

Evaluating the Evidence: Public Awareness of the Association Between Alcohol and Cancer in the US

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Type of Investigation: Cross-sectional, population-based survey study.

Question: What proportion of the United States adult population are aware of the association between alcohol consumption and cancer risk and what sociodemographic, behavioral, and cancer beliefs are associated with this awareness?

METHODS

Design. Cross-sectional, population-based survey from the 2022 data from Health Information National Trends Survey (HINTS), a nationally representative survey of United States adults.

Outcome. The primary outcome was awareness of the association between alcohol and cancer risk based upon responses to the question, “Have you ever heard or read that alcohol increases the risk of cancer?” Responses were categorized, as “Yes, No, or Don’t know.” Covariates included sociodemographic, health, behavioral, and cancer belief-related variables.

Population. The population was U.S. adults ≥18 years who answered questions on alcohol-cancer awareness in the 2022 HINTS. A total of 5,937 respondents were included in the study.

Statistical Analysis. Survey-weighted statistical analyses were used to summarize the characteristics of the study population and prevalence of awareness of the association between alcohol and cancer. Survey-weighted multinomial logistic regression analysis was used to examine factors associated with awareness of the association between alcohol and cancer. The significance level was set at $p < 0.05$, and results were reported as adjusted odds ratios with 95% confidence intervals.

Follow-Up. There was no follow-up during this study.

RESULTS

Among 5,937 respondents, 50.7% were women, 17.0% Hispanic, 5.7% non-Hispanic Asian, 10.9% non-Hispanic Black, 61.3% non-Hispanic White, and 5.0% non-Hispanic other. Overall, 67.3% had no more than some college education, 10.1% reported a personal history of cancer, and 30.6% believed cancer prevention is not possible. Awareness that alcohol increases cancer risk was reported by 40.6% of respondents, while 39.1% were unaware and 20.4% were unsure. Awareness was lowest among non-Hispanic Black respondents (30.0%), those with no more than some college

education (35.2%), and those who believed cancer prevention is not possible (31.5%). In adjusted analyses, non-Hispanic Black respondents (OR 0.59; 95% CI 0.42-0.84), individuals with lower education (OR 0.62; 95% CI 0.45-0.85), and those who believed cancer prevention is not possible (OR 0.60; 95% CI 0.47-0.78) had significantly lower odds of awareness, whereas respondents with a cancer history had higher odds (OR 1.61; 95% CI 1.21-2.13).

Study Conclusion. The authors concluded that implementing the updated Surgeon General’s recommendation to include health warning labels on alcohol-containing beverages is needed to reduce the alcohol-related cancer burden in the United States.² They also advocated for stronger public health strategies and improved clinician-patient communication regarding these risks. Although the guidelines have been revised, awareness of the association between alcohol and cancer among United States adults still has substantial room for improvement.

Commentary. Fokom et al.¹ examined public awareness of the association between alcohol use and cancer risk across sociodemographic, behavioral, and cancer belief-related factors in the United States adult population. The authors reported adherence to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.³ The STROBE checklist is designed to improve the quality and transparency of reporting in observational studies, including cross-sectional, cohort, and case-control designs. It outlines 22 essential items that should be addressed in a manuscript and helps authors critically evaluate their research. Each item includes subcomponents with recommendations for how it should be presented.

The assessment of STROBE adherence showed that the authors included several elements that strengthened the study, such as descriptions of how quantitative variables were handled in the analyses, details about data sources, and clarification of outcomes, predictors, and potential confounders (Supplemental, available online at journals.ku.edu/kjm). However, several reporting deficiencies also were identified. For example, Fokom et al.¹ did not include an abstract, nor did the title specify the study design. The Methods section lacked information on potential sources of bias, while the Results section omitted reasons for non-participation, unadjusted estimates, category boundaries, and handling of missing data. The Discussion section did not provide a comprehensive interpretation of findings or address external validity.

Given that the HINTS data are derived from probability-based sampling involving stratification, clustering, and unequal probabilities of selection,⁴ the Preferred Reporting Items for Complex Sample Survey Analysis (PRICSSA) guidelines would have been more appropriate or used in conjunction with STROBE. These guidelines are recommended for all publicly available HINTS datasets.⁵ Using PRICSSA would have enhanced transparency

can play a key role in raising awareness and potentially reducing alcohol-related cancer burden.

Strengths. The authors' use of a nationally representative survey (HINTS) enhanced the generalizability of their findings,

Table. Itemized List of Each PRICSSA Item, a Detailed Description of Each Item, and Example Text of Each Item That Could Be Used in a Manuscript.

