

Awareness of Alcohol as a Carcinogen and Support for Alcohol Control Policies



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Introduction: Alcohol use increases cancer risk, yet awareness of this association is low. Alcohol control policies have the potential to reduce alcohol-caused cancer morbidity and mortality. Research outside the U.S. has found awareness of the alcohol–cancer link to be associated with support for alcohol control policies. The purpose of this study is to estimate the prevalence of support for 3 communication-focused alcohol policies and examine how awareness of the alcohol–cancer link and drinking status are associated with policy support among U.S. residents.

Methods: Investigators analyzed data from the 2020 Health Information National Trends Survey 5 Cycle 4. Analyses were performed in 2021. The proportion of Americans who supported banning outdoor alcohol advertising and adding warning labels and drinking guidelines to alcohol containers was estimated. Weighted multivariable logistic regression was used to examine how awareness of the alcohol–cancer link and drinking status were associated with policy support.

Results: Most Americans supported adding warning labels (65.1%) and drinking guidelines (63.9%), whereas only 34.4% supported banning outdoor alcohol advertising. Americans reporting that alcohol had no effect/decreased cancer risk had lower odds of support for advertising ban (OR=0.56), warning labels (OR=0.43), and guidelines (OR=0.46) than Americans aware of the alcohol–cancer link. Moreover, heavier drinkers had lower odds of support for advertising ban (OR=0.41), warning labels (OR=0.59), and guidelines (OR=0.60) than nondrinkers.

Conclusions: Awareness of the alcohol–cancer link was associated with policy support. Increasing public awareness of the alcohol–cancer link may increase support for alcohol control policies.

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INTRODUCTION

An estimated 3 million deaths globally were caused by alcohol consumption in 2016, including 378,000 (12.6%) alcohol-attributable cancer deaths.¹ Alcohol consumption increases the risk of 7 cancer types, including cancers of the breast, mouth, and colon.^{2–4} All beverage types containing ethanol increase cancer risk in a dose–response relationship, and consumption even at low levels increases the risk of some cancers.^{2,5} Moreover, alcohol cessation is associated with decreased cancer risk over time.^{6–8} Therefore, policies designed to reduce alcohol consumption may be effective cancer prevention strategies.⁹

In the U.S., alcohol contributed to an average of >75,000 cancer cases and almost 19,000 cancer deaths per year between 2013 and 2016.¹⁰ However, despite this significant cancer burden, awareness of alcohol's

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carcinogenic risks is suboptimal.¹¹ For instance, a 2017 national survey found that only 38% of Americans were aware that drinking too much alcohol could lead to cancer.¹² Similarly, a 2017 survey by the American Institute for Cancer Research found that 39% of Americans were aware that alcohol increased cancer risk.¹³ In the same survey, 93% and 80% of Americans were aware that tobacco and asbestos, respectively, increased cancer risk.¹³ Studies monitoring alcohol consumption and the related harms also reveal increasing alcohol use, high-risk drinking, and alcohol use disorders among Americans.^{14–16} Interventions to mitigate these trends are needed, and raising awareness of the alcohol–cancer link may offer a promising new strategy to increase the motivation to reduce alcohol consumption.¹⁷

Improving awareness about the link between alcohol and cancer may also help to increase support for alcohol control policies, which in turn may reduce the population risk for alcohol-related morbidity and mortality, including from cancer.⁹ For instance, Buykx et al.¹⁸ found that awareness of the alcohol–cancer link was associated with greater odds of support for 7 alcohol control policies (e.g., increasing price, health warnings) among adults in New South Wales, Australia. Similarly, Bates and colleagues¹⁹ surveyed adults in England and found that awareness of the carcinogenic effects of alcohol was associated with support for a variety of alcohol control policies, including pricing and marketing policies. In addition, Weerasinghe et al.²⁰ used a quasi-experimental design to examine the impacts of adding cancer warnings to alcoholic beverages in Yukon, Canada. The researchers found that knowledge of the alcohol–cancer link was associated with greater odds of support for regulating alcohol pricing, availability, and marketing. Furthermore, a media campaign in Denmark describing the alcohol–cancer link increased both awareness and support for minimum unit pricing, a ban on alcohol advertising, and mandatory nutrition labeling.²¹ To date, no known research has examined the relationship between awareness of the alcohol–cancer link and support for alcohol control policies in the U.S. population.

