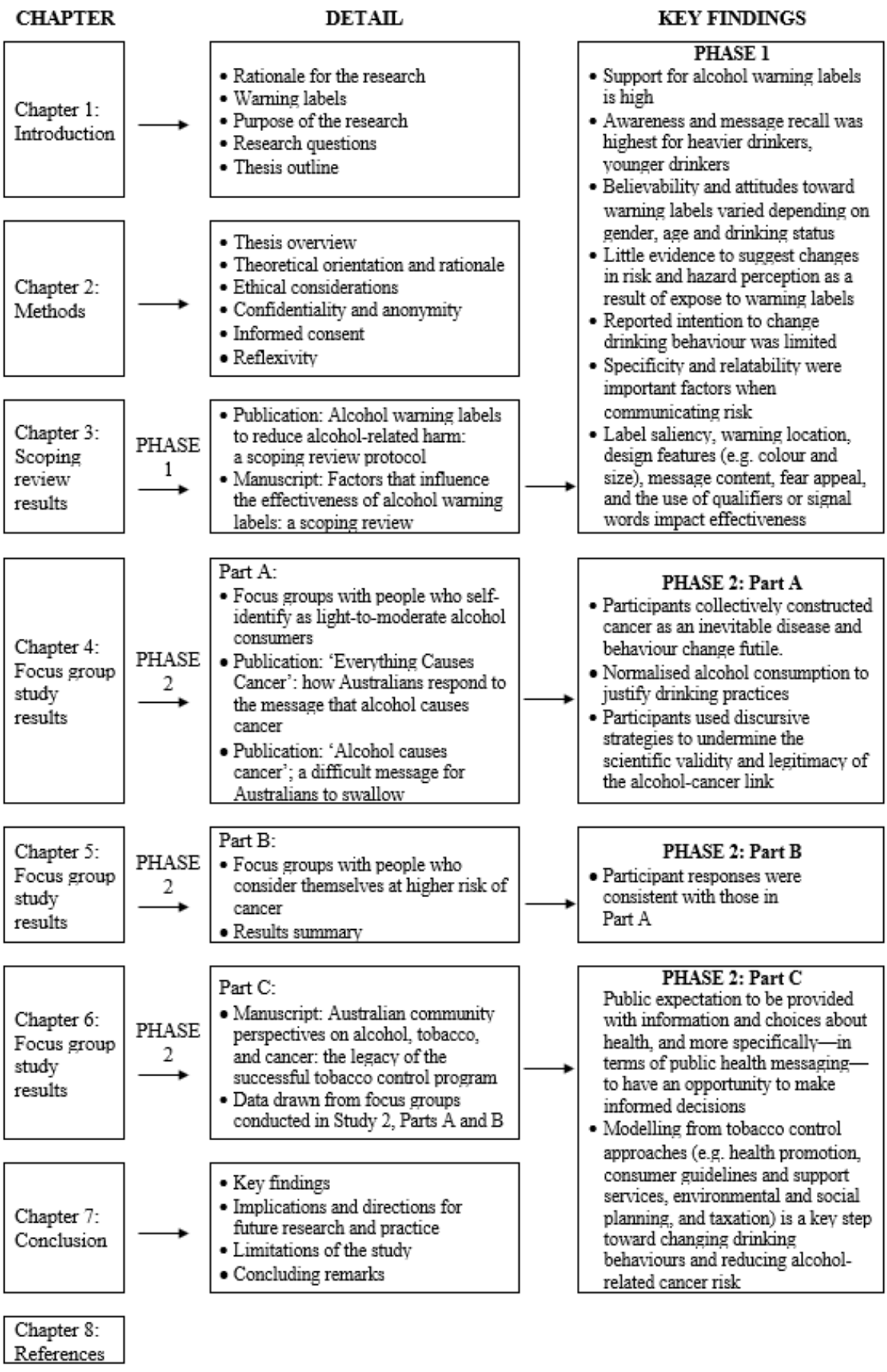

Figure 7. 1: Schematic presentation of thesis outline and key findings

Overall, the research in this thesis has shown significant limitations of alcohol warning labels (in isolation) as a strategy to reduce alcohol consumption. Were this strategy to be implemented, it would be most successful if it was government-supported, adopted designs that improved noticeability and relatability, and formed part of a broader program of measures (similar to anti-smoking reforms).

The specific research questions addressed in this thesis and the key findings were:

1) What does international research tell us about the effectiveness of alcohol warning labels?

The scoping review presented in Chapter 3 concluded that, based on research spanning 30 years, alcohol warning labels are not likely to be effective in eliciting behavioural change, even though awareness of alcohol-related harms has increased since the introduction of alcohol warning labels. It is important to note that the evidence to suggest that noticeability and awareness of warnings prompts consumers to reduce their alcohol consumption is weak, suggesting that warning labels alone are unlikely to lead to behavioural change. However, based on the findings in this review, to have any chance of success, an alcohol warning label would need to have a prominent placement on the front of the bottle, be surrounded by a border and distinct from the packaging, be relatively large in size, use the colour red, and combine text and images. Design features such as these may contribute to the noticeability and, therefore, awareness of the risk messages.

Small changes such as these are unlikely have much impact in the face of the concerted efforts of industry. Packaging is one key way to make products more successful commercially.[516] The visual characteristics of packaging not only play a key role in attracting consumers' attention, they create conceptual associations.[517, 518] For example, a wine label communicates many different types of information (e.g. its contents and nature, philosophies of a winemaker, and the history of its genre etc.[519]) and, as such, is highly

coveted real estate by the alcohol industry.[520] Small changes to labels are unlikely to threaten the overarching message communicated in the rest of the label. To present a credible public face, the alcohol industry (including their Social Aspects/Public Relations Organisations, SAPROs) engages in a self-regulatory scheme with warning labels that are designed to promote 'responsible drinking';[50] a campaign that appears to be supporting existing social norms relating to heavy drinking.[62]

Without government support through the mandating of alcohol warning labels, it can be expected that the alcohol industry will continue to resist the introduction of warnings displaying the features outlined above, in the same way tobacco companies resisted changes to cigarette packaging.[343]

2) How do Australian adults respond to the message that alcohol causes cancer?

In the focus groups with self-identified light-to-moderate consumers of alcohol, participants resisted alcohol-related cancer risk messages using a number of discursive strategies. Participants worked to construct cancer as an inescapable disease, and their own alcohol consumption as unproblematic and socially sanctioned. When presented with alcohol warning labels depicting alcohol-related cancer risk messages, participants' talk challenged the legitimacy of these messages and the entities responsible for disseminating the information. These responses countered any implied recommendation to reduce the speakers' alcohol consumption. In the focus groups with individuals who perceived themselves at higher risk of cancer there was also a high degree of resistance to the message 'alcohol causes cancer.'

Our analysis further suggests that the 'alcohol causes cancer' message is competing with, and undermined by, current health information about safe levels of alcohol consumption and any associated health benefits. These finding add to the scepticism

demonstrated by participants during the focus group discussions and enabled them to provide excuses as to why observing the warnings was unnecessarily risk adverse.

Somewhat paradoxically, participants in the focus groups both did not necessarily believe alcohol warning labels but also thought that they should receive more information about the link between alcohol and cancer. If this message were coupled to a broader range of strategies such as those employed to reduce smoking rates (e.g. multimedia education campaigns, smoke-free areas, taxation etc.) they might be more inclined to take them seriously. Building on the tobacco control approaches used in Australia may be a key step in raising awareness and acceptance of alcohol-related cancer risk.

Based on these findings, alcohol warning labels may not result in behavioural change to reduce alcohol consumption. However, alcohol warning labels do provide an opportunity to inform consumers of the risks associated with alcohol consumption. Alcohol warning labels provide information which may assist consumers to make an informed choice about their alcohol consumption in light of their own values, concerns, and attitudes to risk.[102, 521] Though behaviour change is not guaranteed, the provision of information may contribute to creating greater awareness of the risks associated with consuming alcohol, and facilitate consumer choice.

7.2 Limitations of the study

The limitations of each individual study were discussed in the corresponding chapters. In this section, I will discuss further limitations of the research conducted in this thesis.

I aimed to report on current international literature relating to alcohol warning labels. Initially, I had planned on undertaking a systematic review. However, upon conducting preliminary searches, it was evident that, due to the scope and coverage of available literature and the varied research tools used, a scoping review was a better

option. Undertaking a scoping review enabled me to provide a comprehensive analysis of how the effectiveness of alcohol warning labeling is assessed and reported in international research. Scoping reviews, however, do not produce a critically appraised and synthesised result to specific questions, and quality assessment or risk of bias tools are not used. Given this, implications for practice that arose from the scoping review are somewhat different to those of a systematic review, such that, from a policy-making perspective, a systematic review is helpful to provide concrete guidance on the implementation of alcohol warning labels.

The focus group research conducted in this thesis enabled us to gain an understanding of how people might respond to the message 'alcohol causes cancer,' and alcohol-related warnings presented on alcoholic beverage containers. Though this method has well documented advantages in social science research,[473] it also has certain limitations.[474] A detailed account of the specific limitations for each study are presented in the relevant analytic chapters, however other considerations also include the (limited) cultural diversity within the focus groups, and the differences in attitudes and opinions that may be evident between urban and rural locations, or between different states of Australia (i.e. South Australia compared with New South Wales, Victoria, Queensland, Northern Territory or Western Australia).[522] Additionally, the participants recruited for Phase 2, Part B, self-identified as a higher risk of cancer than the general population. A more accurate indication of intention to change drinking behaviours, as a result of alcohol-related cancer risk, might have been evident among people who have an established higher risk of cancer (e.g. genetic predisposition).

7.3 Implications and directions for future research and practice

Evidence that alcohol increases cancer risk continues to grow. However, public knowledge of the alcohol-cancer link is limited and, therefore, consumers may be

inadvertently putting themselves at an increased risk of cancer. Advocacy groups have called for the introduction of alcohol warning labels to raise awareness of this risk and to motivate drinkers to consume less alcohol.[31]

Studies investigating the effectiveness of alcohol warning labels have produced mixed results. Ultimately, based on the research presented in this thesis, there is limited evidence to suggest that labels are effective in stimulating behaviour change, and they appear to elicit strong resistance from alcohol consumers. Though the implementation of alcohol warning labels may be a necessary step towards raising awareness of alcohol-related cancer, by themselves, they are unlikely to be sufficient in promoting behaviour change. Findings from this thesis show that the use of alcohol warning labels as a public health initiative to change alcohol consumption should not be considered in isolation.

Another consideration is that the absence of alcohol warning labels may undermine warnings of alcohol-related cancer risk. Whether or not the product includes warnings makes a symbolic statement concerning the nature of the product [102, 521]. If a product does not include a warning, consumers may mistakenly assume that the product is safe. When considering a multifaceted approach to reducing alcohol-related cancer, the absence of labels displaying messages that alcohol causes cancer may also compromise efforts to reduce alcohol-related cancer risk. In the following section, I offer recommendations based on the key findings of this thesis.

Recommendation 1: Develop a comprehensive public health strategy, drawing on previous anti-smoking campaigns

Participants in the focus groups questioned the validity of the message that alcohol causes cancer, in part because a warning label was the only vehicle through which they became aware of the link between alcohol and cancer. Social marketing strategies that display the link between alcohol and cancer (through television, radio, social media and

print), product packaging, dissemination of the risk through medical professionals and word-of-mouth, are likely to be important elements of a comprehensive alcohol control strategy. The inclusion of posters or signage at the place of purchase could also increase exposure to the message that alcohol causes cancer.

Other measures could include reducing supply, by restricting access, (for example, restricting trading hours, introducing alcohol-free zones, and the types and quantities of drinks that could be sold), and demand, which could include restricting advertising, marketing, and banning alcohol company sponsorship. Exposure to such alcohol marketing and promotion (through advertising and alcohol sponsorship) is associated with setting up positive expectations about drinking experiences (e.g. mateship, humour, partying and sex etc.),[523, 524] leading to increased risk of early drinking initiation, higher levels of alcohol intake, and problematic drinking. [523-526]

Additionally, given that price is a key determinant of consumer decisions to drink alcohol, taxation is one way that governments can direct safer alcohol consumption.[527] Studies have consistently found that alcohol taxation is one of the most effective policies to reduce alcohol consumption and alcohol-related harm.[339] Based on these findings, advocacy agencies, as well as the Australian National Alcohol Policy 2019-2026,[528] have appealed for all alcohol products sold in Australia to be taxed on the basis of alcohol content through the introduction of a volumetric excise duty.[529-531]

Though these measures are likely to impact alcohol consumption, they will have a substantial effect on a large and powerful sector of the Australian economy. Unlike tobacco, alcohol production is a significant industry in Australia.[532] The alcohol manufacturing industry, wholesalers, retail and hospitality industries, food and beverage services, consumers and export markets (including tourism) play a significant role in Australia's economy and social fabric.[528, 532] If reforms such as those suggested above are

to be implemented to reduce alcohol-related harm, input from a wide range of stakeholders, including governments, non-government organisations, public health experts, police, community-based organisations, and researchers is essential.

Recommendation 2: Include alcohol warning labels in any public health strategy developed

If the goal is to improve the accessibility of warning labels, this research has shown that labels need to have design features that provide clear, accurate information and be placed in a prominent position on the alcoholic beverage container to improve visibility. The message should be legible, surrounded by a border and be distinct from the packaging. They need to be relatively large in size, use the colour red and incorporate a pictorial or icon element. They should also be mandated. These design features all contribute to noticeability and, therefore, may draw consumer attention to the warnings.

Development, implementation, and evaluation of labelling initiatives need to be undertaken independent of the alcohol industry. Current warnings in Australia are self-regulated through DrinkWise. These 'drink responsibly' messages do not include information about alcohol and cancer risk and appear to provide a combination of misleading or distracting information.

Recommendation 3: Further research with different populations

To better understand how different populations respond to the message that alcohol causes cancer and the suggested introduction of warning labels that display this message, further research within selected segments of the community (e.g. rural and/or remote communities, people of different cultural or ethnic backgrounds (including Indigenous communities), and people with established high cancer risk) is needed. Repeated surveys of community attitudes toward alcohol warning labelling and the message that alcohol

causes cancer, together with qualitative research methods (e.g. focus groups or interviews), will provide policy makers with the opportunity to change, or adjust, campaign strategies according to research findings.

7.4 Concluding remarks

Changing any behaviour is difficult and complex. The social and cultural importance of alcohol and alcohol consumption in Australia creates further challenges. Despite this, the success of anti-smoking campaigns provides evidence to suggest that multifaceted public health campaigns can change the cultural significance of harmful substances and, therefore, create an opportunity for changing harmful behaviours. Labels that warn of alcohol-related cancer risk may be a practical, cost-effective, passive, and wide-reaching educational tool that helps to raise awareness of the dangers associated with alcohol consumption. In isolation, however, alcohol warning labels are unlikely to reduce alcohol-related cancer risk and are likely to be met with resistance by the public. In order to raise awareness and acceptance of alcohol-related cancer risk, and support behaviour change, an integrated health promotion strategy is essential.

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Appendix A: Ethics Approval HS-2013-050

RESEARCH BRANCH
OFFICE OF RESEARCH ETHICS, COMPLIANCE AND INTEGRITY

BEVERLEY DOBBS
EXECUTIVE OFFICER
LOW RISK HUMAN RESEARCH ETHICS REVIEW GROUP (FACULTY OF HUMANITIES AND SOCIAL SCIENCES AND FACULTY OF THE PROFESSIONS)
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Applicant: Dr J Eliott

School: Population Health and General Practice

Application/RM No: 0000017077

Project Title: **Alcohol causes cancer! A discursive analysis of perceptions and implications of public health warnings in relation to alcohol and cancer in Australia**

Low Risk Human Research Ethics Review Group (Faculty of Health Sciences)

ETHICS APPROVAL No: **HS-2013-050**

APPROVED for the period: **3 Sep 2013 to 30 Sep 2016**

This study is to be conducted by Ms Natalie May, PhD Candidate.

Dr John Semmler
HREC Convenor on behalf of the
Low Risk Human Research Ethics Review Group (Faculty of Health Sciences)

Appendix B: Ethics Approval HS-2016-192

THE UNIVERSITY of ADELAIDE

RESEARCH BRANCH
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CRICOS Provider Number 00123M

Applicant: Dr J Eliott

School: School of Public Health

Project Title: Alcohol causes cancer: Who wants to know?

The University of Adelaide Human Research Ethics Committee
Low Risk Human Research Ethics Review Group (Faculty of Health Sciences)

ETHICS APPROVAL No: H-2016-192 App. No.: 0000021708

APPROVED for the period: 25 Aug 2016 to 31 Aug 2019

Thank you for the response dated 10.8.16 to the matters raised. It is noted that this project will involve Natalie May, PhD candidate.

Sabine Schreiber
Secretary, Human Research Ethics Committee
Office of Research Ethics, Compliance and Integrity

Appendix C: Participant information sheet (Part A)

INFORMATION SHEET

Alcohol and cancer: Public opinions about a new public health message

Researchers
Dr Jaklin Eliott (Supervisor)
Dr Shona Crabb (Supervisor)
Ms Natalie May (PhD Candidate)

I am seeking volunteers for a study concerned with how people respond to the information that alcohol causes cancer. I will be exploring how people feel about this health message, and what they know, think, and feel about the benefits and risks of consuming alcohol. This study is funded by the Australian Research Council, and run by the University of Adelaide in partnership with Cancer Council Australia and the Drug and Alcohol Service of South Australia.

What is the purpose of this study?
The purpose of this study is to investigate what the Australian public thinks about the proposed introduction of warning labels on alcoholic beverages. These labels are intended to inform consumers of the risks of cancer associated with alcohol consumption. We want to understand more about the best way to communicate information about alcohol-related cancer risk.

What happens to you and other study participants?
Participation involves taking part in a small group discussion (or a focus group), with approximately 6 to 8 people of a similar age to yourself. Some groups will be all male, some all female, and some mixed. We will allocate participants to groups and let you know which group you are in: if you do not want to be in a specific group, just let us know. The group discussions will be video recorded, but all information collected will be treated as private and confidential. All participants will be asked to respect the privacy and confidentiality of other group members. Although we have some questions just to get the discussion started, you do not have to answer specific questions if you don't want to. You will be offered light refreshments, and will receive $50 to cover your time and associated costs.

What will be discussed?
The discussion is based around alcohol and cancer. We will ask about what you know, feel, and think about the link with alcohol and cancer; your thoughts about the role that alcohol plays in your life and in Australian culture; and how you feel about receiving the message that alcohol causes cancer.

Where and when?
The focus group will held be at Harrison Research, Level 1, 69 Fullarton Road, Kent Town. The time and day of participation will be determined by group preferences, and will be advised to all participants.

How long will it take?
The discussion will take around 90 minutes, but this could be more or less depending on the length of the conversations. If you need to leave at 90 minutes, this is quite OK.

What are the potential benefits to you and others?
Results from this research will help to improve understanding of how members of the Australian public will receive and respond to warnings about the link between alcohol and cancer. We would like to be able to

develop recommendations that will assist with strategies to reduce the national cancer burden. My hope is that you find the experience enjoyable and worthwhile.