PRICSSA item	Description	Page
1.1 Data collection dates	Describe the survey's data collection dates (e.g., range) to provide historical context that could affect survey responses and nonresponse.	1
1.2 Data collection mode(s)	Describe the survey's data collection mode(s). Data collection mode can affect survey responses (e.g., to sensitive questions), including nonresponse, and a survey's data collection mode may change over time (e.g., during the COVID-19 pandemic).	No
1.3 Target population	State the target population the survey was designed to represent and describe all weighted estimates with respect to this target population.	1
1.4 Sample design	Describe the survey's sample design, including information about stratification, cluster sampling, and unequal probabilities of selection.	No
1.5 Survey response rate(s)	State the survey's response rate and how it was calculated.	No
2.1 Missingness rates	Report rates of missingness for variables of interest and models and describe any methods (if any) for dealing with missing data (e.g., multiple imputation).	No
2.2 Observation deletion	State whether any observations were deleted from the dataset. If observations were deleted, provide a justification. Note: It is best practice to avoid deleting cases and use available subpopulation analysis commands no matter what variance estimation method is used.	No
2.3 Sample sizes	Include unweighted sample sizes for all weighted estimates.	No
2.4 Confidence intervals/standard errors	Include confidence intervals or standard errors when reporting all estimates to inform the reliability/precision of each estimate.	1-2
2.5 Weighting	State which analyses were weighted and specify which weight variables were used in analysis.	1
2.6 Variance estimation	Describe the variance estimation method used in the analysis and specify which design variables (e.g., PSU/stratum, replicate weights) were used.	No
2.7 Subpopulation analysis	Describe the procedures used for conducting subpopulation analyses (e.g., Stata's "subpop" command, SAS's "domain" command).	No
2.8 Suppression rules	State whether or not a suppression rule was followed (e.g., minimum sample size or relative standard error).	No
2.9 Software and code	Report which statistical software was used, comprehensively describe data management and analysis in the manuscript, and provide all statistical software code.	1
2.10 Singleton problem (as needed)	Taylor Series Linearization requires at least two PSUs per stratum for variance estimation. Sometimes an analysis is being performed and there is only a single PSU in a stratum. There are several possible fixes to this problem, which should be detailed if the singleton problem is encountered.	No
2.11 Public / restricted data (as needed)	If applicable, state whether the public use or restricted version of the dataset was analyzed.	1
2.12 Embedded experiments (as needed)	If applicable, provide information about split sample embedded experiments (e.g., mode of data collection or varying participant incentives) and detail whether experimental factors were accounted for in the analyses.	No

by ensuring detailed reporting of survey design variables, weighting procedures, and variance estimation.⁵

Assessment Instrument. Evaluation of the study using the PRICSSA guidelines is shown in the Table. Several key reporting elements were missing, including information on data collection mode, sample design, survey response rates, and handling of missing data. In addition, details on variance estimation and unweighted sample sizes were not provided. Failure to account for these complex design features may hinder reproducibility, bias parameter estimates, and increase the likelihood of Type I error.⁴

CONCLUSIONS

While this study has limitations, it draws attention to a meaningful public health gap. The observed disparity in awareness across the educational and racial groups shows a need for targeted education, and the need for real implications for policy and clinical practice. Health professionals and public health campaigns

and the application of survey weights ensured appropriate representation across key demographic groups. The authors incorporated multiple relevant covariates, including sociodemographic and belief-based factors, providing a comprehensive analytical framework. Additionally, the results are timely and relevant, aligning with the release of the 2025 Surgeon General's guidance on alcohol and cancer risk.²

Limitations. The cross-sectional design limits causal inference. Potential selection bias may be present due to non-response and missing data that were not fully addressed. The outcome measure relatively was simplistic and may not have captured the nuances of participants' awareness. Although the authors claimed to have followed the STROBE guidelines, adherence was incomplete. While they used survey-weighted multinomial logistic regression to examine factors associated with awareness of the alcohol-cancer link, they did not report model performance measures, leaving uncertainty about how well the model fit the data.

COMPLIANCE WITH ETHICAL STANDARDS

Conflict of Interest. Dr Hawk reported receiving personal fees from multiple cancer centers for serving on external advisory boards, consulting, and co-chairing committees, as well as from Guardant Health for advising on blood-based cancer detection tests. He also reported institutional and federal grants related to cancer prevention and early detection, with partial salary support from an endowed chair position. No other disclosures were reported.

ARTICLE INFORMATION

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Conflict of Interest Disclosure: Samuel Ofei-Dodoo currently is the current Editor-in-Chief for the *Kansas Journal of Medicine*.

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