Elucidating the factors that influence the support for alcohol control policies is vital to policymakers because policy support helps to shape political will, an essential component of public health policy implementation.^{22–24} Although some work has been done to examine the public support for alcohol taxation and sales restrictions in the U.S., less is known about the support for communication-related policy measures such as advertising restrictions and product labeling, which have the potential to influence consumption behaviors.²⁵ Moreover, measuring the support for communication-focused

alcohol policies is timely because several public health organizations recently (October 2020) submitted a petition to the Alcohol and Tobacco Tax Trade Bureau encouraging new cancer-specific health warnings for alcoholic beverages.²⁶ The aims of this study are to estimate population-level support for communication-related alcohol control policies and examine how awareness of the alcohol–cancer link and drinking status are associated with policy support in a U.S. sample.

METHODS

Study Sample

Investigators analyzed data from the Health Information National Trends Survey (HINTS) 5 Cycle 4 (2020), a cross-sectional, nationally representative postal survey that is administered to assess Americans' access to, need for, and use of cancer and health information and technology. HINTS used a 2-stage sampling design. In the first stage, a stratified random sample of addresses was selected, with an oversample of addresses from a stratum containing high-minority census tracts. In the second stage, 1 adult was selected from each selected household. A detailed description of the HINTS design has been published elsewhere.^{27,28} The survey was administered February 27, 2020–June 15, 2020.

Measures

Support for 3 communication-related alcohol policies was measured: (1) banning outdoor alcohol advertising, (2) requiring health warnings on alcoholic beverage containers, and (3) requiring recommended drinking guidelines on alcoholic beverage containers. Policy support was measured by asking: *To reduce the problems associated with excessive alcohol use, to what extent would you support or oppose. . . with each policy listed in a matrix grid.* Response options were *strongly oppose, oppose, neither support nor oppose, support, and strongly support*. Responses were dichotomized to *support (support/strongly support)* versus all other responses.

Awareness of the alcohol–cancer link was measured separately for wine, beer, and liquor by asking: *In your opinion, how much does drinking the following types of alcohol affect the risk of getting cancer?* Responses were *decreases risk a lot, decreases risk a little, no effect, increases risk a little, increases risk a lot, and don't know*. Responses were coded as *increases risk (a little/a lot), no effect/decreases risk (no effect/decreases risk a little/a lot), and don't know*. Responses of *no effect/decreases risk* were combined because both responses are incorrect and because <3% reported decreased risk for liquor and beer. The 3 alcohol–cancer awareness items were highly correlated ($r=0.87–0.90$). Therefore, the authors created a composite alcohol–cancer awareness item to serve as the primary predictor. If respondents reported that any of the 3 beverage types increased cancer risk, they were categorized as *increases risk*. Among those remaining, respondents reporting *no effect/decreased risk* for any beverage type were categorized as *no effect/decreased risk*. All remaining respondents reported *don't know* for all items and were categorized accordingly.

Current drinking was measured using 3 items: (1) *During the past 30 days, how many days per week did you have at least one drink of any alcoholic beverage?*; (2) *During the past 30 days, on*

the days when you drank, about how many drinks did you drink on average?; and (3) During the past 30 days, how many times did you have [5 for male respondents, 4 for female respondents] or more alcoholic drinks on one occasion? A figure pictorially showing 1 drink equivalents of beer (12 fluid ounces), malt liquor (8–9 fluid ounces), wine (5 fluid ounces), and 80-proof distilled spirits (1.5 fluid ounces per shot) was displayed before these items. Using the 2020–2025 U.S. Dietary Guidelines for Americans,²⁹ participants were categorized as heavier drinkers (consuming >1 drink per day or ≥4 drinks on a single occasion for female respondents or >2 drinks per day or ≥5 drinks on a single occasion for male respondents), drinkers (consuming ≤1 drink per day and not consuming ≥4 drinks on a single occasion for female respondents or ≤2 drinks per day and not consuming ≥5 drinks on a single occasion for male respondents), and noncurrent drinkers (no past 30-day drinking), referred to as nondrinkers in the remaining part of this paper.