What are the risks of this study?
There are no anticipated risks associated with this study, but talking about cancer risk is a sensitive topic, and you may find it upsetting. If you do get upset, you are free to stop participating at any point. You have the choice to re-join the conversation, and you also have to right to withdraw from this study at any time without having to provide a reason, and without incurring consequences. If you decide to withdraw from the study after a focus group has commenced, any information that you have already provided will be kept private and confidential. Due to the interdependent nature of focus groups, it is not possible for this information to be removed.

What will happen to the information you provide?
Focus group sessions will be video recorded and transcribed. Analysis and results will be included in my PhD thesis, and may appear in an academic paper, or be presented at an academic conference. All data collected will be stored securely for a minimum of 5 years as part of the policy at The University of Adelaide. You are welcome to request a summary of the research results.

Will my information be kept private?
Although you cannot withdraw material from a focus group once it has commenced, nor can sections of videotapes be erased, all data obtained in this study will be kept anonymous and confidential. Names will be replaced with study codes to protect anonymity, any identifying information changed, and only the principal investigators and myself will have access to the coded data. Data will be kept on password-protected computers and in locked filing cabinets. You will not be identifiable in any discussions or reporting of this work. Although it is unlikely, if something is discussed that threatens the safety of yourself or others, I am obliged to report this information to an authorised third party.

What happens if you are injured or harmed in some way by this study?
If anything that is discussed raises issues, either about cancer or consuming alcohol, we recommend that you discuss these matters with your General Practitioner. You may also wish to contact The Cancer Council Australia helpline, 13 11 20; Al-Anon/Alateen Families of Alcoholics, (08) 8231 2959; Alcoholics Anonymous, 1300 22 22 22; or Lifeline, 13 11 14. If you have any ethical issues relevant to the study, you are welcome to contact the Human Research Ethics Committee's Secretariat on phone (08) 8313 6028 or by email to hrec@adelaide.edu.au (please see the attached Independent Complaints Procedure form).

Would you like to participate in another focus group?
As this research is part of a PhD project, it may be necessary to hold some follow-up focus group sessions. If you would like to be invited to participate in one of these sessions, then please answer 'yes' to question 7 of the Consent Form. Harrison Research will keep your contact details on file so that you can be invited to participate again in the future.

What do I need to do if I would like to participate?
If you would like to participate, please complete the attached Consent Form.

Thank you for your time.
Natalie May

Appendix D: Participant information sheet (Part B)

INFORMATION SHEET

Alcohol and cancer: Public opinions about a new public health message

Researchers
Dr Jaklin Eliott (Supervisor)
Prof Annette Braunack-Mayer (Supervisor)
Ms Natalie May (PhD Candidate)

Hello, my name is Natalie, and I am a PhD student at The University of Adelaide. I am seeking volunteers for a study concerned with how people respond to the information that alcohol causes cancer. I will be exploring how people feel about this health message, and what they know, think, and feel about the benefits and risks of consuming alcohol. This study is funded by the Australian Research Council, and run by the University of Adelaide in partnership with Cancer Council Australia and the Drug and Alcohol Service of South Australia.

What is the purpose of this study?
The purpose of this study is to investigate what Australians, who consider themselves at increased risk of cancer, think about suggestions to introduce warning labels on alcoholic beverages. These labels are intended to inform consumers of the risks of cancer associated with alcohol consumption. We want to understand more about the best ways to communicate information about alcohol-related cancer risk.

What happens to you and other study participants?
Participation involves taking part in a small group discussion (or a focus group), with approximately 6 to 8 people of a similar age to yourself. Some groups will be all male, some all female, and some mixed-gender: if you do not want to be in a specific group, just let us know, and we can work with that. We will allocate participants to groups and let you know which group you are in. The group discussions will be video recorded, but all information collected will be treated as private and confidential. All participants will be asked to respect the privacy and confidentiality of other group members. Although we have some questions just to get the discussion started, you do not have to answer specific questions if you don't want to. You will be offered light refreshments, and will receive $50 to cover your time and associated costs.

What will be discussed?
The discussion is based around alcohol and cancer. We will ask about what you know, feel, and think about the link with alcohol and cancer, as well as your thoughts about the role that alcohol plays in your life and in Australian culture; and how you feel about the message that alcohol causes cancer.

Where and when?
The focus groups will held be at Harrison Research, Level 1, 69 Fullarton Road, Kent Town. We will work with you and the other participants in your group to identify a suitable time and day to hold these, and make sure you know in plenty of time.

How long will it take?
The discussion will take around 90 minutes, but this could be more or less depending on the length of the conversations. If you need to leave at 90 minutes, this is quite OK.

What are the potential benefits to you and others?
Results from this research will help to improve understanding of how people who have an increased risk of developing cancer (compared to the general populations) will receive and respond to warnings about the link between alcohol and cancer. We would like to be able to develop recommendations that will assist with

strategies to reduce the national cancer burden. My hope is that you find the experience enjoyable and worthwhile.

What are the risks of this study?

There are no anticipated risks associated with this study, but talking about cancer risk can be a sensitive topic, and so it's possible that you may find it upsetting. If you do get upset, you are free to stop participating at any point. You have the choice to re-join the conversation, and you also have to right to withdraw from this study at any time without having to provide a reason, and without incurring consequences. If you decide to withdraw from the study after a focus group has commenced, any information that you have already provided will be kept private and confidential. Because focus groups involve conversations amongst those attending, it is not possible for any one person's information to be removed.

What will happen to the information you provide?

Focus group sessions will be video/audio recorded and transcribed. Analysis and results will be included in my PhD thesis, and may appear in an academic paper, or be presented at an academic conference. All data collected will be stored securely for a minimum of 5 years as part of the policy at The University of Adelaide. You are welcome to request a summary of the research results; just let me know and I'll make a note to send to a contact address that you provide.

Will my information be kept private?

Although you cannot withdraw material from a focus group once it has commenced, nor can sections of videotapes or audio recordings be erased, all data obtained in this study will be kept anonymous and confidential. Names will be replaced with study codes to protect anonymity, any identifying information changed, and only the principal investigators and myself will have access to the information. All records from the focus groups will be kept on password-protected computers and in locked filing cabinets. You will not be identifiable in any discussions or reporting of this work. Although it is unlikely, if something is discussed that threatens the safety of yourself or others, I am obliged to report this information to an authorised third party.

What happens if you are injured or harmed in some way by this study?

If anything that is discussed raises issues, either about cancer or consuming alcohol, we recommend that you discuss these matters with your General Practitioner. You may also wish to contact The Cancer Council Australia helpline, 13 11 20; Al-Anon/Alateen Families of Alcoholics, (08) 8231 2959; Alcoholics Anonymous, 1300 22 22 22; or Lifeline, 13 11 14.

What if I have a complaint or any concerns?

The study has been approved by the Human Research Ethics Committee at the University of Adelaide (approval number H-2016-192). If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the Principal Investigator. If you wish to speak with an independent person regarding a concern or complaint, the University's policy on research involving human participants, or your rights as a participant, please contact the Human Research Ethics Committee's Secretariat on: Phone: +61 8 8313 6028; Email: hrec@adelaide.edu.au; Post: Level 4, Rundle Mall Plaza, 50 Rundle Mall, ADELAIDE SA 5000. Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

What do I need to do if I would like to participate?

If you would like to participate in this research, please complete the attached Consent Form.

Thank you for your time. Natalie May

Appendix E: Consent Form (Parts A and B)

CONSENT FORM

Participant's name .....

1. I have read the attached Information Sheet and agree to take part in the following research project:

Title:	Alcohol and cancer: Public opinions about a new public health message
Ethics Approval	TBA

2. I have had the project, so far as it affects me, fully explained to my satisfaction by the research worker. My consent is given freely.

3. I have been informed that, while information gained during the study may be published, I will not be identified, and my personal information will not be divulged.

4. I understand that, while I am free to withdraw from the project at any time, once a focus group has commenced, the material collected (e.g., video/audio taped recordings), cannot be erased.

5. I understand that it is important to respect the privacy and confidentiality of other members of the focus group. I agree not to divulge any information shared/discussed in the focus group setting. I can expect the same courtesy with the information I share, but am aware that this cannot be guaranteed.

6. I agree to the interview being video recorded. *(please tick)* Yes ☐ No ☐

7. I would like to participate in the following group/s. *(please tick as many as you like)*
   All male ☐ All female ☐ Mixed (both male and female) ☐ Either mixed or single gender ☐

8. I am aware that I should keep a copy of this Consent Form, when completed, and the attached Information Sheet.

Participant to complete:

Name: _____ Signature: _____ Date:_____

Researcher/Witness to complete:

I have described the nature of the research to _____
(print name of participant)

and in my opinion, she/he understood the explanation.

Signature: _____ Position:_____ Date:_____

Appendix F: Independent Complaints Procedure form (Parts A and B)

The University of Adelaide

Human Research Ethics Committee (HREC)

CONTACTS FOR INFORMATION ON PROJECT AND INDEPENDENT COMPLAINTS PROCEDURE

The following study has been reviewed and approved by the University of Adelaide Human Research Ethics Committee:

Project Title:	Alcohol and cancer: Public opinions about a new public health message
Approval Number:	TBA

The Human Research Ethics Committee monitors all the research projects which it has approved. The committee considers it important that people participating in approved projects have an independent and confidential reporting mechanism which they can use if they have any worries or complaints about that research.

This research project will be conducted according to the NHMRC National Statement on Ethical Conduct in Human Research (see http://www.nhmrc.gov.au/publications/synopses/e72syn.htm)

1. If you have questions or problems associated with the practical aspects of your participation in the project, or wish to raise a concern or complaint about the project, then you should consult the project co-ordinator:

Name:	Dr Jaklin Eliott
Phone:	(08) 8316 3855
Name:	Prof Annette Braunack-Mayer
Phone:	(08) 8313 1694

2. If you wish to discuss with an independent person matters related to:

   - making a complaint, or
   - raising concerns on the conduct of the project, or
   - the University policy on research involving human participants, or
   - your rights as a participant,

   contact the Human Research Ethics Committee's Secretariat on phone (08) 8313 6028 or by email to hrec@adelaide.edu.au.

Appendix G: Scoping review inclusion/exclusion criteria

Inclusion	Exclusion
Research conducted between Jan 1st 1989 and 1st March 2020 Includes primary research data General populations Qualitative, quantitative, or mix-method studies International research Journal articles, reports or theses Warning labels presented on alcoholic beverage containers English language	Systematic or scoping reviews Conference proceedings, opinion pieces, articles from magazines, newspapers, newsletters, or editorials Does not include primary research data (i.e. it is not a study) Alcohol warning labels presented through media and/or online platforms, for example television advertisements, Facebook, Twitter, or Instagram

Appendix H: Characteristics of the included studies in the scoping review

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
1	Alcohol Education & Rehabilitation Foundation (2011)[226]	Australia	Report	Determine community attitudes/support towards alcohol warning labels and other policies in Australia.	Survey	General population	1009	>18	The majority of Australians (62%) believe that health information labels should be placed on alcoholic products. Women and non-drinkers are most supportive of the introduction of health information labels.
2	Al-hamdani, M., et al. (2015)[280]	Canada	Journal article	Test whether plain packaging of alcoholic beverages alters consumer perceptions.	3 x 4 mixed experimental	University students and hospital employees	92	M=36.4 (SD=13.3)	Health warnings, if similar to those on cigarette packs, can change consumer-based perceptions of alcohol products.
3	Al-hamdani, M., et al. (2017)[300]	Canada	Journal article	Test whether increasing the size of an alcohol health warning lowers product-based ratings.	3 x 2 mixed experimental	General population	440	M=26 (SD=7.1)	Plain packaging and warning size influences perceptions about alcohol bottles. Plain packaging increases the likelihood of correct health warning recognition.
4	Andrews, J., et al. (1990)[108]	United States	Journal article	Impact of warning label content on believability of warning information.	Experimental	University students	273	19-27; M=21.4 (SD=.91)	Birth defects and drinking impairment warnings are perceived as more believable than other alcohol warning labels. Prior attitudes and beliefs toward drinking and personal alcohol consumption, influence

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
									warning believability and attitudes.
5	Andrews, J., et al. (1991)[281]	United States	Journal article	Examine effects of consumption frequency and warning label type on label believability, attitudes, and attitude confidence.	Survey	University students	273	19-27; M=21.4 (SD=.91)	Frequent alcohol users find the labels significantly less believable and less favourable than occasional/non-users or alcohol.
6	Andrews, J., et al. (1993)[282]	United States	Journal article	Examine whether attitudes toward alcohol label information are influenced by attitudes toward drinking alcohol, and label believability.	Survey	University students	273	19-27; M=21.4 (SD=.91)	While initial attitudes toward drinking may be an important element in the formation of warning label attitudes, respondents' self-generated thoughts about the warnings play a greater role in explaining their post-warning attitudes.
7	Anglin, L., et al. (2001)[246]	Canada	Journal article	Investigate public opinion of alcohol control policies by demographic characteristics.	Cross-sectional survey	General population	1,205	>18	Health warning labels on alcoholic beverage containers were the most popular policy measure to reduce alcohol-related harms.
8	Annunziata, A., et al. (2016)[228]	Italy	Journal article	Investigate consumer support, content preference and format of nutritional information and health warnings on wine labels	Survey	Wine consumers (> once a month)	300	18-75	Consumers supported simplified, cheaper, rotating warnings or nutritional labels, that include guidelines and possible side-effects of excessive wine consumption.
9	Annunziata, A., et al. (2016)[229]	Italy	Journal article	Investigate wine consumer's attitudes	Survey	Wine consumers	300	18-75	Consumers supported warnings or nutritional labels,

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				towards nutritional and health information on wine labels.		(> once a month)			and warnings of possible side-effects of excessive wine consumption.
10	Annunziata, A., et al. (2016)[227]	Italy, France, United States & Spain	Journal article	Investigate consumer support for the inclusion of nutritional and health information on wine labels.	Survey	Wine consumers (> once a month)	1,016	21-70	European and United States consumers expressed interest for the introduction of nutrition and health information on wine labels.
11	Annunziata, A., et al (2017)[283]	Italy	Journal article	Analyse the interest and attitudes of Italian university students regarding health warnings on alcoholic beverages	Survey	University students	385	M=22.4	Moderate consumers viewed label warnings positively, while those with riskier consumption behaviours viewed labels more negatively.
12	Armitage, C., et al. (2016)[290]	United Kingdom	Journal article	Influence of augmenting labels with a self-affirming implementation intention to reduce alcohol consumption.	Experimental: brief intervention	University students; regular wine consumers	Study 1: 85 Study 2: 58	Study 1: M=23.93 (SD=3.55) Study 2: M=19.07 (SD=1.33)	A self-affirming intention appears to augment the effect of alcohol warning labels to reduce drinking however, it is unclear what mediated the effect.
13	Barrett, M., et al. (1993)[254]	United States	Journal article	Examine the prevalence of self-reported alcohol use among women of childbearing age and their ability to recall information about pregnancy risk contained in warning.	Cross-sectional survey	Women of childbearing age	748	M=32.1 (SD=7.5)	Approximately one fourth of all women were able to recall information about pregnancy risk contained in warning labels. There were no differences between nonpregnant and pregnant women in recall.
14	Barry, H., et al. (2017)[307]	New Zealand	Report	Document the current status of voluntary health warnings on	Audit	General population	N/A	N/A	Voluntary warning labels on alcoholic beverages sold in New Zealand provide

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				local and imported alcoholic beverages in New Zealand.					inconsistent information and are difficult to read.
15	Bates, S., et al. (2018)[248]	United Kingdom	Journal article	Examine awareness of the link between alcohol and cancer and support for 21 policy proposals.	Cross-sectional survey	General population	2,100	>18	Support for alcohol policies is greater among individuals who are aware of the link between alcohol and cancer.
16	Bensley, L., et al. (1991)[308]	United States	Journal article	Impact of dogmatic alcohol prevention messages on alcohol consumption, compared with a neutral message.	Experimental	Study 1: Young adults Study 2: alcohol consumers aged over 21	Study 1: 535 Study 2: 74	Study 1: 15-50 M=19.7 Study 2: 21-45 M=23.15	High-threat messages were rated more negatively and resulted in more drinking intentions compared to low threat.
17	Blackwell, A., et al. (2018)[291]	United Kingdom	Journal article	Examine the impact of alcohol labels on intention to change drinking behaviour	Experimental	General population	1,884	M= 35 (SD=12)	Motivation to drink less was higher amongst participants who had viewed both cancer and negatively framed messages, compared to mental health and positively framed messages.
18	Blume, A., et al. (2007)[255]	United States	Journal article	Mexican origin women living in colonia and the potential health risks related to drinking behaviour.	Cross-sectional survey	Pregnant women	99	M=33.01 (SD=13.05)	English skills may be associated with awareness of content of labels on alcohol beverage containers.
19	Branco, E., et al. (2001)[110]	United States	Journal article	Pregnant women's beliefs and opinions about drinking during pregnancy.	Focus group research	Pregnant and post-partum women	11	N/R	Warnings presented with messages that countered personal knowledge or experience were perceived as exaggerated and more readily discounted.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
20	Buykx, P., et al. (2015)[26]	Australia	Journal article	Investigate the associations between personal factors and support for alcohol policies.	Survey	General population	2,482	M=46.8 (SD=13.6)	Knowledge of alcohol-related cancer is significantly associated with support for policy. Warning labels were favoured over reducing availability and increasing taxation.
21	Centre for Science in the Public Interest (2001)[301]	United States	Report	Measure awareness of, and attitudes toward the government's health warning statement.	Telephone survey	General population	801	>21	Barriers to the effectiveness include noticeability and difficulty to read the labels.
22	Christensen, A., et al.[214]	Denmark	Journal article	Examine if a mass media campaign intended to raise awareness of the relation between alcohol and cancer raises public awareness of alcohol-related cancer risk.	Cross-sectional survey	General population	6000	18-74	Support for minimum unit pricing, a ban on alcohol advertising, and mandatory nutrition labelling increased after mass media campaign.
23	Coomber, K., et al. (2015)[213]	Australia	Journal article	Evaluate awareness of the 'Get the facts' logo, alcohol warning labels, and consumer use of the DrinkWise website.	Survey	General population; 18-45; had consumed alcohol	561	18-45	Limited awareness/recall of the current, voluntary warning labels on Australian alcohol and few people reported visiting the DrinkWise website.
24	Coomber, K., et al. (2017)[222]	Australia	Journal article	Examine rates of awareness of standard drink labelling and drinking guidelines	Survey	General population	1,061	18-45 M=33.2	Good awareness of standard drink labels (80%). Almost three quarters of respondents supported the inclusion of more information

