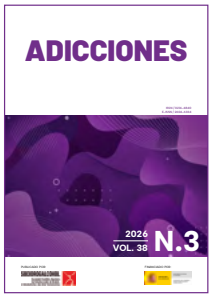
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ORIGINAL

The true meaning behind the concept of "drink responsibly" or "moderate consumption" in young people: An experimental study

El verdadero significado del concepto de "consumo responsable" o "consumo moderado" en los jóvenes: Un estudio experimental

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Abstract

Aims: The objective of this study was to examine young people's perceptions and perceived thresholds of "responsible", "moderate", and "risky" alcohol consumption. *Methods:* We conducted an experimental vignette-based study with 242 university students randomly assigned to one of five scenarios: (A) responsible drinking in general, (B) moderate drinking in general, (C) responsible drinking in a party context, (D) moderate drinking in a party context, and (E) risky drinking. Participants were provided with standardized materials (e.g., bottles, glasses, ice) and asked to represent the amount of alcohol corresponding to their assigned scenario. We then measured the alcohol content of each representation and converted it into grams of alcohol. *Results:* Participants attributed a median of 26.4 grams of alcohol to responsible or moderate drinking in a general context. These amounts increased in party settings, reaching medians of 33.5 grams for responsible drinking and 48.5 grams for moderate drinking. The median amount considered risky was 102.8 grams per occasion. Participants classified as hazardous drinkers (AUDIT-C) consistently reported higher perceived thresholds across all scenarios. *Conclusions:* Young people interpret "responsible" and "moderate" drinking as involving alcohol quantities that exceed public health recommendations, particularly in social contexts. These findings highlight the limitations of industry-led messages and support the need for clearer, evidence-based communication strategies developed by public health professionals.

Keywords: alcohol, young adult, drink responsibly, moderate consumption, grams of alcohol, college students

Resumen

Objetivo: El objetivo de este estudio era examinar las percepciones de los jóvenes y los umbrales que estos asocian con el consumo de alcohol «responsable», «moderado» y «de riesgo». *Métodos:* Llevamos a cabo un estudio experimental basado en viñetas con 242 estudiantes universitarios asignados aleatoriamente a uno de cinco escenarios: (A) consumo responsable de alcohol en general, (B) consumo moderado de alcohol en general, (C) consumo responsable de alcohol en el contexto de una fiesta, (D) consumo moderado de alcohol en el contexto de una fiesta y (E) consumo de riesgo. Se proporcionó a los participantes material estandarizado (por ejemplo, botellas, vasos, hielo) y se les pidió que representaran la cantidad de alcohol correspondiente al escenario que se les había asignado. A continuación, medimos el contenido de alcohol de cada representación y lo convertimos en gramos de alcohol. *Resultados:* Los participantes atribuyeron una mediana de 26,4 gramos de alcohol al consumo responsable o moderado en un contexto general. Estas cantidades aumentaron en entornos de fiesta, alcanzando medianas de 33,5 gramos para el consumo responsable y de 48,5 gramos para el consumo moderado. La cantidad mediana considerada de riesgo fue de 102,8 gramos por ocasión. Los participantes clasificados como bebedores de riesgo (AUDIT-C) informaron sistemáticamente de umbrales percibidos más altos en todos los escenarios. *Conclusiones:* Los jóvenes interpretan que el consumo «responsable» y «moderado» de alcohol implica cantidades que superan las recomendaciones de salud pública, especialmente en contextos sociales. Estos hallazgos ponen de relieve las limitaciones de los mensajes impulsados por la industria y respaldan la necesidad de estrategias de comunicación más claras y basadas en la evidencia, desarrolladas por profesionales de la salud pública.

Palabras clave: alcohol, adulto joven, beber con responsabilidad, consumo moderado, gramos de alcohol, estudiantes universitarios

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Alcohol consumption among adolescents and young adults represents a major public health concern, as it is associated with a wide range of adverse health outcomes and social problems that may hinder a successful transition into adulthood (Ellickson et al., 2003; Schulenberg & Maggs, 2002). In Spain, among individuals aged 15–24 years, approximately 62% reported alcohol consumption in the past month, 1.3% reported daily use, and around 10% engaged in risky drinking (Plan Nacional Sobre Drogas, 2021).