Sociodemographic measures included sex, age, race/ethnicity, education, and income perceptions (e.g., living comfortably or finding it difficult on present income). Given the high rates of drinking among cigarette smokers, this study also controlled for current smoking status. Furthermore, because previous research suggests that significant variance in policy support is explained by political ideology or party identification, political viewpoint was included.^{30,31} All models also adjusted for survey return time stamped before or after the coronavirus disease 2019 (COVID-19) pandemic was declared on March 11, 2020.

Statistical Analysis

All analyses were performed in 2021 using StataSE, version 16. Analyses were weighted with sample weights, and 50 jackknife replicate weights were applied to compute design-adjusted SEs. The design-corrected Pearson chi-square/(second-order correction of Rao and Scott³²) was used to assess bivariate relationships. A total of 3 weighted multivariable logistic regression models were run to examine the relationship of awareness between the alcohol–cancer link, drinking status, and other covariates with policy support. Investigators looked for evidence of multicollinearity first by including all the 3 alcohol–cancer awareness items (i.e., wine, beer, liquor) with predictor variables and covariates. Variance inflation factor values were 5.25 for liquor, 6.56 for beer, and 6.14 for wine–cancer awareness items. After replacing the 3 alcohol–cancer awareness items with the composite alcohol–cancer awareness item, the variance inflation factor for the composite variable was 1.09 (variance inflation factor values for all other predictors were ≤1.17). Therefore, the authors included a composite measure of alcohol and cancer awareness in all models.

This study also examined whether the relationship between awareness of the alcohol–cancer link and policy support was moderated by drinking status. Interactions between awareness and drinking status yielded 4 interaction terms in each model (Appendix Table 1, available online). Of the total 12 interaction terms (across 3 models), 11 of 12 were nonsignificant. Therefore, all interaction terms were removed, and results are reported with no moderation.

A total of 3 sensitivity tests were conducted. The authors first reran all models using the missing indicator method, which involved creating a response option for missingness for all variables. This approach maximizes sample size by retaining

observations with missing data. Missingness for all variables ranged from 0% to 9.9% and was highest for political viewpoint (9.9%), Hispanic ethnicity (9.2%), and drinking status (8.4%). Next, each model was rerun, replacing the composite awareness item with the 3 separate awareness items. This was conducted for both listwise deletion and the missing indicator approach. Finally, each model was rerun 3 times, and the composite awareness item was replaced with 1 of the 3 awareness items (e.g., wine–cancer awareness item). Similarly, this was run using both listwise deletion and the missing indicator approach.

Sensitivity analysis results are reported in Appendix Tables 2 and 3 (available online). Listwise deletion and missing indicator approaches yielded similar findings; therefore, results from listwise deletion are reported. Similarly, findings from the inclusion of a composite variable of awareness and a single measure of awareness for a single beverage type yielded comparable results. Results are reported from models using the composite awareness variable to avoid multicollinearity and because this approach more robustly captures awareness. The HINTS 5 was given a non-human subjects determination by the NIH Office of Human Subjects Research through exemption #13204 on April 25, 2016.

RESULTS

A total of 3,865 adults participated in HINTS 5 Cycle 4 (response rate=36.66% using the American Association for Public Opinion Research Response Rate 4 formula²⁷), representing a population estimate of 253,815,197 Americans. Most Americans supported requiring health warnings (65.1%) and drinking guidelines (63.9%) on alcoholic beverage containers. Fewer Americans (34.4%) supported banning outdoor alcohol advertising. Approximately half of Americans (52.1%) were nondrinkers; 19.6% were (past 30-day) drinkers, and 28.3% were heavier drinkers.

Awareness of the alcohol–cancer link was low, with 31.8% reporting an increased risk (composite variable). By individual beverage type, 20.3%, 24.9%, and 31.2% of Americans were aware that wine, beer, and liquor, respectively, increased cancer risk. Moreover, approximately half of participants responded *don't know* (wine: 51.8%, beer: 54.0%, liquor: 51.6%) to the 3 awareness items, and 48.7% were coded as *don't know* using the composite variable. Table 1 includes weighted point estimates and 95% CIs for support for each policy overall and by sociodemographic characteristics.