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				among Australian adult drinkers.					on labels regarding guidelines to reduce negative health effects.
25	Coomber, K., et al (2017)[256]	Australia	Journal article	Investigate awareness of alcohol warning labels and short/long-term risk of alcohol use.	Survey	General population	1,061	18-45 M=33.2	Most consumers lack understanding of the potential consequences of alcohol use. Current alcohol warning messages are perceived as unconvincing and are unlikely to deter people from drinking to excess.
26	Coomber, K., et al. (2017)[302]	Australia	Journal article	Explore young adult drinkers' perception of the pictorial warnings developed by FARE and prototype graphic warnings developed for this study.	Focus group research	University students; alcohol consumers	26	18-25; M=20.16 (SD=2.27)	Consistent with tobacco warning literature, warning labels with photographic images and targeted statistics were found to have the most persuasive impact against risky drinking within this sample.
27	Coomber, K., et al. (2018)[212]	Australia	Journal article	Assess alcohol warnings on products as an effective method to communicate the risks of alcohol consumption.	Focus group research	University students; alcohol consumers	40	18-25; M=20.54 (SD=2.17)	Limited understanding of DrinkWise as an industry-funded body. A belief that warnings were too small, hard to find, vague, and conveyed weak messages. Current Australian warnings did not encourage changes to drinking behaviours or to seek further information about the harms of alcohol.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
28	Creyer, E., et al. (2002)[284]	United States Australia	Journal article	Examine the influence of alcoholic beverage health warnings on risk perception, attitudes and intentions, and characterisations of problem drinking behaviours.	Survey	University students; binge drinkers and non-binge drinkers	274	M=21	Warning type had no significant effect on social or health benefits or other attitudinal variables, but it had diverse effects on the perceived risk measures and perceptions of various drinking behaviours.
29	Critchlow, N., et al. (2019)[257]	United Kingdom	Journal article	Awareness and recall of alcohol warning labels among adolescents.	Cross-sectional survey		3399	11-19	Most young drinkers, including higher-risk drinkers, did not recall seeing any information, suggesting that current labelling is failing to reach this key audience.
30	Cvetkovich, G., et al. (1995)[309]	United States	Journal article	To assess opinion and processing of product warning information in drinking and non-drinking situations.	Survey	University students	296	N/R	For a warning to be effective it should be perceived to be personally relevant.
31	DeCarlo, T., et al. (1997)[533].	United States	Journal article	Explore the effectiveness of alcohol warning labels.	Survey	General population	150	19-68 M=26	Participants reported warning labels to be moderately effective however, few indicated that they intended to change their behaviour.
32	deTurck, M., et al. (1992) [111]	United States	Journal article	Determine how consumer's information processing objective, the level of risk communicated in a warning labels, and consumer's previous alcoholic beverage	Experimental	Young adults	198	N/R	Participants with an attitude-set objective rated alcohol as more hazardous when they were exposed to a moderate fear warning message. Participants attending to the warning label with a memory set objective spent more time

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				consumption mediate consumer perception of the harms of alcohol consumption.					forming and reporting their impression of the product.
33	deTurck, M., et al.(1995)[303]	United States	Journal article	Explore the relationship between characteristics of a product warning message and behavioural compliance.	Survey	Young adults	198	N/R	Alcohol consumers perceive far less danger than abstainers.
34	Dossou, G., et al. (2017)[217]	France	Journal article	To explore the effectiveness of two mandatory warnings in France, and the influence of marketing context.	Interviews	Young people Pregnant women	26	15-29 M=21.8	Current labelling is ineffective in eliciting behavioural change due to poor visibility, ambiguity and competing health messages.
35	Dumas, A., et al. (2018)[262]	France	Journal article	Evaluate awareness of alcohol warning. labels that recommend abstinence during pregnancy and breast feeding.	Cross-sectional survey	Pregnant and postpartum women	3,603	N/R	Of the 66.1% of women and 77.3% men who noticed the warning label, 98.6% thought that it suggested abstinence.
36	Farke, W. (2011)[104]	Europe	Report	Investigate and summarise labelling activities in different European countries.	Survey Review	Consumer organisations	7	N/A	Mandatory regulations are poorly implemented.
37	Foundation for Alcohol Research & Education (2011)[310]	Australia	Report	Comparison of FARE and DrinkWise labels.	Survey	General population	504	>18	In all areas, the majority of respondents selected the FARE series of health warning labels over DrinkWise labelling.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
38	Foundation for Alcohol Research & Education (2011)[53]	Australia	Report	Determine attitudes and perceptions of the Australian public regarding alcohol health warning labels.	Survey	General population	504	>18	The majority of people (58%) were supportive of health warning labels being applied to alcoholic beverages. Regular consumers were less likely to support health warning labels (49%) than moderate (52%) and occasional (66%) consumers.
39	Foundation for Alcohol Research & Education (2012)[230]	Australia	Report	Determine community attitudes towards alcohol in Australia. Determine current perspectives on various alcohol-related policies	Survey	General population	1,041	>18	The majority of Australians (61%) believe that health information labels should be placed on alcohol products, while 24% think they should not, and a further 14% are unsure. This result remains consistent with data from 2012 and 2011.
40	Foundation for Alcohol Research & Education (2013)[250]	Australia	Report	Determine community attitudes towards alcohol in Australia. Determine current perspectives on various alcohol-related policies	Survey	General population	1,533	>18	The majority of Australians (61%) believe that health information labels should be placed on alcohol products. This result remains consistent with data from 2011.
41	Foundation for Alcohol Research & Education (2014)[232]	Australia	Report	Determine community attitudes towards alcohol in Australia. Determine current perspectives on	Survey	General population	1,533	>18	The majority of Australians (66%) believe that health information labels should be placed on alcohol products, while 18% think they should not, and a further 16% are

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				various alcohol-related policies.					unsure. This represents an increase from previous years.
42	Foundation for Alcohol Research & Education (2015)[233]	Australia	Report	Determine community attitudes towards alcohol in Australia. Determine current perspectives on various alcohol-related policies.	Survey	General population	1,533	>18	The majority of Australians (60%) believe that health information labels should be placed on alcohol products, while 25% think they should not, and a further 15% are unsure. This represents a decrease from 2014 (66%) and is in line with previous years.
43	Foundation for Alcohol Research & Education (2019)[247]	Australia	Report	Determine community attitudes towards alcohol in Australia. Determine current perspectives on various alcohol-related policies.	Survey	General population	1,820	>18	The majority of Australians (76%) believe that health information labels should be placed on alcohol products, while 15% think they should not, and a further 9% are unsure. This represents an increase in support from previous years.
44	Giesbrecht, N. et al. (1999)[237]	Canada	Journal article	Examine views and support for current and potential alcohol policies.	Cross-sectional survey	General population	23,789 (11,634 ; 12,155)	>15	Respondents expressed support for warning labels in both years: overall 77% in 1989 and 72% in 1994.
45	Giesbrecht, N., et al. (1999)[234]	Canada United States	Journal article	Study international and within country differences with regard to views by the general public on alcohol policy.	Cross-sectional survey	General population	15,638 (11,550 ; 4,004)	>15	U.S. respondents reported a higher level of support for warning labels than Canadian respondents. Warning labels on alcoholic beverage containers had the most public support out of the

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
									three health promotion initiatives reported in this study.
46	Giesbrecht, N., et al. (2001)[236]	Canada	Journal article	Present trends in public opinion of different alcohol policy options over time and compare that to actual policy events.	Survey	General population	14,385 (1,974; 1,045; 1,028; 1,058; 1,034; 2,022; 994; 2,721; 2,509)	>15	There is a strong support for counter-promotion, and support for health wanting labels on alcoholic beverage containers has remained steady.
47	Giesbrecht, N., et al. (2005) [235]	Canada	Journal article	Examine the association between drinking variables and views on alcohol policy.	Survey	General population	2,500 (1,294; 1,206)	>18	A majority (69.2%) support warning labels on alcoholic beverages, particularly among female participants.
48	Giesbrecht, N., et al. (2007) [192]	Canada	Journal article	Examine the relationship between opinion on alcohol policy and demographic and drinking status characteristics. Uncover trends in public support for alcohol control and intervention initiatives.	Survey	General population	28,447 (11,634 ; 12,155; 4,658)	>15	Change in support of warning labels occurs equally for categories of sex, age, education, drinking pattern and heavy drinking. However, declines in support vary by province. Support for warning labels declines significantly in Newfoundland, Quebec, Ontario and Manitoba, but remains stable in all other provinces.
49	Glasscoff, M.,et al. (1994)[258]	United States	Journal article	Awareness of dangerous products to	Survey	Pregnant women	140	>15	Knowledge of warning labels on alcoholic beverages was

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				consume during pregnancy.					lower than knowledge of warning labels on over-the-counter drugs and cigarettes.
50	Glock, S., et al. (2013)[292]	Luxembourg	Journal article	Compare positive expectancy-related and health-related alcohol warning labels.	Survey	Young adults	40	M=23.97 (SD=3.18)	The drinking intentions of those exposed to the positive-related warning labels tended to be lower than those exposed to the health-related warning labels.
51	Gorn, G., et al. (1996)[319]	Canada	Journal article	Develop a model for creating effective warning labels.	Between-subjects design	Young adults	55	N/R	Alternative warning labels may be more effective than the government mandated labels, especially in target populations.
52	Graves, K. (1993)[259]	Canada United States	Journal article	Evaluate the impact of the introduction of health warning labels on alcoholic beverages.	Cross-sectional survey	General population	3,000	>18	The proportion reporting awareness of the label increased to 27%. Men, 18 to 29 years, heavy drinkers, and the more educated were more likely to be aware of the label.
53	Greenfield, T., et al. (1993)[260]	Canada United States	Journal article	Evaluate the mandated alcoholic beverage warning label.	Cross-sectional survey	General population	8,096	N/R	21% of Americans were aware of the label 6 months after it was implemented. This rose to 27% after 18 months. Awareness was highest among target populations for the intervention: young men and women, and heavy drinkers.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
54	Greenfield, T., et al. (1998)[261]	United States	Journal article	Compare exposure to alcohol warning labels over time.	Cross-sectional survey	General population	8,000	>18	Awareness and recall of health warning labels increased until four to five years after the introduction of mandatory warning labels, when levels appear to plateau.
55	Greenfield, T., et al. (1999)[182]	United States Canada	Journal article	Compare the effects of alcohol warning label in America and Canada over a four-year period	Cross-sectional survey	General population	9,187	>18	Awareness of the label in the U.S. increased rapidly after implementation and has stabilised. Higher proportions of the young and male target groups were reached, with increased rates over time.
56	Greenfield, T., et al. (2007)[240]	United States	Journal article	Examine trends in the U.S. public opinion of 11 alcohol policy items.	Survey	General population	7,066	>18	Between 1989 and 2005, public support for warning labels on alcoholic beverages increased from 86.8% in 1989 to 93.6% in 2000. Support decreased in 2005 to 89.8%. In 2005, warning labels were the most popular policy.
57	Greenfield, T., et al. (2007)[239]	United States	Journal article	Examine trends in the U.S. public opinion of 11 alcohol policy items.	Survey	General population	8,066	>18	Support for health warning labels has continued to increase and is the most popular policy to reduce alcohol consumption.
58	Greenfield, T., et al. (2014)[238]	United States	Journal article	Explore the relationship with reporting harms due to other's drinking and support for alcohol	Survey	General population	6,957	>18	Support for container warning labels was strongest (80%). Having experienced harms from other's drinking was associated with

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				policies and control measures.					supporting policy measures to reduce alcohol consumption
59	Hankin, J., et al. (1993)[335]	United States	Journal article	Investigate the impact of alcohol warning labels on drinking during pregnancy.	Survey	African American pregnant women	4,379	M=23.87	Six months after the warning label law was implemented, lighter drinkers decreased their drinking during pregnancy by a small but statistically significant amount. In contrast, pregnant risk drinkers did not significantly change their alcohol consumption.
60	Hankin, J., et al. (1993)[338]	United States	Journal article	Explore the impact of alcohol warning labels on antenatal drinking.	Survey	African American pregnant women	12,026	M=23.71	Antenatal drinking fell slightly after the warning label law went into effect. There is estimated to be a seven-month lag between the implementation of alcohol warning labels and behavioural change.
61	Hankin, J., et al. (1993)[265]	United States	Journal article	Examine the change in knowledge of the existence of the label among a sample of high risk, lower socioeconomic status African American women seeking prenatal care at an inner city clinic.	Survey	African American pregnant women	5,169	M=23.9	There was a significant increase in awareness beginning March of 1990. Young women, and women who were drinking beverages with a shorter shelf-life were more likely to be aware of the warning labels. There was a high level of false-positive awareness.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
62	Hankin, J., et al. (1994)[336]	United States	Journal article	Examine the impact of the Alcoholic Beverage Warning Label on the attitudes and drinking behaviour of African American women who are pregnant.	Survey	African American pregnant women	3,572	M=~24	Knowledge of the Warning Label increased 3 months after the implementation of the law. Drinking during pregnancy declined after a 7-month lag only among non-risk drinkers, although birthweight showed no trends.
63	Hankin, J., et al. (1996)[337]	United States	Journal article	Compare the impact of alcohol warning label on women with a previous live birth, and those without.	Survey	African American women	17,456	M=23.71 (SD=6.17)	Women who had no previous live births showed a significant decline in rates of alcohol consumption during pregnancy after the implementation of mandatory alcohol warning labels. However, rates of alcohol consumption during pregnancy for women who have had a previous live birth reported no change in behaviour.
64	Hankin, J., et al. (1996)[264]	United States	Journal article	Examine whether awareness of alcoholic beverage warning labels has reached its upper limit.	Survey	African Americans	7,334	M=23.8	The level of awareness continued to increase through December 1992 and then plateaued. It is likely that the upper limit has been reached.
65	Hankin, J. (1998)[263]	United States	Journal article	Examine predictors of label exposure and correct knowledge of warning messages.	Survey	Women	1,107	>18	Women were less likely to know the wording on the warning label if they were older, infrequent drinkers,

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
									and did not binge drink. Half of the drinking population surveyed could not recall seeing the warning label.
66	Hankin, J., et al. (1998)[534]	United States	Journal article	Compare levels of alcohol consumption during pregnancy before and after alcohol warning label implementation.	Survey	Pregnant African American women	21,117	M=~24	Although there is a decrease in drinking during pregnancy, the decline began eight months after the implementation of the warning label. Unemployment rate being positively related to drinking during pregnancy suggests that societal factors play an important role in alcohol consumption for this vulnerable population.
67	Hilton, M. (1991)[241]	United States	Journal article	Examine the degree of support for alcohol warning labels among the general population.	Cross-sectional survey	General population	2,006	>18	87% of participants reported supporting mandated alcoholic beverage warning labels. Abstaining from drinking was the most significant predictor for support. Most participants reported a belief that warning labels would not have a significant impact on heavy drinkers.
68	Hobin E., et al. (2020)[266]	Canada	Journal article	Examine changes in recall and knowledge of alcohol-related cancer risk	Quasi-experiment	General population	2,049	>19	In a real-world setting, cancer warning labels get noticed and increase knowledge that alcohol can cause cancer.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
69	Ialomiteanu, A., et al. (2010)[224];	Canada	Journal article	Determine if classes of individuals have similar opinions on a number of alcohol policies.	Cross sectional survey	General population	1,216	M=45 (SD=17.2)	Those most opposed to alcohol controls were dedicated liberalisers, were more likely to be male, younger and heavier drinkers. Warning labeling was the most supported policy.
70	Ipsos Social Research Institute (2012)[211]	Australia	Report	Evaluate implementation of DrinkWise labelling.	Audit	N/A	N/A	N/A	Only 16% of products audited carry any of the DrinkWise messages.
71	Jarvis, W., et al. (2013)[311]	Australia	Journal article	Investigate the stated effects of four different warning statement relating to health outcomes and drink driving, characterised by both positive and negative framing.	Study 1: Focus groups Study 2: Discreet choice experiment	Young adults	Study 1: N/R Study 2: 300	Study 1: 18-25 (male M=22.6) (female M=22.5)	Negatively framed messages had the greatest influence on the higher alcohol consuming classes.
72	Jones, S., et al. (2010)[285]	Australia	Journal article	Examine the attitudes and opinions relating to alcohol warning labels and the likelihood of such labelling influencing personal behaviours	Focus groups	University students	44	>18	If labels are more noticeable, varied, specific, and contain messages that are more relevant to this age group, then they have the potential to be an effective intervention for this age group.
73	Jongenelis, M., et al. (2018)[293] [293]	Australia	Journal article	Assess whether exposing at-risk drinkers to warning statements relating to	Survey	General population; alcohol consumers	364	18-65	Significant increases in perceived risk factor for diabetes, heart disease, mental illness and cancer

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				specific chronic diseases increases risk perception and influences consumption intentions.					were found. With the exception of the liver damage and heart disease statements, exposure to each statement was associated with a significant reduction in consumption intentions.
74	Kaskutas, L. (1992)[267]	United States	Journal article	Examine awareness of the alcohol warning labels and changes in knowledge by demographic.	Cross-sectional survey	General population	4,006	>18	Over 25% reported seeing the warning label in the last 12 months. Rates of awareness were higher in men (than women), younger people (than older people), heavy drinkers (than light drinkers).
75	Kaskutas, L. (1993)[286]	United States	Journal article	Investigate the relationship between public support for alcohol policies, and public perceptions of policy effectiveness.	Cross-sectional survey	General population	1,562	>18	32% of participants believed that the implementation of warning labels effected moderate drinkers, while 14% believed an effect on heavy drinkers. 55% reported that warning labels had changed their behaviour regarding alcohol consumption.
76	Kaskutas, L. (1993)[242]	United States	Journal article	Explore changes towards alcohol control policies in the U.S. since the implementation of warning labels on alcoholic beverages.	Cross-sectional survey	General population	3,188 (1.626; 1,562)	>18	Warning labels were the only policy measure to maintain public support between 1989 and 1991. Participants who has seen the warning label were twice as like to support the policy measure.
77	Kaskutas, L. (1994)[287]	United States	Journal article	Explore the relationship between	Cross-sectional survey	Pregnant women	4,017	<40	Respondents exposed to different message sources