Alcohol use among young people is shaped by a complex interplay of environmental, social, and individual factors, including social norms, peer influence, family context, emotional factors, leisure environments, and the availability and accessibility of alcohol (Ares-Maneiro et al., 2026; Teixidó-Compañó et al., 2023). In particular, the widespread availability of alcohol contributes not only to increased consumption but also to its social normalization (Sureda et al., 2017, 2018).

Alcohol marketing and advertising constitute another key driver of both consumption and normalization processes (Pastor et al., 2022; Villalbí et al., 2019). A substantial body of evidence, including longitudinal studies and systematic reviews, has demonstrated that exposure to alcohol advertising is associated with earlier initiation, higher levels of consumption, and more hazardous drinking patterns among young (Anderson et al., 2009; Ellickson et al., 2005; Smith & Foxcroft, 2009). In response to these concerns, the alcohol industry has implemented self-regulation strategies, often promoting messages such as "drink responsibly" or "moderate consumption." However, these messages are frequently ambiguous and have not been shown to reduce alcohol consumption (Jones et al., 2017). This may reflect inherent conflicts of interest, whereby industry messaging tends to normalize consumption while framing it as safe, thereby blurring the distinction between moderate and risky drinking (van Schalkwyk et al., 2022).

At the same time, young people often exhibit a reduced perception of risk associated with alcohol consumption. Previous research shows that a substantial proportion of adolescents perceive regular or episodic drinking as posing little or no health risk (Moral-Jiménez et al., 2011) and this "low-risk" perception has been identified as a key factor in both the initiation and maintenance of alcohol use (Pons & Buelga, 2011). From this perspective, how young people interpret normative messages about alcohol consumption becomes particularly relevant.

Despite the pervasive utilization of terms such as "drink responsibly" in alcohol advertising, there is a paucity of evidence concerning the way young people interpret these messages in concrete terms. There is a paucity of research on how these abstract concepts are translated into perceived acceptable quantities of alcohol consumption, which may ultimately influence drinking behaviors. The objective of this study was to examine young people's perceptions and perceived thresholds of "responsible", "moderate", and "risky" alcohol consumption.

Methods

Study Design and Participants

This study employed an experimental vignette-based design to examine how young people operationalize the concepts of "responsible", "moderate", and "risky" alcohol consumption. Experimental scenarios were selected as an appropriate methodological approach because they allow the standardization of contextual cues (e.g., advertising messages, drinking environments) while capturing subjective interpretations of socially constructed concepts (Visser et al., 2022).

The five scenarios were designed to reflect two key dimensions identified in the literature:

1. Type of normative message (responsible vs. moderate drinking), commonly used in alcohol industry self-regulation, and
2. Context of consumption (general vs. party setting), given evidence that drinking norms vary by social environment.

The scenario asked Scenarios were

- Scenario A: "In general, how much alcohol do you think constitutes responsible consumption, excluding health conditions, driving, pregnancy, etc.
- Scenario B: In general, how much alcohol do you think constitutes moderate consumption, excluding health conditions, driving, pregnancy, etc.
- Scenario C: When you go to a party and want to consume alcohol responsibly, how much do you drink?"
- Scenario D: "When you go to a party and want to drink moderately, how much do you drink?"
- Scenario E addressed the participants' perception of risky levels of alcohol consumption, defined as levels that could potentially harm their health during a single drinking session, with the exclusion of health conditions, driving, and pregnancy.

The study included 242 university students enrolled in health and social science degrees. Participants were randomly assigned to one of five experimental conditions (approximately $n \approx 50$ per group) using pre-coded envelopes to ensure allocation concealment. Randomization was used to minimize selection bias and to ensure comparability between groups. Baseline characteristics across groups were assessed and showed no statistically significant differences in sociodemographic or behavioral variables, supporting the internal validity of the experimental design.