Across all the 3 policies, support was higher among Americans aware that alcohol increased cancer risk than among those responding *no effect/decreases risk*. For example, 75.4% and 72.6% of Americans aware that alcohol increases cancer risk supported adding health warnings and drinking guidelines on beverage containers compared with 56.1% and 53.2% among those responding *no effect/decreases risk*, respectively. Similarly, 37.8% of those aware supported banning outdoor

Table 1. Unadjusted, Weighted Proportion of Americans Supporting Alcohol Control Policies Overall and by Sociodemographic Characteristics

Characteristics	Outdoor alcohol advertising ban		Health warning labels		Drinking guidelines	
	Weighted estimate (95% CI)	p-value	Weighted estimate (95% CI)	p-value	Weighted estimate (95% CI)	p-value
Overall	34.4 (31.9, 37.1)	—	65.1 (62.6, 67.5)	—	63.9 (61.4, 66.4)	—
Alcohol—cancer risk beliefs		<0.001		<0.001		<0.001
Increase risk	37.8 (33.4, 42.5)		75.4 (70.8, 79.4)		72.6 (68.2, 76.7)	
No effect/decrease risk	23.6 (19.4, 28.3)		56.1 (48.3, 63.6)		53.2 (45.9, 60.4)	
Don't know	36.5 (32.7, 40.4)		61.9 (58.9, 64.9)		62.5 (59.6, 65.3)	
Current drinking		<0.001		0.003		<0.001
Nondrinker	42.8 (38.3, 47.4)		70.2 (65.4, 74.5)		70.2 (66.0, 74.1)	
Drinker	28.6 (23.4, 34.5)		64.8 (59.0, 70.3)		59.6 (53.2, 65.7)	
Heavier drinker	21.9 (18.8, 25.4)		56.9 (50.9, 62.7)		56.7 (51.2, 62.0)	
Sex		0.002		0.014		<0.001
Female	39.3 (36.2, 42.4)		69.5 (66.3, 72.5)		70.1 (67.1, 72.9)	
Male	30.0 (25.7, 34.6)		61.3 (56.4, 66.0)		58.1 (53.8, 62.4)	
Age, years		<0.001		0.817		0.203
18–39	32.8 (27.5, 38.6)		66.6 (60.0, 72.6)		68.0 (61.3, 74.1)	
40–59	30.6 (27.1, 34.3)		65.5 (61.7, 69.1)		61.7 (57.4, 65.9)	
≥60	42.3 (39.4, 45.3)		64.7 (61.3, 67.9)		63.3 (60.1, 66.4)	
Race		0.007		0.134		0.085
White	32.2 (29.3, 35.2)		63.9 (61.4, 66.3)		61.7 (58.8, 64.5)	
Black	42.4 (35.3, 50.0)		65.7 (58.4, 72.3)		68.7 (61.0, 75.4)	
Other	42.3 (33.9, 51.2)		72.3 (63.8, 79.4)		68.8 (60.6, 76.0)	
Ethnicity		0.939		0.207		0.090
Non-Hispanic	34.5 (31.5, 37.8)		64.7 (62.0, 67.3)		62.8 (60.2, 65.3)	
Hispanic	34.3 (28.3, 40.8)		69.7 (62.4, 76.1)		69.3 (61.9, 75.8)	
Education		0.234		0.018		0.009
≤High school/technical school	35.8 (30.9, 40.9)		60.8 (55.5, 65.8)		59.2 (53.7, 64.5)	
Some college	31.0 (26.4, 36.0)		66.8 (62.7, 70.7)		64.1 (59.5, 68.4)	
≥College degree	36.2 (32.4, 40.2)		69.4 (65.8, 72.8)		69.9 (66.0, 73.5)	
Income perceptions		0.032		0.485		0.578
Living comfortably	30.3 (26.9, 33.9)		63.1 (59.0, 67.0)		62.3 (58.0, 66.5)	
Getting by	36.8 (32.9, 40.9)		67.1 (62.8, 71.2)		66.0 (61.3, 70.4)	
Finding it difficult	36.5 (31.0, 42.4)		66.4 (58.2, 73.7)		64.4 (57.1, 71.0)	
Current smoking		0.039		0.024		0.031
Nonsmoker	35.4 (32.7, 38.1)		67.0 (64.3, 69.0)		65.3 (62.8, 67.7)	
Smoker	27.7 (21.5, 34.9)		56.0 (46.4, 65.2)		55.6 (46.4, 64.4)	
Political ideology		0.556		0.069		0.004
Liberal	36.5 (31.4, 41.9)		71.3 (65.2, 76.7)		72.2 (66.9, 77.0)	
Moderate	34.0 (29.0, 39.3)		64.4 (59.7, 68.9)		62.2 (57.0, 67.2)	
Conservative	33.0 (29.5, 36.7)		62.5 (57.5, 67.2)		60.1 (55.7, 64.3)	

Note: Boldface indicates $p < 0.05$.