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				exposure to multiple sources of health messages about the risk of drinking during pregnancy.					were more like to converse about drinking during pregnancy and reduce drinking during pregnancy.
78	Kaskutas, L. (1997)[268]	United States	Journal article	Examine the relationship between health consciousness and attention to health warnings about alcohol consumption	Cross-sectional survey	General population	1,026	<40	Labels are reaching the intended audiences, especially younger people, males, and heavy alcohol consumers.
79	Kaskutas, L. (1998)[269]	United States	Journal article	Examine the effectiveness of different types of health messages on drinking during pregnancy.	Cross-sectional, longitudinal survey	pregnant women	9,800 685	>18	No relationship between exposure to alcohol warning labels and reduction in consumption while pregnant.
80	Kaskutas, L. (2000)[535]	United States	Journal article	Examine the exposure and effect of exposure in Native American and African American pregnant women.	Surveys	Native American and African American pregnant women	321	18-42	Heavy drinkers continued to drink while pregnant despite exposure to warning labels.
81	Kersbergen, I., et al. (2017)[294]	United Kingdom	Journal article	Investigate the extent to which alcohol consumers attend to warning labels on alcohol packaging.	Study 1: Cross-sectional survey Study 2: Experimental	Study 1: Young adults Study 2: those who consume alcohol above recommend	Study 1: 60 Study 2: 120	Study 1: M=21.27 (SD=6.54) Study 2: >18	Alcohol consumers paid minimal attention to warning labels on alcohol packaging. When attention was directed to alcohol warning labels, no impact on drinking intention was reported.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
						ed guidelines			
82	Kozup, J., et al. (2001)[112]	United States	Journal article	Examine the effects of including a health claim related statement on wine containers.	Between-subjects experimental	General population	150	M=49	Consistent with the boomerang effect, the presence of health warnings elicited more favourable attitudes toward the product and perceptions of health-related consequences.
83	Krischler, M., et al. (2015)[295]	Luxembourg Germany	Journal article	Investigate the effectiveness of alcohol warning labels tailored toward young adults' positive outcome expectancies.	Experimental	Young adults	122	M=23.5 (SD=3.47)	Warning labels presented as statements had no influence on outcome expectancies and drinking intentions. Warnings posed in the form of questions increased individual negative outcome expectancy perception.
84	Laughery, K., et al. (1993)[536]	United States	Journal article	Examine the noticeability of health warnings on alcoholic beverage containers.	Experimental	General population	Study 1: 75 Study 2: 72 Study 3: 24	Study 1: N/R Study 2: M=34.0 (SD=13.2) Study 3: M=31.3 (SD=6.4)	Generally, current warnings do not stand out from their background. Pictorials, icons, and colour can substantially improve noticeability, whereas borders may not have much effect.
85	Laughery, K., et al. (1993)[304]	United States	Journal article	Assess effects of product warning explicitness on purchase preferences and caution in use.	Experimental	Young adults	Study 1: 99 Study 2: 108 Study 3: 66 Study 4: 52	M=34.1 (SD=13.2)	More explicit warnings were associated with greater levels of perceived danger, hazard understanding, injury severity, and manufacturers' concern.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
86	MacKinnon, D. et al. (1993)[270]	United States	Journal article	Determine whether amount of alcohol use was related to recognition memory for the alcohol warning label.	Survey	Young adults	243	M=19.8	There was a statistically significant correlation between alcohol use and memory for the alcohol warning label.
87	MacKinnon, D. (1993)[312]	United States	Journal article	Determine: i) If the avoidance effect for the "poison" label is present for alcohol containers ii) Whether the effect is present for the mandated alcohol warning label iii) Whether there is an avoidance response to a “causes cancer" or "toxic" label	Experimental	Young adults	Study 1: 111 Study 2: 75	N/R	There was avoidance of the ‘poison’, ‘toxic’, and ‘causes cancer’ warning labels. The effect of the government legislated warning label was less than the experimental ones used in this study.
88	MacKinnon, D., et al. (1993)[537]	United States	Journal article	Determine awareness of the alcohol labelling law, exposure to warning labels, and beliefs about and memory for the risks listed on the label before and after legislation.	Survey	Adolescents; 12th grade students	3,217 (1,211; 2006)	N/R	After the alcohol warning label was legislated, more adolescents had seen it, were aware that it existed, and were able to recognise the risks written on the label. No positive change in beliefs about the risks on the label was observed.
89	MacKinnon, D., et al. (1994)[313]	United States	Journal article	Examine the impact of alcohol warning label features (e.g. length, presence of qualifying	Experimental	University students	292	M=19.9 (SD=2.31)	Words such as “cancer,” “poison,” and “health problems” generate the strongest avoidance. Existing

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				words, and warning content.)					warnings may be improved by warning of cancer, warning that rapid consumption of alcohol is poisonous, and by removing the "may" and "government warning" qualifiers.
90	MacKinnon D., et al. (1998)[288]	United States	Journal article	Explore the effect of advertising and warnings on perceptions of alcohol risks and benefits.	Experimental	Young adults	Study 1: 164 Study 2: 268	Study 1: M=19.19 (SD=3.1) Study 2: M=19.9 (SD=4.1)	Exposure to alcohol advertising decreased the perceived risks of alcohol consumption, while exposure to alcohol warning labels increased the perceived risks and reduced the effectiveness of alcohol advertising.
91	MacKinnon D., et al. (2000)[109]	United States	Journal article	Examine the effects of the alcohol warning label on adolescents during the first 5 years that the warning was required.	Survey	Adolescents; 12th grade students	32,517	N/R	The initial positive effects of the alcohol warning label on adolescents have levelled off, consistent with theories of repeated exposure to persuasive information. The alcohol warning has not affected adolescents' beliefs about alcohol or alcohol-related behaviours.
92	MacKinnon D., et al. (2001)[186]	United States	Journal article	Explore the longitudinal relationship between exposure to an alcohol warning label and	Survey	Adolescents; 12th grade students	649	N/R	Alcohol warning labels are having the intended effect, that is, informing and reminding people that of the risks associated with alcohol use. However, it does not

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				alcohol consumption in adolescents.					appear to be changing consumption
93	Malouff, J., et al. (1993)[314]	United States	Journal article	Four studies examine important characteristics of warning displays on alcohol containers.	Study 1: Survey Study 2: Survey Study 3: Between-subjects experimental Study 4: Experimental	General population	Study 1: 43 Study 2: 50 Study 3: 44 Study 4: 75	Study 1: M=19.44 (SD=2.18) Study 2: M=26.86 (SD=8.57) Study 3: M=33.02 (SD=10.73) Study 4: M=19.44 (SD=2.18)	Study 1: 77% of participants thought that current alcohol warning labels were not conspicuous. Study 2 & 3: Participants rated horizontal warning labels as more conspicuous, had better awareness and recall than vertical warnings. Study 4: Participants prompted to notice the alcohol warning label drank less thereafter than those who were not prompted.
94	Marin, G. (1994)[187]	United States	Journal article	Investigate self-reported awareness of the presence of product warning messages and signs among Hispanic people in San Francisco.	Survey	Hispanic people	Survey 1: 1,204 Survey 2: 1,569	N/R	Drinkers of alcoholic beverages reported the second highest level of awareness of the relevant warning label. The presence of warning messages was higher for beer than for wine.
95	Marin, G. (1997)[271]	United States	Journal article	Investigate changes in self-reported awareness of the presence of product warning messages and signs among Hispanic people in San Francisco.	Survey	Hispanic people	4,661	M=37.6	There were increases in awareness across years for the alcohol-related warning messages. Alcohol consumers reported the second highest level of awareness of the relevant warning label.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
96	Marin, G., et al. (1997)[272]	United States	Journal article	Analyse the changes in awareness of product warning labels and messages that may take place within one year among Hispanic and non-Hispanic whites	Survey	Hispanic people; general population	1,011	18-65	Both groups showed an increased awareness of alcohol warning labels.
97	Martin, D. (1991)[225]	United States	Thesis	Investigate public attitudes and perceptions regarding alcoholic beverage health warning labels.	Survey	General population	437	>18	Drinkers and non-drinkers supported alcohol warning labelling, but thought they were unlikely to be read. Results suggest that heavy drinkers are least likely to pay attention.
98	May, N., et al. (2017)[139]	Australia	Journal article	Examine how Australians respond to the information that alcohol causes cancer.	Focus group research	Light-moderate alcohol consumers	38	>18	Through the construction of cancer as an inescapable disease, and their own alcohol consumption as unproblematic and socially sanctioned, participants were able to resist the message that alcohol causes cancer, and any implied need to alter personal alcohol consumption to reduce the risk of cancer.
99	Mayer, R., et al. (1991)[177]	United States	Journal article	Evaluate the impact of the mandated alcohol warning labels.	Cross-sectional survey	General population	2,417	>18	Awareness of alcohol warning labels is high. No evidence to suggest changes to risk perception or behaviour.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
100	Maynard, O., et al. (2018)[223]	United Kingdom	Report	examined the impact of calorie, unit and health warning labelling on knowledge, attitudes, beliefs, intentions and behaviours related to alcohol.	Survey	General population	250	>18	Health warnings which describe the negative consequences of drinking, focusing on the risk of cancer, may be an effective communication tool.
101	Mazis, M., et al. (1991)[273]	United States	Journal article	Assess awareness and risk perception resulting from mandated alcohol health warning label.	Cross-sectional survey	General population	2,028	>18	Since implementation, there has been a slight increase in the public's perception of the risk level associated with consuming alcohol. Awareness was highest among younger adults and heavy alcohol consumers.
102	Mazis, M., et al. (1996)[274]	United States	Journal article	Explore differences in alcohol warning label awareness between major population subgroups.	Longitudinal cross-sectional survey	General population	5,032	>18	A statistically significant change in reported awareness of the alcoholic beverage warning label was observed. Respondents who were younger, less educated, black, and alcohol consumers had higher awareness levels than respondents who were older, more educated, white, and non-drinkers.
103	McStay, C. (2014)[330]	Australia	Report	Assess the alcohol industry actions in implementing pregnancy health warnings on alcohol	Study 1: Field study Study 2: Cost analysis Study 3:	General population; pregnant women; planning	Study 1: N/R Study 2:	N/R	Less than half of all alcohol products available for sale had a pregnancy health warning label. Overall, awareness of warnings about

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				product labels, and consumer awareness and understanding of such warnings.	Survey Study 4: Interviews	pregnancy; postpartum	N/A Study 3: 5,622 Study 4: 30		drinking alcohol when pregnant increased from the first (62.4%) to the second evaluation (71.1%). Limited evidence to suggest changes in drinking behaviours as a result of alcohol warning labelling initiatives.
104	Miller, E., et al. (2016)[289]	Australia	Journal article	Investigate the impact of cancer warning messages on alcohol products.	Survey	General population	1,547	>18	Warning labels may raise awareness and prompt discussion, but unlikely to result in significant behavioural change.
105	Nohre, et al. (1999)[275]	United States	Journal article	Examine labelling and receiver characteristics that influence awareness, memory and beliefs about alcohol warnings.	Cross-sectional survey	Adolescents; high school students	6,391	N/R	Limited evidence indicating that receiver characteristics moderated the association between warning appearance, warning awareness, exposure, memory, or beliefs.
106	Noordink, S. (2013)[296]	Netherlands	Thesis	Determine the effectiveness of an alcoholic beverage warning label design.	Between-subjects experiment	University students	Study 1: 128 Study 2: 126	M=22.62 (SD=2.64)	The inclusion of consequences in warning label message led to a positive behavioural intention to prevent drunk driving.
107	Nowak, L., et al. (2004)[113]	United States	Journal article	Exposure to alcohol warning labelling and purchase intentions.	Survey	University students	297	18-23	Inclusion of a warning statement on wine labels did not have a significant impact on attitudes toward alcohol, brand, disease risk, believability, or purchase intention.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
108	Ohtsu, T., et al. (2010)[276]	Japan	Journal article	Examine awareness of warnings about drinking.	Survey	General population	985	>20	Awareness of warnings against underage drinking and drunk driving were high, but low for pregnancy warning.
109	Parackal, S., et al. (2010)[538]	New Zealand	Journal article	Report preferences for an alcoholic beverage label warning of risks associated with alcohol consumption in pregnancy.	Cross-sectional survey	Non-pregnant women	1,129	16-40	Warning labels may increase awareness of the risks of consuming alcohol during pregnancy, however, a more comprehensive campaign is needed to elicit behaviour change.
110	Parker, R., et al. (1994)[277]	United States	Journal article	Examine the impact of alcoholic beverage container warning labels.	Cross-sectional survey	General population	913	>18	Increase in recall of labels, warning content and risk perception post-introduction period.
111	Parsons, J., et al. (1993)[278]	United States	Journal article	Investigate the awareness and knowledge of alcoholic beverage warning labels among homeless persons.	Interview	Homeless people	481	N/R	41% of participants were aware of the warning labels. Label awareness was significantly greater among males and those under40 years of age.
112	Patterson, L., et al. (1992)[334]	United States	Journal article	Investigate perceptions of alcohol warnings and the risks associated with alcohol consumption.	Survey	Young adults	238	16-24	Heavier consumers perceived less alcohol-related risk compared with those reporting lower consumption.
113	Pendleton, L. et al. (1990)[243]	United Kingdom	Journal article	Investigate public opinion regarding 21 alcohol control policies.	Survey	General population	516	>15	79% of participants believed that alcoholic beverage containers should have warning labels.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
114	Petticrew, M., et al. (2016)[305]	United Kingdom	Journal article	Assess impact of specific labelling elements, including size, colour and placement of text of the pregnancy warning logo.	Audit	N/A	156	N/A	Labelling information frequently falls short of best practice, with font and logos smaller than would be accepted on other products with health effects.
115	Pettigrew, S., et al. (2014)[317]	Australia	Journal article	Develop and test a range of cancer warning statements that Australian drinkers consider believable, convincing, and personally relevant.	Study 1: Focus groups Study 2: Survey	General population	Study 1: 48 Study 2: 2,168	>18	Cancer warning statements may increase awareness about the relationship between alcohol consumption and cancer risk. These warning statements are likely to be considered believable, convincing, and personally relevant by the Australian drinking public.
116	Pettigrew, S., et al. (2016)[318]	Australia	Journal article	Investigate the extent to which a series of cancer warning statements are perceived to be believable, convincing and personally relevant to Australian drinkers.	Survey	General population	1,608	>18	Cancer warning statements have the potential to play an important role in public education programs designed to inform drinkers of the long-terms harms associated with alcohol consumption and encourage behavioural change. Mass media, product packaging, medical professionals, and word-of-mouth are likely to be important elements of a comprehensive alcohol control strategy.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
117	Pham, C., et al. (2018)[306]	Australia	Journal article	Compare participant attention to current alcoholic beverage warning labels measured through subjective and objective methods.	Study 1: Survey Study 2: Eye tracking	General population	Study 1: 559 Study 2: 87	M=31.9 (SD=7.8)	Results indicated an increase in attention for the colour and size condition (red and 50% larger) when compared to the current (grey) warning label.
118	Rim, J. (2013)[114]	South Korea	Thesis	Investigate how alcohol warning messages affect a consumer's attitudes toward alcohol consumption.	Study 1: Interviews Study 2: Survey	Alcohol consumers	Study 1: 5 Study 2: 102	>20	Alcohol warning messages positively affected consumer attitudes toward reduction or moderation of alcohol consumption.
119	Robertson, K., et al. (2017)[333]	New Zealand	Journal article	Inform message development by identifying the negative expectancies associated with alcohol consumption.	Survey	General population	1,168	>18	Heavy drinkers and young adults reported concerns for self (e.g. liver damage); lighter drinkers and older adults reported harm for others (e.g. violence); overall, females reported greater concern than males.
120	Roderique-Davies G., et al. (2020)[297]	United Kingdom	Journal article	Eye-tracker device was used to measure gaze times, focus groups to discuss warning label designs.	Experiment; Focus group	University staff and students	25	23-63	Brief gaze times demonstrated their limited impact on alcohol purchasing, and challenge the utility of health warnings.
121	Room, R., et al. (1995)[244]	Canada United States	Journal article	Explore trends in public opinion regarding alcohol policies between 1989 and 1991	Cross-sectional survey	General population	10,700 (1974; 2006; 2000; 2017;	>15; >18	Support for warning labels increased significantly in all population segments in Ontario between 1989 and 1991. In 1989, there were

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
							1045; 1028)		substantial divergences between males and females (with higher support among females), by educational level (with higher support among the least educated) and by drinking pattern (with higher support among current abstainers).
122	Scammon, D., et al. (1991)[279]	United States	Journal article	Evaluate the impact of the mandated alcohol warning labels.	Cross-sectional survey	General population	2,417	>18	Awareness of alcohol warning labels is high. No evidence to suggest changes to risk perception or behaviour.
123	Siggins Miller (2014)[315]	Australia	Report	Assess the alcohol industry actions in implementing pregnancy health warnings on alcohol product labels, and consumer awareness and understanding of such warnings.	Audit	N/A	N/A	N/A	Less than half of all alcohol products available for sale had a pregnancy health warning label. Overall, awareness of warnings about drinking alcohol when pregnant increased from the first (62.4%) to the second evaluation (71.1%). Limited evidence to suggest changes in drinking behaviours as a result of alcohol warning labelling initiatives.
124	Sillero-Rejon, C., et al. (2018)[219]	United Kingdom	Journal article	Examine the impact of enhanced self-affirmation and response to pictorial warning labels.	Experimental	General population; those who consume alcohol above	128	>18	Unclear evidence that enhancing self-affirmation influenced any outcome. Compared to moderately severe health warnings, highly severe health warnings

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
						recommend ed guidelines			increased avoidance and reactance, were perceived as more effective and increased motivation to drink less.
125	Snyder, L. et al. (1992)[328]	United States	Journal article	Compare the effects of alcohol advertising with the effects of alcohol warning labels.	Experimental	University students	159	17-22 M=18.9 (SD=1)	Warnings were not perceived as communicating greater dangers of alcohol drinking.
126	Stacy et al. (1993)[323]	United States	Journal article	Apply a meta-theoretical and an analytic framework to an investigation of alcohol warning label effectiveness.	Survey Modelling	High school students	813	N/R	General (or higher order factors) and specific (or lower order factors) predicted positive and negative expectancies related to alcohol consumption.
127	Stafford, L. et al. (2017)[218]	United Kingdom	Journal article	Examine if health warning messages can influence rate of alcohol consumption.	Between-subjects experimental	Female university students	45	18-25 M=18.93 (SD=1.12)	Strong health warnings on alcoholic beverages can influence drinking rates.
128	Tam, T., et al. (2010)[115]	United States	Journal article	Examine the relationship between message recall and action to deter others from drinking while intoxicated.	Survey	General population	1,376	>18	Greater awareness of the warning label's relevant message may encourage interactions to deter others from drink driving
129	Thomson, L., et al. (2012)[198]	Australia	Journal article	Identify features of health information warning labels on alcohol beverage containers that could inform the development and implementation of a	Study 1: Survey Study 2: Focus groups	General population	Study 1: 1523 Study 2: 45	Study 1: >16 Study 2: >16	High levels of public support for alcohol warning labels were reported. Participants drew comparison with the success of cigarette warning labels in Australia, and rather than a deterrent, warning

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				new labelling regime in Australia.					labels pose as a reminder of alcohol-related risk.
130	Tinawi, G., et al. (2018)[216]	New Zealand	Journal article	Examine the prevalence, content, size, appearance, and position of health warning and related industry initiatives on alcoholic beverage containers sold in New Zealand.	Audit	General population	59 local & imported beers, wines, and ready-to-drink alcoholic beverage containers	N/A	Voluntary, industry-lead initiatives appear inadequate for producing accurate, consistent health warnings on alcoholic beverage containers. Standardised, mandatory labelling may be required for adequate consumer information.
131	Vallance, K., et al. (2018)[120]	Canada	Journal article	Gauge consumer acceptability and effectiveness of labels designed to provide information that best supports informed drinking.	Focus group research	Residents Stakeholders	369	19-65	Information portraying standard drink content, low risk drinking guidelines, cancer health messages, and pregnancy warnings were supported by consumers, and may be effective in informing consumers of the health effects of drinking alcohol.
132	Vallance, K., et al. (2020)[249]	Canada	Journal article	Examine consumers' baseline knowledge of alcohol-related cancer risk, standard drinks, and low-risk drinking guidelines as well as	Survey	Liquor store patrons	836	19-44	Limited alchol-related health knowledge, and moderate support for alcohol warning labeling as a tool to raise awareness.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
				levels of support for labelling.					
133	Victorian Health Promotion Foundation. (2009)[252]	Australia	Report	Explore perceptions of health advisory labels on alcoholic beverages amongst teenagers, young adults and the parents of teenagers.	Focus group research	Young adults Parents	44	>16	Participants expressed support for health warnings on alcohol containers, as well as an expectation that this intervention was likely to happen.
134	Weerasinghe, A. (2020)[253]	Canada	Journal article	Examine changes in baseline knowledge of alcohol-related cancer risk.	Survey	Liquor store patrons	1730	19-44	Increases in individual-level knowledge that alcohol can cause cancer after an alcohol labelling intervention.
135	Weiss, S. (1997)[245]	Israel	Journal article	Explore the level of youth support for alcohol warning label legislation.	Cross-sectional survey	Young adults	3,065	16-18	More respondents were in favour of warning labels on alcohol containers than on advertisements.
136	Wigg, S., et al. (2016)[298]	United Kingdom	Journal article	Test the effectiveness of text-only and pictorial health warning labels.	Experimental	Young adults	60	M=19.43 (SD=3.1)	Pictorial health warnings were associated with significantly higher fear arousal, increased understanding of the health consequences of excess alcohol consumption, and greater intention to reduce alcohol consumption.
137	Winstock, A., et al. (2019)[539]	United Kingdom	Journal article	Explore perceptions of alcohol health warning labels.	Cross-sectional survey	General population	75,969	16-85	Health messages displayed on alcoholic beverages have the potential to raise awareness of alcohol-related harms and support a reduction in drinking.