Experimental Procedure

The experimental setting was designed to simulate a realistic yet controlled representation of alcohol consumption. Participants were young people seated and provided with standardized materials representing different alcoholic beverages (colored water labeled as beer, wine, or spirits), glassware, and ice. Each participant received a written scenario and was instructed to physically construct their interpretation of the assigned drinking situation using the materials provided. This behavioral representation approach was chosen to improve ecological validity and reduce reliance on purely abstract self-reporting. Participants worked independently and were explicitly instructed not to interact with others to avoid social influence bias. No additional clarification was provided during the task to preserve the integrity of individual interpretations.

Upon completion, participants signaled readiness. A trained researcher then recorded the configuration of drinks using a standardized data collection sheet. Subsequently, volumes were measured using calibrated graduated cylinders and converted into grams of alcohol using standard equivalence tables. Participants exited the room immediately after completion to prevent contamination.

Participation in the study was voluntary, and informed consent was obtained from all participants prior to their inclusion. Data was collected anonymously and handled in a confidential manner. The study protocol received a favorable ethical viability assessment from the Research Department of the Fundació Universitària del Bages.

Measures

The primary outcome was the amount of alcohol (in grams) attributed by participants to each conceptual category (responsible, moderate, or risky drinking). Importantly, these variable captures perceived normative thresholds, rather than actual consumption behavior. Specifically, it reflects the quantity of alcohol that participants consider appropriate or typical under each scenario. This operationalization is consistent with research on social norms and risk perception, where subjective thresholds are key determinants of behavior. The use of a behavioral representation task (rather than verbal estimation) enhances construct validity by anchoring responses in concrete quantities.

Additional variables were obtained through a structured questionnaire administered after the experimental task. This questionnaire collected information on sociodemographic characteristics and alcohol consumption patterns. Hazardous drinking was assessed using the validated Alcohol Use Disorders Identification Test–Consumption (AUDIT-C).

Figure 1
Organization of the experimental situation



Data analysis

Alcohol consumption (grams) was summarized using medians and interquartile ranges (IQR) due to non-normal distributions. Differences in categorical sample characteristics across scenarios were examined using Pearson's chi-square test. Between-group differences in alcohol consumption were assessed using non-parametric tests, specifically the Mann–Whitney U test for comparisons between two groups and the Kruskal–Wallis test for comparisons involving more than two groups, as appropriate. Additional analyses were conducted stratified by hazardous drinking status and sex. Statistical significance was defined as $p < 0.05$. All analyses were performed using Stata (version 17).

Results

The final sample comprised 242 university students who were randomly assigned to each of the experimental scenarios (with approximately 50 participants per scenario). A lack of statistically significant differences was observed between the groups (p-value > .05) in terms of sex, place of birth, socioeconomic status, course of study, academic year, employment status, weekly physical activity, cannabis use, or hazardous drinking behavior (see Table 1).

The median alcohol consumption attributed to responsible and moderate drinking (scenarios A and B) was 26.4 grams for the entire sample. This amount increased when responsible or moderate drinking occurred in a nightlife setting (scenarios C and D), with medians of 33.5 and 48.5 grams, respectively. In response to the question regarding the amount of alcohol corresponding to risky consumption (scenario E), participants attributed 102.8 grams to risky drinking (Figure 2).