Current drinking is defined as past 30-day drinking. p -values are from design-corrected Pearson chi-square with the second-order correction of Rao and Scott.³² Drinkers consumed ≤ 1 drink per day and did not consume ≥ 4 drinks on a single occasion for women and ≤ 2 drinks per day and did not consume ≥ 5 drinks on a single occasion for men. Heavier drinkers consumed > 1 drink per day or consumed ≥ 4 drinks on a single occasion for women and > 2 drinks per day or consumed ≥ 5 drinks on a single occasion for men.

alcohol advertising, compared with 23.6% of those responding *no effect/decreases risk*. Policy support among Americans responding *don't know* fell in between those responding *increases risk* and *no effect/decreases*

risk, with 36.5% supporting advertising bans, 61.9% supporting warnings, and 62.5% supporting guidelines.

Policy support was highest among nondrinkers, followed by drinkers, and was lowest among heavier drinkers. For instance, 42.8% of nondrinkers supported

restrictions on outdoor alcohol advertising, compared with 28.6% of drinkers and 21.9% of heavier drinkers. Similarly, 70.2% of nondrinkers, 64.8% of drinkers, and 56.9% of heavier drinkers supported adding health warning labels on alcoholic beverages. Examining unadjusted support by demographic characteristics, support was generally higher among females than among males, among non-Whites than among Whites, among those with higher educational attainment, and among non-smokers than among smokers.

Table 2 reports the adjusted odds of supporting the 3 alcohol control policies. Across all 3 policies, Americans responding that alcohol has *no effect/decreases risk* had lower odds of support than those responding that alcohol increases cancer risk (advertising ban: OR=0.56, warnings: OR=0.43, guidelines: OR=0.46). Americans responding *don't know* also had lower odds of supporting warnings (OR=0.54) and guidelines (OR=0.63) than those aware of the alcohol–cancer link.

The adjusted models also revealed that heavier drinkers had lower odds of support for banning outdoor alcohol advertisements (OR=0.41), warnings (OR=0.59), and guidelines (OR=0.60) than nondrinkers. Drinkers had lower odds of supporting a ban on outdoor alcohol advertising (OR=0.60) than nondrinkers. Drinkers and nondrinkers had similar odds of support for warnings and guidelines.

Unlike awareness of the alcohol–cancer link and drinking status, no covariates were associated with support for all the 3 policies. However, several associations between covariates and policy support were found. For instance, males had lower odds of supporting an outdoor advertising ban (OR=0.68) and drinking guidelines on beverage containers (OR=0.66) than females. In addition, Americans aged ≥ 60 years had greater odds (than those aged 18–39 years) of supporting an outdoor alcohol advertising ban (OR=1.62). Those with a college degree or greater had higher odds of supporting the inclusion of warning labels (OR=1.54) and drinking guidelines (OR=1.79) on beverage containers than those with a high-school degree/technical degree or less. Those *getting by* had higher odds (OR=1.33) of supporting an outdoor advertising ban than those describing their income as *living comfortably*. Finally, moderate (OR=0.66) and conservative (OR=0.67) Americans had lower odds of support for adding drinking guidelines than liberal Americans. No associations were found between policy support and race, ethnicity, or smoking status.

DISCUSSION

Most Americans supported adding health warning labels (65.1%) and recommended drinking guidelines (63.9%)

to alcoholic beverage containers. By contrast, only 34.4% of Americans supported banning outdoor alcohol advertising. The odds of support for all the 3 policies were lower among Americans believing that alcohol has no effect/reduces cancer risk than Americans aware of the alcohol–cancer link. Americans responding *don't know* had lower odds of support for adding warning labels and drinking guidelines to alcohol containers than those aware of the alcohol–cancer link. Moreover, the odds of support were lower among heavier drinkers than among nondrinkers.