	Author (Date)	Country	Publication Type	Aims	Study Design	Target Population	Sample Size	Age: Years	Conclusion
138	Zahra, D., et al. (2015)[324]	United Kingdom	Journal article	To investigate the cognitive processing of emotive pictorial warnings intended to curb alcohol misuse.	Experimental	University students	Study 1: 153 Study 2: 58	Study 1: M=21 (SD=5) Study 2: M=22 (SD=6)	Imagery of negative outcomes may improve reasoning, however, its use in alcohol-related messages does not appear to be consistently beneficial.
139	Zhao, J., et al. (2020)[10]	Canada	Journal article	Various warning labels temporarily replaced previous pregnancy warning labels to test if the intervention was associated with reduced alcohol consumption.	Time series study	Liquor stores in Yukon	7	>15	Alcohol warning labels with varying and highly visible labels with impactful messages are associated with reduced population alcohol consumption.

N/A – not applicable; N/R – not report

Appendix I: Proposed focus group questions (Part A)

THE UNIVERSITY of ADELAIDE

ATTACHMENT 1

Proposed Focus Group Questions

Opening question

1. Tell us your name, and why you have chosen to join the focus group today?

Introductory question

2. What is the first thing that comes to mind when you hear the message that alcohol causes cancer?

Transition questions

3. Have you heard anything about the risks between alcohol and cancer?
    - Where from?
4. What do you understand about the risks between alcohol and cancer?
5. Have you seen alcohol warning labels?
    - Where?
    - How did you react to them?

Key questions (outlined as a topic question, and the ways I might address each question)

6. Topic – What role does alcohol play in society?
    - When do people drink?
    - Why do people drink?
    - Where do people drink?
    - Is alcohol a part of your life?
        - When do you drink?
        - Why do you drink?
        - How much do you drink?
            - Do you think you drink more or less than the average Australian?
    - What do you think the benefits of drinking alcohol are?
    - What do you think the risks of drinking alcohol are?
    - How do you think people will react to being told that alcohol causes cancer?
    - How do you feel about being told that alcohol causes cancer?

7. Topic – What role does cancer play in society?
    - What do you think it means to have cancer? (What thoughts come to mind when you think about cancer?)
    - Do you think that people can manage their health to prevent cancer?
        - How?
    - What does cancer mean to you?
    - Do you think you have a higher risk of cancer than the rest of the population?
        - Why? Or Why not?
    - What sorts of things do you do to manage your health to prevent cancer?

- Is there anything you would like to do, but just haven't got around to yet?
- How much do you think is a safe level of drinking to avoid getting cancer?
- Do you think that people would change the amount they drink if they thought it could cause cancer?
    - Why? Or Why not?
- What would it mean to you if you thought that drinking might contribute to you getting cancer?
    - Would you change the way you drink?
    - What would that mean to you?
- How do you think it might change the ways you drink?
- Do you think there might be challenges in making these changes?
- What would help you to make these changes?
    - Do you think these things could help other people to make changes as well?

8. Topic – Where does helpful medical information come from?
    - Where do you get the most of your medical information?
        - Is this source helpful?
    - What is good about receiving information in this way?
    - What is bad about receiving information in this way?
    - Can you think of a time when you (or someone else) has stopped drinking (or been advised to stop drinking) because of health reasons?
    - How do you think the message that alcohol causes cancer could/should be communicated?
    - What sorts of messages could help to change drinking behaviour?

Ending questions

9. Considering all of the things we have discussed today, what are the most important things to you?

Facilitator gives a 2-3 minute summary, and then asks:

10. Is this an adequate summary? Or, Did I correctly describe what was said?

Facilitator gives an overview of the purpose of the study and asks:

11. Have we missed anything? Or, Is there anything that we should have talked about but didn't?

Feedback:

12. Do you have any feedback or advice on how we can improve our focus group sessions?

Thank you for coming. If you would like a summary of the research, please let me know.

Appendix J: Proposed focus group questions (Part B)

THE UNIVERSITY of ADELAIDE

ATTACHMENT 1

Proposed Focus Group Questions

Please note: these questions are intended to encourage conversation, so they may not be asked verbatim.

Opening question

1. Tell us your name, and why you have chosen to join the focus group today? Why do you think you have a higher risk of cancer than other people?

Introductory question

2. Has anyone ever told you about alcohol-related cancer?
    - Where from?
3. What do you know about the link between alcohol and cancer?
4. Have you seen warning labels on alcohol bottles or cans before?
    - Where?
    - What do you think of them?

Key questions (outlined as a topic question, and the ways I might address each question)

5. **Topic** – Let's talk about drinking (alcohol)
    - When do people drink?
    - Why do people drink?
    - Where do people drink?
    - Is alcohol a part of your life?
        - When do you drink?
        - Why do you drink?
        - How much do you drink?
            - In your opinion, do you think you drink more or less than the average Australian?
    - What are the good things about drinking?
    - What are some of the bad things about alcohol?

6. **Topic** – What do you think about cancer?
    - What do you think it means these days to have cancer? (What thoughts come to mind when you think about cancer?)
    - Do you think that people generally can manage their health to prevent cancer?
        - If yes, how?
    - What is it that makes you at higher/high risk than other people?
    - What does cancer mean to you?
    - Has there ever been a time that you thought you were more at risk?
    - How has your life changed since you saw yourself as a person with an increased risk of cancer? Have you changed anything?
    - Anything others have suggested that you've not done?

7. **Topic** - Alcohol and cancer
    - How do you think people will react to being told about the link between alcohol and cancer?
    - How do you feel about it?
    - Do you think that people might change the amount they drink if they thought it could cause cancer?
        - Why? Or Why not?
    - What would it mean to you if you thought that drinking might contribute to you getting cancer?
        - Would you change the way you drink?
        - What would that mean to you?
    - How do you think it might change the ways you drink?
    - Do you think there might be challenges in making these changes?
    - What would help you to make these changes?
        - Do you think these things could help other people to make changes as well?
    - Do you think people should be told that alcohol causes cancer?
        - Why? Why not?

8. **Topic** – Where does helpful medical information come from?
    - Where do you get the most of your medical information?
        - Is this source helpful?
    - What is good about receiving information in this way?
    - What is bad about receiving information in this way?
    - Can you think of a time when you (or someone else) has stopped drinking (or been advised to stop drinking) because of health reasons?
    - How do you think the message that alcohol causes cancer could/should be communicated?
    - What sorts of messages could help to change drinking behaviour?

Ending questions

9. Considering all of the things we have discussed today, what are the most important things to you?

Facilitator gives a 2-3 minute summary, and then asks:

10. Is this an adequate summary? Or, Did I correctly describe what was said?

Facilitator gives an overview of the purpose of the study and asks:

11. Have we missed anything? Or, Is there anything that we should have talked about but didn't?

Feedback:

12. Do you have any feedback or advice on how we can improve our focus group sessions?

Thank you for coming. If you would like a summary of the research, please let me know.

Appendix K: Journal publications

Alcohol warning labels to reduce alcohol-related harm: a scoping review protocol

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ABSTRACT

Objective: This scoping review aims to explore international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm.

Introduction: Alcohol-related harm is a global public health issue. More than 200 injuries, diseases and conditions are attributable to alcohol, and almost 6% of all global deaths are related to alcohol consumption.
A common approach to raising public awareness of health hazards is product warning labels. Currently, 31 countries or territories have mandated the inclusion of alcohol warning labels on alcoholic beverages. However, research findings on the effectiveness of alcohol warning labeling to reduce alcohol-related harm are mixed and debatable.

Inclusion criteria: This review will consider studies that focus on alcohol warning labeling (in the form of alcoholic beverage containers, simulated messages displayed on a computer screen or cards shown to participants that depict alcohol warning labels on beverage containers) as a strategy to reduce alcohol-related harm (e.g. drunk driving, violence, drinking while pregnant).

Methods: PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL and JSTOR will be searched for relevant articles. The search for unpublished studies will utilise Trove and Google Scholar. Studies published in English from 1989 to the present will be considered. Retrieved papers will be screened for inclusion by at least two reviewers. Data will be extracted and presented in tabular form and a narrative summary that align with the review's objective.

Keywords Alcohol; alcohol consumption; drinking behaviours; drinking intention/s; warning labels

JBI Evid Synth 2020; 18(1):186–193.

Introduction

Alcohol-related harm is an enduring global public health issue,[1] considered as one of the main risk factors for poor health globally.[2] More than 200 injuries, diseases and conditions, including liver cirrhosis, cancers, suicide, violence and road fatalities, are attributable to alcohol.[1,3] Recent reports posit that almost 6% of all global deaths (approximately 3.3 million people) are related to alcohol consumption,[1] despite less than half the world's population (38%) consuming alcohol.[4] Moreover, consistent with current evidence-based criteria, if alcohol was proposed as a new drug it would be categorized with drugs such as morphine, dexamphetamine and gamma-hydroxybutyrate (''fantasy''), all of which are illicit substances.[5]

A wide range of effective global policies and interventions have been implemented to reduce alcohol-related harm, including drink driving and blood alcohol concentration (BAC) laws,[6] minimum legal drinking age,[7] and lockout laws that restrict alcohol access in bars and clubs.[8] Increasing awareness of health hazards through effective health promotion[9] is often presented as the most acceptable method to reduce risky behaviors and, through this, alcohol-related injury and illness. The dissemination of health knowledge through public health campaigns aims to assist individuals to make informed decisions about which risky behaviors to avoid to improve their personal health.[9] With regard to raising public awareness of health hazards,

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a common approach[10] is the inclusion of product warning labels.[4,11]

In 1988, the United States mandated alcohol warning labels on alcoholic beverages.[12] The Alcoholic Beverage Labeling Act of 1988 was introduced to inform the American public about the health hazards associated with alcohol consumption, and to provide a clear unambiguous and nationally regulated warning of such hazards.[13] The warning reads:

Government warning:

(1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects.
(2) Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery and may cause health problems.

Currently, 31 countries or territories have mandated the inclusion of alcohol warning labels on alcoholic beverages,[3,13] while countries such as Australia and New Zealand have voluntary agreements.[14] The messages displayed on alcohol products vary between countries, and include warnings of alcohol-related health risks associated with drink driving, consuming alcohol during pregnancy, harm to others and operating machinery.[15]

Research findings on the effectiveness of alcohol warning labeling to reduce alcohol-related harm are mixed. One study found that alcohol warning labels are associated with stimulating conversation about drunk driving and pregnancy, and deterring drunk driving[16]; however, another study examining attitudes towards alcohol warning labeling and the presented warnings found that consumers who enjoy drinking became defensive and displayed negative attitudes towards the labels.[17] The content type and emotional valence of warnings may contribute to potential defensive reactions. Although some raise the importance of fear arousal in health warnings,[18] an approach that was successful in reducing smoking rates after the introduction of graphic cigarette warning labels,[19] fear tactics are only helpful if individuals perceive their susceptibility or vulnerability to the risk-taking behavior.[20]

Some of the other factors thought to impact warning label effectiveness include visibility, saliency, message content and exposure. Poor visibility and saliency may result from the location of warning labels on alcoholic beverage containers.[19] Message content can elicit a defensive reaction[20]; however, messages that are vague and underwhelming are unlikely to motivate behavioral change in individuals.[21] Exposure, examined through self-reported knowledge of alcohol labels and by recall of labeling content, has been shown to be greater among heavy alcohol consumers.[22,23] Despite this, one study found no evidence of an increase in perceived alcohol-related health risks or intention to change behavior after exposure to such labels.[24]

Research confirming the damaging effects of alcohol consumption continues to grow.[1] Although alcohol warning labeling may be a cost-effective and politically acceptable way to educate the public about alcohol-related health hazards,[25] and cigarette health warnings have become a successful public health approach for reducing tobacco consumption,[19] the extent to which alcohol warning labels are a suitable public health approach is debatable. Therefore, the purpose of this scoping review is to locate and describe the international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm. This investigation will address the following: i) What populations are in the alcohol warning labeling literature? ii) What is current public opinion about alcohol warning labeling? iii) What are the characteristics of alcohol warning labels for evaluating intervention efficacy and how are they measured? iv) What are the barriers and facilitators to implementing alcohol warning labels? Operational definitions for these questions are outlined in Appendix I. Investigating alcohol warning labeling as an approach to communicate alcohol-related risks to the community is vital to informing future efforts to reduce the negative health and social consequences of the harmful use of alcohol. An initial search of literature was conducted via the database PubMed to locate research related to the review questions. Although numerous reviews have been conducted in the area of alcohol warning labeling,[4,10,21,25-38] there are currently no systematic or scoping reviews, published or underway, that: i) integrate the questions proposed by this review, ii) consider both published and unpublished articles, iii) consider articles from 1989 to 2018, and iv) are not limited by language or study location. This scoping review will provide a comprehensive overview of alcohol warning labels as a public health approach for reducing alcohol-related harm. Findings from the

review will progress current understanding on the appropriateness of alcohol warning labels as a public health approach to reduce alcohol-related harm and inform future research.

Review objective/questions

The objective of the scoping review is to locate and describe international literature relating to alcohol warning labels as a public health approach for reducing alcohol-related harm.

Specifically, the review questions are:

i) What populations are being targeted in alcohol warning labeling literature?
ii) What is current public opinion about alcohol warning labeling?
iii) What are the characteristics of alcohol warning labels for evaluating intervention efficacy and how are they measured?
iv) What are the barriers and facilitators to implementing alcohol warning labels?

Inclusion criteria

Participants

This review will consider studies that address the review questions. The studies considered for inclusion will not be limited by participants' demographic variables (e.g. age, sex, ethnicity), recruitment or sampling strategies.

Concept

The concept of interest in this review is alcohol warning labeling as an approach to reduce alcohol-related harm (e.g. drunk driving, violence, drinking while pregnant).

Context

This review will consider any international research that focuses on alcohol warning labeling as a harm-reduction strategy. The studies considered for inclusion will not be limited by research setting (e.g. hospitals, shopping centres, universities). This review will consider research on the messages that are presented on alcoholic beverage containers, simulated messages displayed on a computer screen, or cards shown to participants that depict alcohol warning labels on beverage containers. Alcohol health warnings presented through media and/or online platforms, for example, television advertisements, Facebook, Twitter or Instagram will be not be considered for inclusion.

Types of studies

All studies published after 1 January 1989 will be considered for inclusion in this review, following the enactment of the Alcoholic Beverage Labeling Act in November 1988.[39] Studies published in any language will also be considered for inclusion. Any non-English publications meeting the inclusion criteria will be outsourced to an accredited translation service. See Appendix II for an example search strategy.

This review will consider both quantitative and qualitative study designs. Quantitative study designs will include experimental study designs, quasi-experimental designs, observational methods and survey methods. Qualitative study designs include data collected via interviews and focus group research. Systematic reviews that report on alcohol warning labeling as an effective public health measure will be considered for inclusion. Gray literature will also be considered for inclusion in the review and will include government documents and reports or research conducted by advocacy groups.

Articles from magazines, newspapers, newsletters or editorials will be excluded, but relevant reports, studies or websites mentioned in these sources will be investigated and assessed for inclusion.

Methods

The scoping review will follow the JBI scoping review methodology.[40]

Search strategy

The search strategy aims to locate both published and unpublished studies. Searches will be conducted both electronically and manually (i.e. hand-searching the reference lists of included studies for relevant articles) and follow a three-step process. First, a search will be undertaken using the following electronic databases: PubMed, Embase, Scopus, Cochrane Library, PsycINFO, Web of Science, CINAHL and JSTOR. Second, the search for unpublished studies will utilise Trove and Google Scholar, together with government, advocacy groups, or industry-related websites and documentation (particularly gray literature) that meet the review inclusion criteria. Finally, the reference lists of all identified reports and articles will be searched for additional studies.[41]

Articles located through the search strategy will be imported to EndNote (Clarivate Analytics, PA,

USA). After the removal of duplicate studies or reports, the titles and abstracts of remaining articles will be assessed for inclusion based on the inclusion criteria. Full texts of the articles will be retrieved if the inclusion criteria are met or if further examination is necessary before excluding the article. To determine the inclusion of ambiguous articles, co-authors' judgment will be sought. Multiple articles from the same project/research group will be linked and treated as one for the purposes of data extraction and presenting results.

Data extraction

The data extracted from included papers will be guided by the scoping review questions. It is anticipated that the extracted data will be tabulated according to author(s), year of publication, location, methodology, participants, targeted population, study objective and outcomes significant to the scoping review questions (see Appendix III); however, these categories may be redefined subject to the contents of the included articles.

Data presentation

A narrative summary will accompany the tabulated results and will describe how the results relate to each review question and the objectives of this protocol. Some studies may address more than one category, and these studies will be included in all relevant analyses.

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Appendix I: Operational definitions

Research questions	Operational definitions
1. What populations are being targeted in alcohol warning labeling literature?	Target populations: • population characteristics including gender, age, ethnicity • alcohol consumers/abstainers • individual • child/youth • pregnant women • community • industry • government
2. What is current public opinion about alcohol warning labeling?	Public opinion: • support • defensive reactions
3. What are the characteristics of alcohol warning labels for evaluating intervention efficacy and how are they measured?	Characteristics: • message content • saliency • exposure • risk perception • fear/emotion arousal • believability Measured: • recall • attention • behavioral compliance • reasoning processes and cognition
4. What are the barriers and facilitators to implementing alcohol warning labels?	Barriers and facilitators: • as identified by author(s)

Appendix II: Search strategy for PubMed

Search strategy for PubMed MEDLINE. Preliminary search conducted in July 2018, resulting in 1200 articles.