This is the first study to examine the relationship between alcohol control policy support and awareness of the alcohol–cancer link among a national U.S. sample. Research from Australia, England, Denmark, and Canada using different designs and measures has consistently found policy support to be associated with awareness of the alcohol–cancer link.^{18–21} Collectively, these findings suggest that increasing awareness of the alcohol–cancer link may increase alcohol control policy support, which may ultimately expedite policy adoption and implementation. Furthermore, >50% of Americans are unaware that alcohol affects cancer risk. Efforts are clearly needed to inform the public about this important modifiable cancer risk factor.

The finding that policy support was higher among nondrinkers is also consistent with previous research. Buykx and colleagues¹⁸ found that policy support was inversely related to alcohol consumption quantity. Similarly, Bates et al.¹⁹ found drinking status to be a significant predictor of support for alcohol price/availability, marketing/information, and harm reduction policies, with nondrinkers having greater support. These findings are unsurprising because alcohol control policies may trigger greater reactance among drinkers than among nondrinkers.³³

Although >60% of Americans supported adding warning labels and drinking guidelines to beverage containers, about a third supported banning outdoor alcohol advertising. The use of the term *banning* instead of *reducing* outdoor alcohol advertising may evoke reactance owing to preferences for personal control,³³ which may explain why fewer respondents endorsed such bans than those who supported warning labels and drinking guidelines (which are informational and do not restrict personal choice).

Only awareness of the alcohol–cancer link and current drinking status were consistently associated with policy support. These findings underscore the potential significance of awareness of the alcohol–cancer link and drinking status as factors that may influence alcohol control policy support. There are, of course,

Table 2. Weighted Odds of Supporting Communication-Related Alcohol Control Policies

Variables	Outdoor alcohol advertising ban (n=2,817)		Health warning labels (n=2,821)		Drinking guidelines (n=2,819)	
	Weighted OR (95% CI)	p-value	Weighted OR (95% CI)	p-value	Weighted OR (95% CI)	p-value
Alcohol–cancer risk beliefs						
Increase risk	ref		ref		ref	
No effect/decrease risk	0.56 (0.38, 0.81)	0.003	0.43 (0.26, 0.71)	0.002	0.46 (0.29, 0.74)	0.002
Don't know	0.84 (0.61, 1.17)	0.290	0.54 (0.41, 0.72)	<0.001	0.63 (0.46, 0.86)	0.004
Current drinking						
Nondrinker	ref		ref		ref	
Drinker	0.60 (0.40, 0.88)	0.010	0.86 (0.55, 1.34)	0.496	0.69 (0.46, 1.04)	0.073
Heavier drinker	0.41 (0.29, 0.57)	<0.001	0.59 (0.37, 0.93)	0.023	0.60 (0.41, 0.87)	0.009
Sex						
Female	ref		ref		ref	
Male	0.68 (0.50, 0.93)	0.019	0.75 (0.52, 1.07)	0.113	0.64 (0.47, 0.88)	0.006
Age, years						
18–39	ref		ref		ref	
40–59	0.91 (0.62, 1.34)	0.635	1.10 (0.71, 1.72)	0.652	0.91 (0.59, 1.42)	0.674
≥60	1.62 (1.12, 2.35)	0.011	1.11 (0.74, 1.68)	0.605	1.01 (0.65, 1.57)	0.958
Race						
White	ref		ref		ref	
Black	1.51 (0.96, 2.38)	0.075	1.17 (0.74, 1.86)	0.491	1.50 (0.88, 2.55)	0.130
Other	1.35 (0.86, 2.13)	0.185	1.30 (0.80, 2.10)	0.280	1.23 (0.75, 1.99)	0.403
Ethnicity						
Non-Hispanic	ref		ref		ref	
Hispanic	1.07 (0.67, 1.71)	0.769	1.32 (0.82, 2.12)	0.251	1.29 (0.90, 1.84)	0.166
Education						
≤High school/technical school	ref		ref		ref	
Some college	0.80 (0.53, 1.21)	0.284	1.41 (0.96, 2.09)	0.082	1.38 (0.92, 2.07)	0.121
≥College degree	1.19 (0.81, 1.76)	0.371	1.54 (1.03, 2.30)	0.035	1.79 (1.15, 2.79)	0.011
Income perceptions						
Living comfortably	ref		ref		ref	
Getting by	1.33 (1.05, 1.68)	0.017	1.16 (0.79, 1.71)	0.432	1.13 (0.78, 1.62)	0.514
Finding it difficult	1.39 (0.95, 2.01)	0.085	1.14 (0.66, 1.96)	0.638	1.00 (0.63, 1.58)	0.999
Current smoking						
Nonsmoker	ref		ref		ref	