1. Drinking Behavior [mh] OR Drinking Behavio* [all] OR Alcohol Drinking [all] OR Alcohol Consumption [all] OR Binge Drinking [all] OR Wine [all] OR Alcoholic Beverages [mh] OR Alcoholic Beverage* [all] OR Beer [all] OR Spirits [all] OR Liquor [all] OR drinking intention* [all] OR Fetal Alcohol Syndrome [mh] OR Fetal Alcohol Syndrome [all] OR Foetal Alcohol Syndrome [all] OR Alcoholism [mh] OR Alcoholi* [all] OR Drink driv* [all] OR DUI [all] OR Alcoholic Intoxication [mh] OR Drunk driv* [all] OR Alcohol control* [all]
2. Drug Labeling [mh] OR label* [all] OR Product labeling [mh] OR product warning* [all] OR government regulat* [all] OR alcohol warning* [all]
3. #1 AND #2
4. Open-label [all] OR Label-free [all] OR Off-Label Use [mh] OR Off-label [mh] OR Off-label [all] OR Cattle [mh] OR Rats [mh] OR Rat [all] OR Rats [all] OR Mice [mh] OR Mouse [all] OR Murine [all] OR Swine [mh] OR Porcine [all] OR Dogs [mh] OR Canine [all] OR Sheep [mh] OR Ovine [all] OR DNA [all] OR Cell [all] OR Cells [all] OR Gene [all] OR Genetic [all] OR Genes [all] OR Enzyme* [all]
5. #3 NOT #4

Appendix III: Data extraction tool

Author(s), year	Location	Target population	Participants (n)	Methodology	Study objective	outcomes

Critical Public Health

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‘Everything causes cancer’: how Australians respond to the message that alcohol causes cancer

Natalie May, Jaklin Eliott & Shona Crabb

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RESEARCH PAPER

'Everything causes cancer': how Australians respond to the message that alcohol causes cancer

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ABSTRACT

Over 5000 Australians are diagnosed with alcohol-related cancers annually, with growing evidence that low-levels of chronic alcohol consumption significantly increases cancer risk. Public knowledge of the link between alcohol and cancer is limited and, therefore, alcohol consumers may be inadvertently putting themselves at increased risk of developing cancer. Informing the community of alcohol-related cancer risk is important to reduce the burden of disease, however, the message that alcohol causes cancer may challenge current understanding of the risks and benefits associated with alcohol consumption. We examine how Australian adults who self-identify as light-to-moderate alcohol consumers, respond to the message that alcohol causes cancer. Seven focus groups with males and females aged between 18 and 65 years of age were audio–visually recorded, with transcripts thematically analysed within a social constructionist epistemology informed by critical realism. Cancer was represented as an inevitable part of life and something over which participants had no control: consequently, altering alcohol consumption to reduce cancer risk was not justifiable. Participants worked to present themselves as 'normal' consumers of alcohol by recounting personal experiences and depicting an obligation to uphold societal expectations to consume alcohol. Through the construction of cancer as an inescapable disease, and their own alcohol consumption as unproblematic and socially sanctioned, participants were able to resist the message that alcohol causes cancer, and any implied need to alter personal alcohol consumption to reduce the risk of cancer.

ARTICLE HISTORY
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KEYWORDS
Alcohol; cancer; warning labels; Australia; qualitative analysis

Introduction

Cancer is one of the leading causes of death worldwide (Torre et al., 2015); yet nearly one third of all cancers can be attributed to modifiable lifestyle factors (Rehm et al., 2009), and thus are, in principle, avoidable (Khan, Afaq, & Mukhtar, 2010). The World Cancer Research Fund has reported that 2.8 million cases of cancer globally could be eliminated by improving lifestyle practices (Ferlay et al., 2010).

One modifiable lifestyle choice is consumption of alcohol. Alcohol is a group-1 carcinogen (World Health Organisation [WHO], 2010), and one of the largest risk factors for disease burden (Rehm et al., 2013). In Australia, it is estimated that over 5000 cases of cancer can be attributed to chronic alcohol use each year (Winstanley et al., 2011), with 1400 of these resulting in death (Cancer Council Australia [CCA], 2016). Light-to-moderate consumption of alcohol has been associated with the following cancers: mouth and oropharyngeal, pharynx, larynx, oesophageal, liver, bowel, breast (in women), and prostate (in men) (World Cancer Research Foundation [WCRF], 2007).

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Despite clear evidence of harm, the health effects of alcohol consumption are contested. Some have suggested that consumption of red wine is associated with lower mortality and reduction in heart-disease (Ronksley, Brien, Turner, Mukamal, & Ghali, 2011). Others, however, have asserted that the reported benefits of red wine are specific to cardiovascular disease, and consuming red wine does not protect for other conditions, including cancer (Chiuve et al., 2010). With regard to cancer, there is no evidence to suggest that risk differs with the types of alcohol consumed, for example between red wine or beer (Chen, Rosner, Hankinson, Colditz, & Willett, 2011), or that there is a safe limit of alcohol consumption for avoiding cancer (WCRF, 2007). Some researchers have argued that regular consumption of as little as 5 g of alcohol daily can result in modest increases in cancer risk (e.g. Chen et al., 2011), and that there is a linear dose-response relationship between chronic alcohol consumption and the risk of attributable death, which starts at zero (Winstanley et al., 2011).

Awareness that alcohol is a harmful substance is not new: alcohol-related health problems have been internationally recognised for decades (Room, Babor, & Rehm, 2005). Many hazards associated with alcohol consumption (e.g. drunk driving, drinking during pregnancy, violence) are well publicised through health promotion campaigns (Miller, 2016), and public knowledge and awareness of other alcohol-related health risks (e.g. liver cirrhosis, brain damage etc.) is high (Thomson, Vandenberg, & Fitzgerald, 2012). Knowledge of the link between alcohol and cancer, however, is poor, and therefore consumers may be inadvertently putting themselves at risk (Benedetti, Parent, & Siemiatycki, 2009). Public health campaigns may be one way to inform the public that alcohol causes cancer, and warning labels are deemed to be a cost-effective strategy that has a high level of public and political support (Stockwell, 2006). In Australia there is impetus to introduce mandated warning labels on alcohol bottles and containers that include information about the risk of cancer (Blewett, Goddard, Pettigrew, Reynolds, & Yeatman, 2011): however, several factors may impact the acceptability and efficacy of such messages.

One factor is the cultural and social significance of alcohol within society (Babor et al., 2010). Alcohol is one of the most widely used drugs in Australia, with over 80% of the population reporting to consume alcohol (Australian Institute of Health and Welfare, 2011), which, compared to world standards, is high (WHO, 2014). The ubiquity of alcohol is such that, in Australian vernacular, 'drinking' is synonymous with alcohol consumption (Foundation for Alcohol Research & Education, 2016). People consume alcohol for a variety of complex and diverse reasons: for example, to celebrate (births, marriages), and commiserate (death, war), to be sociable, because of peer pressure, for cultural or religious participation, to become intoxicated, or due to addiction (Australian Chronic Disease Prevention Alliance, 2011). Moreover, exposure to alcohol advertising through multiple media and social platforms (e.g. television, Facebook, Twitter, etc.) contributes to the cultural construction and consolidation of social norms around drinking (Australian Government, 2014; Cavazos-Rehg, Krauss, Sowles, & Bierut, 2015). The alcohol industry promotes positive associations with drinking through media, television, sponsorship of music festivals, sporting events, and so on (Australian Drug Foundation, 2012) – which is known to have an inauspicious influence on young people's drinking behaviours (Atkinson, Elliot, Ellis, & Sumnall, 2011). With alcohol embedded in these cultural and social rituals, disseminating health information that warns of the risk of alcohol-related cancer may challenge some perceived benefits and cultural experiences associated with alcohol consumption.

Additionally, health campaigns that are designed to alter community awareness of harmful lifestyle choices may influence knowledge and attitudes, but have limited impact on behaviour (Jochelson, 2006). Somewhat problematically, this method of communicating health information (though cost-effective and far-reaching) anticipates that the recipient has the skills, capacity, resources and autonomy necessary to promote and protect personal health (Ajzen, 1991; Whitehead, Poval, & Loring, 2014). Furthermore, negotiating risk, given the abundance of health information available, is often challenging (Ahmed, Naik, Willoughby, & Edwards, 2012; Wu & Ahn, 2010). Finally, the community may perceive any government intervention as 'nanny statist' and an unnecessary invasion into people's lives (Calman, 2009).

Investigation is needed to explore perceptions of the Australian public about the benefits and risks of consuming alcohol, and how the message that alcohol causes cancer is interpreted and understood. A comprehensive analysis of the impact that information warning of alcohol-related cancer is best

achieved through the use of qualitative research methods (Wilkinson & Room, 2009), that facilitate analysis of the complexity of concepts, or social processes, pertaining to alcohol and cancer.

In this article we examine how Australian males and females, aged between 18 and 65, respond to the information that alcohol causes cancer. Focus group data (38 participants) were thematically analysed within a social constructionism epistemology (Sargent, 1973), informed by ideas from critical realism (Dingle, 1980). This methodology allowed for acknowledgement that there may be a reality, (e.g. alcohol has a biological effect), but what can be known about the reality is socially constructed through language (Potter, 1996b). Here, we consider the role that language plays in the production (and reproduction) of alcohol consumption, cancer, and how health messages are understood (Keane, 2009).

Method

Based on our purposive sampling strategy (i.e. stratified by age and gender), 38 participants who self-identified as light-to-moderate consumers of alcohol were recruited via a professional market research agency in Adelaide, South Australia. Database members were contacted by telephone and invited to partake in a group discussion about alcohol-related cancer, and the proposed introduction of warning labels on alcoholic beverages. Additional information (which included location of the study, privacy of information, remuneration for time and associated costs, etc.) was then sent to potential participants by post. All personal details such as names and contact details were not made available to the investigators.

Research has suggested that alcohol consumption, (Australian Bureau of Statistics, 2012; Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm, & Gmel, 2009), as well as attitudes toward both alcohol (e.g. Callinan, Room, & Livingston, 2014) and cancer (e.g. Murray & McMillan, 1993; Vrinten, van Jaarsveld, Waller, von Wagner, & Wardle, 2014) may differ according to gender and age. Therefore, homogeneous groups (i.e. two all-male, and two all-female groups with individuals aged 25–35 years; one all-male, and one all-female group with people aged 55–65 years; and one mixed gender group of 18–24 year olds) were created to explore any common threads within and between these two demographic characteristics (Vaughn, Schumm, & Sinagub, 1996).

The audio and visually recorded sessions lasted approximately 90 minutes. Focus group recordings were orthographically transcribed, and entered into the qualitative computer program NVIVO-10 (Richards, 1999). We used qualitative analytic techniques (e.g. Potter, 1996a) to examine the discursive construction of resistance (e.g. see Crossley, 2003; Wilson & Stapleton, 2007) to the message that alcohol causes cancer, and any implied need to alter personal alcohol consumption to reduce the risk of cancer. The extracts presented in this paper were selected as the most relevant and concise examples of the primary themes, illustrating discursive strategies used by focus group participants.

Results

Thematic Analysis, within a social constructionist paradigm (Braun & Clarke, 2013) informed by critical realist ideologies (Sargent, 1973), was employed to investigate repeated patterns of meaning, and identify two dominant themes within the data: (a) the uncontrollability of cancer, and (b) the normalising of alcohol consumption. The following analysis is presented in two sections. The first focuses on respondents' construction of cancer as unavoidable, thereby rendering behaviour change as futile; the second, on how focus group members provided accounts of their own drinking practices that worked to 'normalise' these practices within society.

Cancer is unavoidable: therefore, behaviour change is futile

In each focus group, participants described cancer as an unavoidable disease, and implied the futility of efforts to avoid cancer.

Extract 1 (Females 25–35)

Madison: I would say over time, any alcohol would do it, but I'm a big anything causes cancer type of person (*laughs*)
Kirsten: But then in the society everything causes cancer, so...

Extract 2 (Females 25–35)

Jenny: I guess I'm in denial about a lot of health warnings I mean you see them on everything but, and because cancer's thrown around as so many things causing cancer, um,
Gabby: People are desensitised to it and oh it's just another thing that causes cancer
Kirsten: It's like mobile phones and this and that and everything else

Extract 3 (Males 55–65)

Craig: So [it] came as news to me, but when you think about it well everything causes cancer no matter what you eat or drink or breathe

Extract 4 (Males & Females 18–24)

Usher: I think yet another one to add to the list
Rhys: Then again what doesn't cause cancer, coffee causes cancer, sunscreen causes cancer, probably taking a bath causes cancer
Victoria: Everything can cause cancer

Participants commonly stated that, '*everything' or 'anything*' causes, cancer' (e.g. Extract 1), and '(alcohol is) *just another thing*' that causes cancer' (Extract 2). These statements typically followed the question, 'What is the first thing that comes to mind when I say alcohol causes cancer?' The frequency of these responses suggests that this type of counter-argument is readily available, and may be indicative of a dominant perception about cancer. Other features of their conversation also support this interpretation.

Using phrases such as '*everything* causing cancer' and '*anything* causes cancer', has enabled participants to draw upon elements of a previously-used grammatical construction (i.e. in the question) to create a new meaning. This rhetorical strategy, known as *parallelism* (Van Dijk, 1997), is the act of repeating or mimicking syntactic sentence structure, and is argued to be one way that people 'draw attention to preferred meanings' (Van Dijk, 1997, p. 35) or make a message 'sound different' (Potter, 1996b). Moreover, replacing 'alcohol' with '*everything*' or '*anything*' facilitates the discursive use of vagueness: 'alcohol' is a specific description of a cancer-causing product, whereas 'everything' is a vague description (Drew & Holt, 1998). Thus, whilst the message that alcohol causes cancer is prescriptive, and implies that consumption could be modified to reduce the risk of cancer, changing the meaning to '*everything*' or '*anything*' causes cancer, alters the focus of what causes cancer, and challenges the rationale of changing one behaviour, when all behaviours cause cancer.

In addition, broadening the message to infer that '*everything*' or '*anything*' causes cancer might have aided in weakening the alcohol causes cancer message through creating ambiguity; an ambiguous or vague message (or account) can be more easily undermined or ridiculed, and less easily challenged by specific facts or information (Potter, 1996b). Potter (1996b) has argued that rhetorical vagueness can be used in situations where someone is withholding support or agreement. Indeed, there were many occasions where participants talk worked to resist the message that alcohol causes cancer.

Such resistance was achieved in part through the use of *extreme case formulations* (ECF) (Basham, 2010), and *hyperboles* and *metaphors* (e.g. Lakoff & Johnson, 2008). For example, the inclusion of the extreme descriptors of '*everything*' and '*anything*' in this context is rhetorically constructive in quantifying the enormity of the things that cause cancer. Here, it is not merely that *some* things cause cancer – *everything* or *anything* does, which enables the respondent to maintain the position that cancer is inescapable, and therefore attempts to avoid it, futile.

Some participants used hyperboles and metaphors to make inappropriate and exaggerated analogies to the alcohol causes cancer message (e.g. Lakoff & Johnson, 2008), again weakening the impact of this message. For example:

Extract 5 (Group 1 – Females 25–35)

Danielle: It's to me it's like really? The alcohol this time, are you gonna tell me eating a toothpick's gonna cause cancer?

Extract 6 (Group 5 – Males 25–35)

Harry: My boss turns around and goes, oh next water will be creating cancer. Oh and the other the other comment that I got at work was and when are they putting a label on the sun?

By offering a list of banal things that are unlikely to cause cancer (e.g. water, air, toothpick, coffee, etc.; see also Extracts 3 & 4), and representing them as being unsafe, respondents essentially put forth a straw man argument (Talisse & Aikin, 2006). The use of these flawed, extreme, responses work to weaken the intended message and resist any implied need for change.

The hyperboles and metaphors used by participants were often incorporated into a *three-part list* to 'emphasis(e) the generality of something' (Potter, 1996b, p. 197). Craig, for example, presented a position that '…everything causes cancer no matter what you eat or drink or breathe' (Extract 3). Similarly, Rhys (Extract 4), claims that coffee, sunscreen, and 'probably taking a bath causes cancer'. The use of a three-part list thus facilitated the construction of normal and necessary activities as possible causes of cancer. Such language works both to buttress their assertions that '*everything* causes cancer', and the use of a straw man argument (Talisse & Aikin, 2006). Kirsten (Extract 1) also employed a three-part list use of – 'this and that and everything else'. In addition to providing an endorsement of Madison's contention that 'anything causes cancer', the vagueness of her description of cancer-causing agents, works to avert criticism for providing incorrect information.

Overall, within these participants' speech, the theme that *cancer is unavoidable* works to establish resistance to the message that alcohol causes cancer, and any implied need to change drinking behaviours. In this context, it functioned to position the individual such that even if they wanted to change their behaviour to avoid cancer, this would not be possible due to the enormity and uncertainty of what causes cancer. As a consequence, the individual can discursively excuse themselves from taking action to reduce the risk of cancer and not modify alcohol consumption to heed the warning.

The normalisation of alcohol consumption to justify drinking practices

To further demonstrate the impracticality of altering alcohol intake to reduce cancer risk, participants worked to normalise both personal alcohol consumption, and alcohol in society. This was achieved, first, by depicting drinking as a normal and necessary part of life; and second, through the presentation of self as a prototypical and responsible consumer of alcohol.

Extract 7 (Males & Females 18–24)

Willow: There's certain people in my friendship group that I'm only friends with because they drink in this last month I've had something on every single weekend like whether it be weddings, birthdays, engagements, everything. And with my family and the friends, like friends that have I've got, its, it's kind of like a given, you have to drink um so I think in the last month I reckon I've got drunk every weekend and it sounds really bad, sounds really terrible

Extract 8 (Females 25–35)

Danielle: …and I'm not doubting it at all, um, but like, I drink probably also a bit differently, like my work involves, not really drinking, but networking, and it's during the day as well, and I am not saying you have to have a drink, but at lunch time, when you are out at dinner, like at a formal table, and everyone's drinking, it does a) ease the conversation, and b) yea we just do do it generally, so yea

Extract 9 (Females 55–65)

Theresa: I did drink, so um, but not every night, just at weekends socially and everything, and when you sorta start cutting back, there's a lot of peer pressure, they're going 'oh, go on, have one' and so I sort of realised that I'd have to pour a drink and pretend I was drinking it, like, as long as they saw a glass in front of me they were happy, but then if I didn't have it, they were think I wasn't being very sociable

Participants' talk here illustrates the implicit social obligations associated with alcohol consumption. Danielle describes drinking alcohol as a necessary part of her job – and as 'not really drinking, but networking' (Extract 8). Others reported the same obligations when attending social events, and expressed some of the problematic consequences of not drinking, for example, criticism for being unsociable.

Here, alcohol consumption is being normalised as a necessary and required part of participants' life, with no 'choice' but to drink. Such talk works to position individuals as prototypical in-group members with shared ideologies, such that their alcohol consumption is necessary for them to meet their in-group responsibilities (Buvik & Sagvaag, 2012). Danielle does not explicitly state that there is no alternative but to consume alcohol, rather, asserting 'I'm not saying that you have to drink', but she has carefully negotiated her speech in order for it to be inferred. In all, people within this focus group setting were working to problematise the position of *not* drinking, and to portray the out-group position (i.e. someone who does not participate in 'normalised' drinking practices), as undesired.

Furthermore, participants' accounts of past drinking behaviours worked to normalise both former alcohol consumption and current practices. Following the prompt question 'How much do you drink?' participants' responses typically included an explanation that their current alcohol consumption was much less than it had been in the past

Extract 10 (Group 5 – Males 25–35)

Harry: I am not a big drinker um I used to be when I was younger um but you know I've got kids and a wife and all that kind of stuff and you just don't go out and get drunk

Extract 11 (Group 7 – Males & Females 18–24)

Xanthia: ….. I used to drink a lot more when I was younger

Participants, regardless of age, declared that they drank ('a lot') more when they were younger than they do now. This talk facilitated their positioning as prototypical in-group members, by implicitly constructing 'others' (i.e. youth) as behaving recklessly, in contrast to themselves (i.e. adults), who drink responsibly (Emslie, Hunt, & Lyons, 2012). Stereotypically, youth was depicted as a time for going out and getting drunk (Emslie et al., 2012), and heavy alcohol consumption was often presented as part of growing up, as a rite of passage (Department of Health, 2004). Nearly all participants reported that their drinking practices had changed over time, either with age and maturity, or due to family/parental responsibilities. Through establishing a contrast with a past undesirable behaviour, their current alcohol consumption was normalised and presented as unproblematic.