(continued on next page)

Table 2. Weighted Odds of Supporting Communication-Related Alcohol Control Policies (continued)

Variables	Outdoor alcohol advertising ban (n=2,817)		Health warning labels (n=2,821)		Drinking guidelines (n=2,819)	
	Weighted OR (95% CI)	p-value	Weighted OR (95% CI)	p-value	Weighted OR (95% CI)	p-value
Smoker	0.84 (0.52, 1.34)	0.449	0.78 (0.50, 1.23)	0.286	0.89 (0.57, 1.39)	0.589
Political affiliation						
Liberal	ref	ref	ref	ref	ref	ref
Moderate	0.89 (0.62, 1.29)	0.534	0.74 (0.49, 1.10)	0.130	0.66 (0.46, 0.94)	0.023
Conservative	0.86 (0.59, 1.24)	0.403	0.73 (0.47, 1.12)	0.144	0.67 (0.46, 0.96)	0.030

Note: Boldface indicates $p < 0.05$.

Current drinking is defined as past 30-day drinking. Drinkers consumed ≤ 1 drink per day and did not consume ≥ 4 drinks on a single occasion for women and ≤ 2 drinks per day and did not consume ≥ 5 drinks on a single occasion for men. Heavier drinkers consumed > 1 drink per day or consumed ≥ 4 drinks on a single occasion for women and > 2 drinks per day or consumed ≥ 5 drinks on a single occasion for men. All models adjusted for survey return time stamped before or after the COVID-19 pandemic was declared on March 11, 2020 by the WHO.

many cultural, social, political, and commercial factors that affect alcohol consumption in the U.S. Therefore, raising awareness of the alcohol–cancer link alone may not be sufficient for increasing policy support, but these data reveal a consistent association (experimental or longitudinal data are needed to assess causality).

Limitations

Limitations of this study include the reliance on self-reported drinking status, which may have resulted in misclassification owing to under-reporting of drinking.³⁴ However, the authors have no reason to believe that it would affect the relationship between consumption and policy support. In addition, the alcohol measures assessed past 30-day drinking status and do not capture seasonal drinking behaviors.³⁵ Second, the measures of awareness of the alcohol–cancer link were not conditional on the quantity of alcohol consumed. However, a previous national survey assessed how drinking too much alcohol affected cancer risk and found similarly low levels of awareness.¹² Third, the policy support measures were worded, *To reduce the problems associated with excessive alcohol use...*, which could have encouraged higher endorsement owing to social desirability, although it seems unlikely that this would affect the associations with awareness and consumption. Fourth, the alcohol control policies available in the HINTS survey focused exclusively on communication-specific themes such as advertising and labeling.

CONCLUSIONS

Alcohol is a leading modifiable risk factor for cancer, yet most Americans are unaware that alcohol increases cancer risk. Misperceptions about the alcohol–cancer link were associated with lower odds of support for 3 alcohol control policies. Moreover, heavier drinkers had lower odds of policy support than nondrinkers. Because public opinion is one aspect of political will, which has been described as an essential component to the implementation of public health policies, increasing awareness and subsequently policy support may help increase the adoption of preventive alcohol policies.^{22–24} Increasing awareness of the alcohol–cancer link, such as through multimedia campaigns and patient–provider communication, may be an important new strategy for health advocates working to implement preventive alcohol policies.

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CREDIT AUTHOR STATEMENT

Andrew B. Seidenberg: Conceptualization; Formal analysis; Methodology; Writing - original draft; Writing - review & editing. Kara P. Wiseman: Conceptualization; Methodology; Writing - review & editing. Raimée H. Eck: Writing - review & editing. Kelly D. Blake: Writing - review & editing. Heather N. Platter: Writing - review & editing. William M.P. Klein: Conceptualization; Methodology; Writing - review & editing.

SUPPLEMENTAL MATERIAL

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