The unproblematic, responsible, nature of participants' current drinking was further expressed through the use of the phrase, '*everything* in moderation'. This served a similar rhetorical function to the phrase '*everything* causes cancer', but here, '*everything*' is an extreme case formulation (Basham, 2010) that works to justify the position that any behaviour (including alcohol consumption) is 'okay', if carried out in a moderate fashion (Extract 8). For example:

Extract 12 (Females 55–65)

Rhonda: I think everything in moderation
Sue: And I think that's the thing, um that you know it's, it's having the occasional glass is okay, but when you get that um the alcoholic, the excessive person, um that that continues, and you know has that potential to do the damage to the liver

Extract 13 (Males 55–65)

Alex: I live by the rule that everything's okay in moderation, and as long as you do it in moderation
David: Yep
Alex: There is a risk with everything you do you just do it in moderation

The trope '*everything* in moderation' construes extreme behaviour as a cause for concern, but approaching all things (whether healthy or unhealthy) in a moderate way, as being ideal. It is thus implied that a moderate amount of alcohol is acceptable: however, here, what constitutes moderate alcohol consumption is left inherently unclear and subjectively determined. This talk works a) as a normalisation technique, to 'establish the norm' (Wetherell, Taylor, & Yates, 2001, p. 277), and to avoid defining or endorsing precisely what particular behaviour is deemed 'moderate'; b) to further dismiss, or resist, the message that alcohol causes cancer, but in such a way that enabled the speaker to take up the publically preferred position of being a responsible, health conscious individual (e.g. Crawford, 1980).

Additionally, moderation is linked with ideas of 'health transgression' such that a 'little of what you fancy does you good' and 'a healthy lifestyle might be the death of you' (Davison, Smith, & Frankel,

1991; Lupton & Chapman, 1995). These lay concepts of moderation are considered 'common-sense' and, therefore, health promotion advice is likely to be resisted if it challenges these widely held beliefs. Notably, in the context of our focus group discussions, the importance of moderation was only affirmed by people aged 55 to 65 years, which could suggest a generational attitude or maturity toward any behaviour (e.g. Crossley, 2003). Here, the 55- to 65-year-olds presented death and illness as effecting those who were careless or undisciplined with personal health; by contrast, individuals who behaved in a responsible and moral manner are understood to have the right to continue with their (perceived) moderate alcohol consumption (Crossley, 2003).

Discussion

Our analysis of the language used by focus group participants identified two distinct themes that together demonstrate participants' discursive resistance to the alcohol causes cancer message: (a) cancer is unavoidable, therefore behaviour change is futile, and (b) the normalisation of alcohol consumption to justify drinking practices.

Participants collectively constructed cancer as an inevitable disease, rendering any effort to avoid cancer through behaviour change as pointless. Respondents used a number of discursive strategies; for example extreme case formulations and hyperboles, to claim that no matter what they did they were going to get cancer. The dominant response that '*everything*' and '*anything*' 'causes cancer', served a number of discursive functions. Specifically, in the context of these focus groups, where participants were asked what came to mind when they were told that alcohol causes cancer, the participants generally said '*everything* causes cancer' in ways that demonstrated a discursive resistance, not only towards the message, but ultimately to changing behaviour to heed to the warning.

Participants were prompted to provide accounts of their drinking practices; however, in doing so, responses typically included language that worked to establish the normality of these practices. Consuming alcohol was constructed as a necessary part of life (i.e. professional networking or maintaining friendships), and participants negotiated their drinking practices to portray themselves as just doing what they had to do, rather than what they wanted to do. Participants provided practical reasons for drinking (e.g. increase confidence, reduce anxiety, networking etc.), and few reported drinking because they wanted to, or because they liked drinking. This is consistent with previous research which demonstrated that, although pleasure has an obvious association with alcohol (Harrison, Kelly, Lindsay, Advocat, & Hickey, 2011; Klein & Jess, 2002), it is rarely included in prevention discourses, being undervalued as a primary catalyst for alcohol consumption (Bergmark, 2004). People often report enjoyment from drinking (Emslie et al., 2012), yet discourse around alcohol consumption nearly always includes a practical justification, for example to reward a hard day's work, or celebrate special occasions (Lyons, Emslie, & Hunt, 2014). Providing a practical rationalisation for personal alcohol consumption may work to resist being positioned as an irresponsible or risky drinker, something considered undesirable in many cultures. These representations work to resist the alcohol causes cancer message, and remove accountability for any adverse health consequences (here, cancer) resulting from their alcohol consumption.

There are three final points to conclude: First, the response, '*everything* causes cancer', could be considered to be part of a co-constructed interaction (Jacoby & Ochs, 1995), and therefore a limitation of the research. The structure of the initial question 'What is the first thing that comes to mind when I say alcohol causes cancer?' may have primed or facilitated the response that *'everything* causes cancer' or '*anything* causes cancer'. Warnings and messages stating that 'smoking causes cancer' are prolific, making it a very recognisable, easily accessible phrase (Wold, Byers, Crane, & Ahnen, 2005) that is culturally meaningful (Jacoby & Ochs, 1995). Framing the focus group questions differently may have prompted different initial responses.

Second, these resistant responses may be a consequence of the vast (perhaps overwhelming) amount of health information available within the Australian culture (Hoorens, Smits, & Shepperd, 2008). Several participants spoke of conflicting health information (Wu & Ahn, 2010), expressing scepticism regarding the reliability of the information. Media's role in shaping public perceptions and propagating

confusion is well noted, as the interminable supply of health information is often misrepresented or over-reported (Hoorens et al., 2008). Furthermore, the growth of the internet has enabled information about health and disease to become readily accessible, yet much of this information is inaccurate and of low quality (Ryan & Wilson, 2008). The weight of alcohol advertisements – particularly during sporting competitions sponsored by alcohol companies (Jones, Phillipson, & Barrie, 2010), and pro-drinking messages on social media (Cavazos-Rehg et al., 2015; Jones & Magee, 2011), may also serve to counter messages of alcohol-related harm. Nevertheless, as the amount of information available increases to the point of overload, decision-making abilities decrease, making it difficult to process information (Eppler & Mengis, 2004); people may thus become confused, ignore the information, and do nothing.

Our analysis further suggests that the 'alcohol causes cancer' message is competing with, and undermined by, current health information about safe levels of alcohol consumption, and any associated health benefits. Our participants self-identified as light-to-moderate consumers of alcohol, thus meeting the National Health and Medical Research Council (NHMRC) guidelines of no more than two standard drinks daily (National Health and Medical Research Council [NHMRC], 2013); accordingly, they may consider their current alcohol consumption as safe. As there is no safe level of alcohol consumption with regard to cancer, (Cancer Council Australia [CCA], 2016), further efforts may be needed to deliver accurate, consistent information to reduce confusion, and improve awareness of alcohol-related cancer risk.

Finally, the message that alcohol causes cancer, and the way this information is disseminated requires further consideration. First, it seems plausible that alcohol-warning labels stating 'Alcohol Causes Cancer' will prompt precisely the same resistance as reported here – although participants had no knowledge of alcohol-related cancer risk prior to taking part in the study, and therefore some of the questions raised may have been prevented with the provision of more information. Labels that provide specific health information (e.g. 'One in five breast cancers are caused by alcohol') may be less likely to prompt this resistance, but more research is needed to determine this. There is some evidence to suggest that positively framed messages are less likely to be met with resistance (Seitz & Becker, 2007), so labels that highlight positive aspects of reducing alcohol consumption might be more effective in eliciting behaviour change. Second, alternative methods for communicating health risk information (e.g. television advertising or media campaigns) may be more effective than alcohol warning labels at raising awareness of alcohol-related cancer risk (Corcoran, 2013). Even so, alcohol warning labels, in conjunction with other public health initiatives, may strengthen the validity of this health message in a similar way to warnings on cigarette packaging (Kees, Burton, Andrews, & Kozup, 2010). Certainly, labels may be part of changing the attitude towards alcohol (Louise, Eliott, Olver, & Braunack-Mayer, 2015), and there is some evidence of a shift in the perceptions of alcohol as being harmful (Azar et al., 2014; Eliott, Forster, McDonough, Crabb, and Bowd (under review)). Nonetheless, further research is needed to fully understand the impact of this relatively new health message, and how alcohol warning labels might effectively communicate this information.

Conclusions

Alcohol consumption significantly increases the risk of several types of cancers, including two of the most common – breast and bowel cancer (Nelson et al., 2013). Reducing alcohol consumption is an important yet understated cancer prevention strategy, particularly compared to strategies such as screening, anti-tobacco campaigns, or genetic testing. The introduction of cancer-related alcohol warning labels may be one strategy to raise awareness of the risks; however, the message that 'alcohol causes cancer' alone, is likely to be met with resistance, and therefore, unlikely to elicit behaviour change. This study builds upon previous research (Wilkinson & Room, 2009) to provide a more nuanced account of public perceptions and attitudes toward alcohol warning labels and alcohol-related cancer risk messages, identifying specific points of resistance and how these are re-produced in conversation. The authors suggest that further research is needed to fully understand the impact of message that alcohol causes cancer, and how (at individual-and population-level) to reduce national cancer burden through a reduction in alcohol consumption.

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Article

'Alcohol causes cancer': a difficult message for Australians to swallow

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Summary

Alcohol is a modifiable risk factor for cancer. Public awareness of the link between alcohol and cancer risk is poor; thus, alcohol consumers may be unknowingly putting themselves at increased risk of cancer. One way to raise awareness of alcohol-related cancer is through placing labels warning of cancer risk on alcoholic beverage containers; however, little is known about the impact of such labels. We conducted seven focus groups, comprising participants who self-identified as low-to-moderate alcohol consumers, to gauge public attitudes towards the labels and messages relating to alcohol-related cancer risk. Transcripts of discussions were coded to identify emergent themes. Participants expressed a negative response to the alcohol warning labels, and their talk worked to challenge the legitimacy of alcohol-related cancer messages, and the entities responsible for disseminating the information. These responses functioned to counter any implied recommendation for reduction in speakers' alcohol consumption. These findings illustrate how the general population make sense of information about health risks, using this knowledge to make decisions about personal behaviour. In combination with other public health initiatives, alcohol-warning labels have the potential to increase awareness of cancer risk and help in the fight against cancer, but any messaging will need to account for probable consumer resistance.

Key words: alcohol, warning labels, cancer, thematic analysis, discursive analysis

BACKGROUND

Most cancers result from exposure to environmental, lifestyle or behavioural risk factors (Stewart and Wild, 2015). Tobacco and asbestos are well recognized as carcinogens by the public, but ethanol—the key element of alcoholic beverages—is not (Hobin *et al.*, 2020; Stockwell *et al.*, 2020). Some research suggests that alcohol is the most popular psychoactive drug in the world (Jankowski and Hoffmann, 2016), as well as one of the most addictive and harmful drugs (Nutt *et al.*, 2010). Alcohol is consumed by ~80% of Australians aged 15 years and over(Australian Institute of Health & Welfare, 2016), andaccording to the National Health and Medical Research Council (NHMRC) guidelines (NHMRC, 2016), a substantial proportion of drinkers consume alcohol at a level that is considered to increase their risk of alcohol-related harm (Australian Bureau of Statistics, 2018). On a typical occasion, 49% of Australians report consuming 1–2 standard drinks, 49% report 3 or more standard drinks and 2% are unsure of how much they typically consume (Australian Bureau of Statistics, 2018). Moderate alcohol consumption is

classified as up to one drink per day for women and up to two drinks per day for men(National Institute on Alcohol Abuse and Alcoholism, 2015), and there is considerable evidence that low-to-moderate chronic alcohol consumption is linked to a significant increase in cancer risk (Winstanley *et al.*, 2011; Nelson *et al.*, 2013; Vasiliou *et al.*, 2015).

There are three main ways alcohol can cause cancer(Cancer Research UK, 2018). First, ethanol in the body is broken down in the liver by an enzyme called alcohol dehydrogenase (ADH), which transforms ethanol into a toxic compound called acetaldehyde (CH_3CHO), a known carcinogen (Cancer Research UK, 2018). Acetaldehyde can cause cancer by damaging DNA and stopping our cells from repairing this damage(Cancer Research UK, 2018). Second, alcohol consumption can increase the levels of some hormones (such as oestrogen and insulin), which can modify how cells grow and divide(Sun *et al.*, 2020). These changes can alter the structural development of mammary glands and cause breast cancer in women(Hong *et al.*, 2010; Wong *et al.*, 2011). Third, alcohol can alter the cells in the pharynx and larynx, which may make it easier for other carcinogens (such as tobacco) to be more readily absorbed; leading to cancers of the mouth and throat(Cancer Research UK, 2018; Sun *et al.*, 2020). Epidemiological evidence can support the determination that alcohol causes cancer of the oropharynx, larynx, oesophagus, liver, colon, bowel and breast (in women) (International Agency for Research on Cancer, 2010; United Kingdom Government, 2016; World Health Organization, 2019).

As an individual's consumption of alcohol increases, so does the risk of cancer(Rehm and Shield, 2015; United Kingdom Government, 2016; Perreault *et al.*, 2017). Though there is limited (longitudinal) evidence demonstrating that a reduction in alcohol will reduce cancer risk, there is sufficient evidence to indicate that increasing alcohol consumption does increase risk; therefore, it is reasonable to infer that reducing alcohol consumption, will reduce alcohol-related cancer risk. Recent studies conclude that individuals who consume alcohol—even at low levels—have an increased risk of getting cancers of the oesophagus, mouth, throat and breast (in women), compared withthose who do not consume alcohol at all(Bagnardi *et al.*, 2015; United Kingdom Government, 2016). Additional findings suggest that the risk of alcohol-related cancers may decrease in people who stop drinking alcohol, however, for the risk to reach levels similar to those who have never consumed alcohol, it can take many years (United Kingdom Government, 2016; Connor, 2017).

Information about the link between alcohol and cancer is available in mainstream media (a common source of health information), but may be obscured or challenged by competing health messages(Eliott *et al.*, 2018). Alcohol consumers, therefore, may be making ill-informed decisions about alcohol consumption and their health. Awareness of the other risks or health-related consequences (e.g. birth defects, car accidents, etc.) associated with alcohol consumption is high (Chainey and Stephens, 2016; Foundation for Alcohol Research and Education, 2016). This awareness is possibly due to extensive media coverage (Fogarty and Chapman, 2012) and the current use of warning labels on alcoholic beverage containers that communicate these risks (Stockwell, 2006; Al-hamdani, 2014). In Australia, warning labels that display *cancer* risk messages have been proposed to improve consumer knowledge of the risks associated with alcohol consumption and cancer (Australian Chronic Disease Prevention Alliance, 2011; Blewett *et al.*, 2011) and thus facilitate autonomous decision-making.

Alcohol warning labels have been argued to be a far-reaching, cost-effective method to communicate health information (Whitehead *et al.*, 2014), with a high-level of public and political support (Foundation for Alcohol Research and Education, 2019; Hobin *et al.*, 2020). This strategy, unlike other government-led reforms or interventions (e.g. taxes or price increases), does not restrict the availability of alcohol products (Wagenaar*et al.*, 2009), and therefore, is less likely to be deemed 'nanny statist' or an act to restrict freedom of choice (Calman, 2009; Basham, 2010). Rather, this approach is presented as enhancing autonomous, informed decision-making (Binder and Lades, 2015), leaving responsibility for healthcare choices and behaviours firmly with the consumer (Koelen and Lindström, 2005).

This approach, however, rests on the assumptions that each individual has the skills, capacity, resources and autonomy necessary to promote and protect personal health (Bandura, 1986; Ajzen, 1991) and is able to discriminate between competing risk messages and decide on 'appropriate' personal conduct to minimize risk of disease or illness (Petersen, 1996). To date, evidence to demonstrate that the inclusion of alcohol warning labels increases awareness of alcohol-related risk is mixed (Giesbrecht and Greenfield, 1999; Jones and Gordon, 2013; Coomber *et al.*, 2015). Moreover there is little evidence that increased awareness influences changes to alcohol consumption (Hankin *et al.*, 1993; Stockwell, 2006; Wilkinson and Room, 2009). This may be, in part, because of the social and cultural

significance of alcohol consumption (Roche *et al.*, 2009; Babor *et al.*, 2010).

From a public health perspective, the social and cultural significance of alcohol consumption is generally understood by the amount of alcohol consumed, drinking patterns and intoxication within the community (Savic *et al.*, 2016). The emphasis is on risky or harmful use of consuming alcoholand primarily focuses on individual behaviours and responsibilities (Hunt and Barker, 2001; Savic *et al.*, 2016). The problem here is that this rhetoric obscures some of the culturally significant practices (e.g. celebrations, religious occasions, etc.(Stollznow, 2003; Murphy *et al.*, 2017) and associations (e.g. pleasure, social connection, intimacy, cultural belonging, etc.;Klein and Jess, 2002; Babor *et al.*, 2010; Peele and Grant, 2013)with alcohol use. The social and cultural significance of alcohol consumption in many countries is such that any attempt to advocate for a change of behaviour—namely reduction—in alcohol consumption, is likely to engender resistance (Eliott and Miller, 2014; Bartram, Eliott, and Crabb, 2017).

Beyond the cultural significance of alcohol, changing any health-behaviour is difficult, as many factors contribute to the likelihood of adopting and maintaining a healthy lifestyle (Rogers, 1975; Janz and Becker, 1984). Placing safety warnings on a product may make a 'symbolic statement concerning the nature of that substance' (Wilkinson and Room, 2009) and, thus, could contribute to changing the culture of harmful drinking in Australia and internationally (Cancer Council Australia, 2016). To date, however, there is uncertainty concerning the effectiveness of health warnings on alcoholic products (Tobin, Moodie, and Livingstone, 2011), as some messages appear to challenge some of the perceived benefits and cultural experience sassociated with alcohol consumption, and stimulate a negative response (Eliott and Miller, 2014; Bartram *et al.*, 2017).

In this article, we describe how working Australian men and women (aged between 18 and 65) responded to alcohol warning labels displaying cancer risk messages. Our approach to purposive sampling helped to ensure we captured any gender and age differences in alcohol consumption (Australian Bureau of Statistics, 2012), attitudes towards alcohol (Callinan *et al.*, 2014) and views around cancer (Murray and McMillan, 1993; Vrinten *et al.*, 2014).

We aim to gain an understanding of how the Australian public might make sense of information about alcohol-related cancer risk, and how this knowledge might be used to make decisions about personal behaviour. To the authors' knowledge, this is the first research of its kind to explore public response to such messages. Research findings may be used to inform the construction of public health messages that avoid any potentially negative response and thus increase the uptake and efficacy of such messages.

This study was approved by the University of Adelaide Ethics Committee(HS-2013-050).

METHODS

We used a market research agency to recruit men and women aged between 18 and 65 years of age, who (i) self-identified as low-to-moderate alcohol consumers and (ii) did not have a prior cancer diagnosis, or family member diagnosed with cancer, to participate in focus group discussions (i.e. to limit any potentially adverse effects from the topics discussed.) This method of participant recruitment was employed to ensure the focus groups included participants who met these inclusion criteria (Greenbaum, 1998).

The market research agency contacted potential participants—using their established database—based on our criteria, distributed information sheets and gained consent from each respondent prior their participation in the focus group. Participation in the research was voluntary, and participants' personal details were masked from the researcher to ensure complete anonymity. Participants were compensated with a standard honorarium of $50 for partaking in the focus group research, which included any reimbursement for any travel or car parking expenses, as well as a remuneration for their time.

Using this purposive sampling strategy, seven focus groups (totalling 38 participants) were comprised as follows: two male only groups aged 25–35 years, two female only groups aged 25–35 years, two groups of 55–65 year olds (one male only and one female only) and one mixed gender group aged 18 and 24 years. As mentioned above, these groups were created given gender and age differences in alcohol consumption (Australian Bureau of Statistics, 2012), attitudes towards alcohol (Callinan *et al.*, 2014) and views around cancer (Murray and McMillan, 1993; Vrinten *et al.*, 2014).

Focus group discussions facilitated by the first author were guided by pre-designed questions/topics to elicit conversation among research participants about their knowledge and experiences with alcohol, cancer and the message that alcohol causes cancer. Alcoholic beverage containers (i.e. bottles and cans) included a visual representation of possible alcohol warning labels. These included messages based on current statistics of the harmful effects of alcohol:'one in five breast cancers are caused by alcohol'; '6% of all cancers are caused by

alcohol'; 'Alcohol causes cancer'; 'Three drinks a day increases your risk of bowel cancer by 20%'; 'Two or more drinks a day can increase your risk of mouth and throat cancer by over 50%' and 'Drinking alcohol increases your risk of developing cancers' (World Health Organization, 2015). The audio-visually recorded sessions lasted ~90 min and were orthographically transcribed by the first author. All personal information was anonymized prior to being entered into the qualitative computer program NVIVO-10 (Richards, 1999).

Data were thematically analysed within a social constructionist framework (Gergen, 1999) to explore patterns in talk and meaning, as described by Braun and Clarke (Braun and Clarke, 2006; Clarke and Braun, 2013).Specifically, the data were thematically analysed at a latent (or interpretive) level, such that underlying ideas and ideologies were examined and developed into themes—as opposed to a manifest style of analysis which involves the development of categories(Braun and Clarke, 2006; Vaismoradi *et al.*, 2013).

To minimize coding bias, themes were identified using a collaborative, open coding process guided by the first author. This process involved the first author coding common themes across the seven focus groups (using NVIVO) and presenting the data to the co-authors. Interpretation of these data was then discussed among the research team. Any differences of opinion were resolved through consultation with the original interview data. Data collection ceased once data saturation was achieved (Fusch and Ness, 2015).

Two key assumptions underpin our analysis. First, that the cultural and social significance of alcohol is socially produced and reproduced through language (Harréand Van Langenhove, 1991); therefore, shared social experiences are drawn upon to re-construct (not just describe) social reality (Potter, 1996b; Andrews, 2012). Second, the meaning of language is context-specific and interpretations will vary depending on the nature of the discussion (Potter and Wetherell, 1987). The extracts presented in this article represent the most relevant and concise examples of the primary theme, illustrating some discursive strategies used by participants. To improve readability, talk that does not contribute to the meaning or analytical usefulness of the information has been omitted. Our results and discussion are presented together: thus, important concepts are raised and discussed in context (Burnard *et al.*, 2008).

RESULTS AND DISCUSSION

The primary theme identified within participant responses was 'motivated scepticism'(Ditto and Lopez, 1992). Motivated scepticism describes the way motivational factors influence personal judgement, and the tendency for individuals to respond critically to information that they do not wish to receive (Ditto and Lopez, 1992). Throughout the focus group discussions, motivated scepticism was exhibited through the way participants challenged the legitimacy of alcohol-related cancer messages and the entities responsible for disseminating these messages. Participants achieved this in three ways, presented here as subthemes: (i) undermining the scientific validity and legitimacy of the alcohol–cancer link; (ii) offering anecdotal evidence as a counter-argument and (iii) scrutinizing current public health messages and rationalization in the form of excuses. These responses worked to defend a speaker's position as an alcohol consumer, and present plausible reasons for action (or inaction) in relation to alcohol consumption, by discrediting the message that alcohol causes cancer.

Undermining scientific validity and legitimacy

The first way in which participants exhibited motivated scepticism was to undermine the scientific validity and legitimacy of the alcohol–cancer link. In discussing the example labels presented during the focus group discussions, participants often spoke about the (perceived) contradictory nature of available health information, including information around alcohol consumption. Though contradictions of this nature are not necessarily present in current health guidelines, this strategy worked to both undermine and challenge the legitimacy and source of the *alcohol causes cancer* message.

> Extract 1 (Women 55–65)
>
> Olive It's confusing, it really is confusing. . . . one minute they say you can have a glass of red wine a day, a few weeks later, oh you'd better not do that.
>
> Extract 2 (Women 25–35)
>
> Kirsten They're also saying it's good to have a couple of drinks a night and then they're saying no don't because it causes cancer. . . . there's no real set guide saying yes, it's a definite thing that it causes cancer.

As suggested by Olive, receiving conflicting information causes confusion; previous researchers have asserted that this confusion results in scepticism towards further information and the validity of the scientific research that produces said information (Covello and Peters, 2002; Vardeman and Aldoory, 2008). Essentially, this talk works to undermine legitimacy by questioning the appropriateness of the alcohol–cancer warning.

This de-legitimization was typically performed through the reporting of irregularities in health information. For example, our focus group members drew attention to contradictory reports about red wine consumption (see Extracts 1 and 2), and other commodities, such as milk and Brazil nuts (see Extract 3). Furthermore, in the context of a focus group about alcohol, Eli's talk (Extract 3) works to establish alcohol as an 'ordinary' commodity, comparable to milk and nuts (Babor *et al.*, 2010)—separating alcohol from other known cancer causing products such as tobacco (Jemal *et al.*, 2011).

Extract 3 (Men 55–65)

Eli One minute milk's good for you, the next it's bad for you, then it's good for you

David Exactly, and then they're sayin' [eat] brazil nuts . . . and now they're saying that brazil nuts aren't healthy for you. I mean huh?

Commonly, consumer product information (including benefits or hazards) is communicated through multiple media platforms (Brossard and Scheufele, 2013) and, although there is a high level of public interest in science and scientific discovery (Davis, 1958; National Science Board, 2016), the ability of the public to apply appropriate reasoning strategies to scientific issues, is limited (Allum *et al.*, 2008). Moreover, the nature of science is such that what is known, and what is able to be known, is subject to change (Miller, 2004). This changeability means that scientific knowledge is always contestable, and therefore both the source and content of scientific knowledge is always open to be construed as unreliable (Irwin and Wynne, 2003). Here, participant talk thus articulates a dilemma contingent upon changeable assessments, perhaps as a result of technological advancements. Conveying this quandary works to justify a position that the unreliability of available information makes establishing appropriate health-protective behaviours (or following recommendations) difficult—if not impossible—and potentially a waste of time if further technological advancements then reveal the benefits of consuming a product that was once considered hazardous.

De-legitimization was also performed by presenting arguments and value judgments that worked to undermine or marginalize the credibility of the entity perceived to be accountable for the information (Van Leeuwen, 2007). Participants, however, rarely referred to a specific entity, rather speaking of an undefined 'they' (e.g. Extracts 1–3). As demonstrated in Extracts 1–3, the use of 'they' appeared to reference an entity who had been afforded the right to speak about health promoting behaviours, either an institution (e.g. government) or individual (e.g. scientist). In this context, 'they' worked as a constructive strategy (Van Leeuwen and Wodak, 1999) to build and establish two distinct groups: focus group participants ('we') and authorities ('they'). Whilst it is possible that the lack of specificity expressed by respondents may demonstrate a deficit in scientific literacy and uncertainty of research practices (National Science Board, 2016), in this context, avoiding reference to specific facts or details enables the respondent to deflect challenges regarding their scientific knowledge (Potter, 1996a).

Anecdotal evidence

The second way in which participants' motivated scepticism was demonstrated was through the use of anecdotal evidence. Participants presented personal evidence to counter the claims of alcohol-related cancer, and contest personal risk.

Extract 4 (Women 25–35)

Chelsea I think the only way to make someone actually see it, is if it did cause cancer in someone close to them, and then they saw, with their own two eyes, the effects of it.

Elise [like] with smoking you can directly link someone who's died after being a smoker, . . . but people will probably look in their own personal circumstances and think, blah, blah drank like a fish and was fine. I think people will try and match up with somebody in their lives, and if they can't see it they might just dismiss it.

Extract 5 (Men 25–35)

Isaac There's someone, that would be late 80s, and is a heavy, heavy drinker but yet, is as fit as a fiddle, he still drives, he still plays golf, he's still healthy. But he'd probably drink a bottle of vodka a day. . . . and you think how's this guy doin' what he's doin' with no health [effects]

Here, participants presented evidence that is currently available and readily accessible through personal knowledge and experience, rather than conveyed via an independent authority. This talk had three functions: first, to call into question the lack of tangible proof to support the alleged risk of cancer (Michael, 1992), second—given talk discrediting authorities—it allowed participants to offer logical alternatives based on their own 'evidence' (Hoeken, 2001), and third, participants used an active voice to confirm that other individuals would also resist the alcohol causes cancer message (Wooffitt, 1992). Essentially participants presented justifications

for their, and others', (in)action, and bolstered their argument by exposing scientific knowledge as both visibly fallible (as no one has seen it 'with their own two eyes'), and imperialistic (as it dismisses personal experience) (Michael, 1992). Additionally, anecdotal evidence is often more difficult to evaluate than statistical evidence as personal stories create emotional attachments, which in turn influence the way we think (Hoeken, 2001).

Scrutinization and excuses

The third way in which motivated scepticism was displayed was through participants' scrutinization of current public health messages and using rationalization in the form of excuses. Although alcohol consumption is considered socially and culturally acceptable (Babor *et al.*, 2010), ignoring health warnings, such as *alcohol causes cancer*, typically is not (Rosenstock, 1990; Petersen, 1996). As participants self-identified as light to moderate alcohol consumers (study criteria), many engaged in conversation that worked to mitigate responsibility for personal alcohol consumption after hearing the risk of alcohol-related cancer. This third strategy—scrutinizing current public health messages—was often exhibited through the use of accounts. Accounts are socially approved vocabulary used whenever an action does not align with personal or cultural expectations and there is a need to deflect potential criticism or neutralize one's actions (Austin, 1971; Orbuch, 1997). In our data, one type of account, that is, *excuses* (Scott and Lyman, 1968), were often employed by participants when discussing either a lack in risk communication or misinformation.

Two forms of excuses—*appealing to defeasibility* and *scapegoating*(Scott and Lyman, 1968)—allowed participants to present rational explanations for their behaviour, despite potential health hazards. Arguments that imply *defeasibility* are demonstrated through claims of misinformation, or lack of 'free will' (Sykes and Matza, 1957)—factors that influence responsible decision-making (Hart, 1949). *Scapegoating* works as a discrediting strategy whereby the speaker shifts blame or responsibility away from themselves to a target person or group (Scott and Lyman, 1968).

Extract 6 (Women 55–65)

Naomi I think there are a few of us who really haven't been aware of the connection …Why hasn't it been a more widely known until now?

I've heard a number of times that a glass of wine is good for the soul, it's good for the well-being.

Extract 7 (Men 25–35)

Paul After a few drinks, I don't think I would be reading the labels too much.

Naomi's talk (see Extract 6) worked to deflect any intimation of blame for personal alcohol consumption by claiming that if she had been given accurate information—and warned of the alcohol–cancer link—she might have altered her behaviour. Instead, Naomi recounts her understanding of the health benefits associated with consuming alcohol and presents herself as an individual who attends to public health messages. Additionally, Naomi is able to shift personal responsibility to those who have told her of the benefits of consuming wine. This talk represents a form of discursive manipulation, such that offering a particular version of 'facts' allows the speaker to exempt themselves of responsibility, maintain positive self-presentation, and depict others as accountable for the negative situation (Van Dijk, 2006).

As demonstrated in Extract 7, Paul negated responsibility for consuming alcohol by claiming interference with his 'free will', such that when intoxicated (i.e. absence of complete consciousness), he was unlikely to be able to read alcohol warning labels. This talk has two functions. First, Paul is able to manage personal accountability through defeasibility, and an inability to act responsibly due to impairment (yet does not raise the possibility of reading the labels before this point). Second, Paul's talk works to cast doubt on the utility of warning labels and undermine the possibility that the messages of the alcohol–cancer link will have any real impact on reducing alcohol consumption.

In the extract below, Elise works to deflect any implied criticism of person alcohol consumption, by appealing to defeasibility (misrepresentation of cancer-causing products) and scapegoating (government responsibility). Further, this extract also represents the way in which groups worked to collectively discredit the presentation of the alcohol causes cancer message. Emphasizing government-regulated restrictions on tobacco (a known cancer-causing agent) and smoking enabled speakers to avoid appearing irresponsible for ignoring genuine public health messages.

Extract 8 (Women 25–35)

Elise I think as well, smoking has been banned in restaurants, cafés (and) bars. You can't smoke inside club(s). It's a bit of an oxymoron saying this [alcohol] will cause cancer but there are nightclubs, bars, or restaurants out there where your sole purpose is to just drink the night away. If it was so bad then the government would ban nightclubs, restaurants and bars from selling it.

Here, Elise presents an argument whereby if alcohol causes cancer (like tobacco) the government would put laws into place to protect public safety (as done for tobacco) (Fleming and Parker, 2015) and 'ban nightclubs and bars from selling it' (Extract 8); however, as this is not the case, alcohol must be safe to consume. In querying the rationale of banning one cancer-causing activity (smoking) (Cooper *et al.*, 2010), but not the other (drinking), Elise effectively shifts the focus onto the governments' role in safeguarding public health, and the wrongfulness of continuing to sell a product known to cause cancer. By doing so, Elise is able to deflect personal responsibility, and excuse her decision to continue consuming alcohol.

CONCLUSIONS

The aim of this study was to examine how participants responded to the message that alcohol causes cancer as presented on cancer-warning labels on alcohol products, and the discursive strategies employed to support their position. Our analysis illustrates how understandings of the benefits (e.g. cardiovascular benefits of red wine) of alcohol consumption are strongly embedded in public discourse, and readily available as a resource to undermine any claims that (i) alcohol causes cancer and (ii) this risk requires individual action to reduce alcohol consumption. Participants in our focus groups used discursive strategies to undermine the scientific validity and legitimacy of the alcohol–cancer link, and the (perceived) contradictory nature of available health information and drinking guidelines. They used anecdotal evidence to counter the claims of alcohol-related cancer, contested personal risk and scrutinized current public health message. Drawing attention to incongruities within available understandings served two functions, working to, one, de-legitimize the message and the entities providing the risk information, and two, to counter personal responsibility for personal alcohol consumption.

Within a focus group setting, we identified several strategies that enabled our participants to defend personal alcohol consumption in the face of the potential cancer risk argument. Though this methodology has well documented advantages in social science research (Stewart and Shamdasani, 2014), it also presents certain challenges(Smithson, 2000). We acknowledge that these discursive strategies were produced in the specific setting of a focus group, and thus were shaped by features of that setting, such as the questions used to guide discussions; the researchers' role also involved the interpretation, generation and construction of meaning in the process of data analysis. For this reason, the data were analysed using a collaborative, open coding process guided by the first author.

Our analysis illustrates how understandings of the benefits (e.g. cardiovascular benefits of red wine) of alcohol consumption are strongly embedded in public discourse, and readily available as a resource to undermine any claims that a) alcohol causes cancer and b) this risk requires individual action to reduce alcohol consumption. Drawing attention to incongruities within available understandings served two functions, working (i) to delegitimize the message and the entities providing the risk information and (ii) to counter personal responsibility for personal alcohol consumption. Health promotion necessitates the provision of risk information in an attempt to discourage unsafe or unhealthy behaviour, and enable people to increase control over their health (Crossley, 2001). Nevertheless, general conceptions of health, and how personal health is achieved, are complex (Williams, 1998). As Beck (1999) and Lupton (1999) have argued, risk has become a key concept in contemporary society such that people are bombarded with information about behaviours that should be avoided. This proliferation of health/risk information, together with the inconsistencies and/or changeability of scientific evidence, creates confusion and mistrust (Crossley, 2003). Our analysis demonstrates how this is actualized in conversation. Specifically, respondents expressed confusion and mistrust by presenting conflicting health information and providing examples of anecdotal evidence to invalidate warnings of alcohol-related cancer risk. Ultimately, motivated scepticism (Ditto and Lopez, 1992) was exhibited in response to risk information—alcohol causes cancer—that the focus group participants did not wish to receive.

The findings presented in this article highlight the need for a comprehensive health promotion approach to communicate alcohol-related cancer risk, in a similar way as has been achieved with anti-smoking campaigns. It is not uncommon for new public health messages or interventions (e.g. seatbelts, gun control, cigarette warning labels, etc.) to generate anger and resistance before being accepted as commonplace (Jochelson, 2006; Calman, 2009; Basham, 2010). However, at least so far as they elicit the negative responses documented here, warning labels alone are unlikely to be successful in changing behaviour. It is worth noting, however, that some of the talk generated here appears to capture participants' responses to new health information; as the public becomes better informed about the alcohol–cancer link, these public responses may change. Certainly, support of other entities (e.g. media, government,

doctors etc.) to present a united—and consistent—message about the link between alcohol and cancer, is necessary to ensure that alcohol warning labels do not simply add to the confusion and (mis)understandings around alcohol consumption (Eliott *et al.*, 2018). Health promotion necessitates the provision of risk information in an attempt to discourage unsafe or unhealthy behaviour, and enable people to increase control over their health (Crossley, 2001). Nevertheless, general conceptions of health, and how personal health is achieved, are complex (Williams, 1998). As Beck (1999) and Lupton (1999) have argued, risk has become a key concept in contemporary society such that people are bombarded with information about behaviours that should be avoided. This proliferation of health/risk information, together with the inconsistencies and/or changeability of scientific evidence, creates confusion and mistrust (Crossley, 2003). Our analysis demonstrates how this is actualized in conversation. Specifically, respondents expressed confusion and mistrust by presenting conflicting health information and providing examples of anecdotal evidence to invalidate warnings of alcohol-related cancer risk. Ultimately, motivated scepticism (Ditto and Lopez, 1992) was exhibited in response to risk information—alcohol causes cancer—that the focus group participants did not wish to receive.

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Health promotion strategies seeking to reduce alcohol consumption could also be informed by the successes and failures of cigarette warning labelling and campaigning, given the shared association with cancer risk (Al-hamdani, 2014). One notable similarity between the current study and cigarette warning labelling research is the way in which smokers actively avoid or divert their attention away from cigarette health warning labels(Hiilamo, Crosbie, and Glantz, 2014; Maynard *et al.*, 2014). The use of graphic, explicit or overtly threatening language has been shown to elicit psychological reactance (Dillard and Shen, 2005) and is associated with reactance resulting from freedom threat perception(LaVoie *et al.*, 2017). Further research has shown that freedom threat perceptions led to reductions in source credibility and increases in source derogation (Bessarabova *et al.*, 2013; LaVoie *et al.*, 2017), findings that are consistent with the results presented in this study. Understanding current challenges associated with reporting the link between alcohol and cancer may help identify strategies most likely to be acceptable and/or least likely to elicit resistance within the populace, thus increasing the likelihood of prompting reduction in alcohol consumption and incidence of alcohol-related cancers.

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