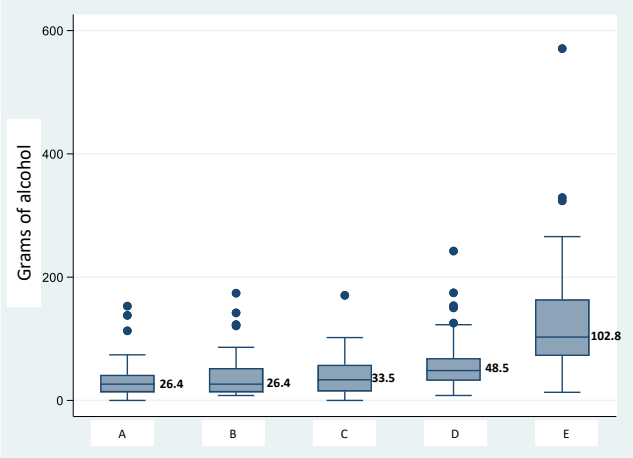
When analyzing the data by gender, combining similar scenarios A+B and C+D, it was observed that boys' participants tended to attribute a higher number of grams to responsible or moderate consumption across all

Table 1
Sample characteristics by scenario

	Scenario	A	B	C	D	E	
	n	50	48	48	48	48	
		%	%	%	%	%	p-value
Gender	Girls	54	67	75	67	56	0.185
Place of birth	Catalonia	53	49	46	51	46	0.940
Socioeconomic level	Better than others	26	27	31	35	29	0.862
Degree	Health Sciences	82	81	81	79	79	0.995
Course	First or second	74	83	85	83	85	0.560
Employed	Yes	32	35	40	42	35	0.874
Physical activity	Yes	80	88	88	90	77	0.362
Ever cannabis use	Yes	66	54	50	63	50	0.367
AUDITC	Hazardous drinker	28	29	40	40	31	0.594

Note. A= Scenario A (responsible alcohol consumption); B= Scenario B (moderate alcohol consumption); C=Scenario C (responsible alcohol consumption when going out to a party); Scenario D (moderate alcohol consumption when going out to a party) and Scenario E (risky (and therefore harmful) consumption for their health).

Figure 2
Medians, 25th and 75th percentile of self-perceived alcohol consumption by scenario. A= Scenario A (responsible alcohol consumption); B= Scenario B (moderate alcohol consumption); C=Scenario C (responsible alcohol consumption when going out to a party); Scenario D (moderate alcohol consumption when going out to a party) and Scenario E (risky (and therefore harmful) consumption for their health)

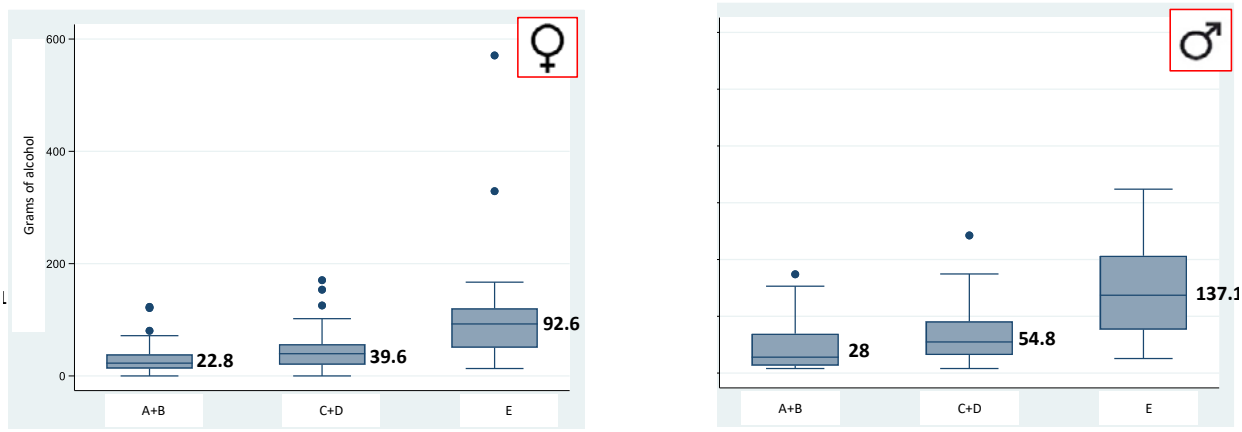


Note. *No statistically significant difference was found between scenarios A and B (p = .44), whereas a significant difference was observed between C and D (p = .012), with higher alcohol consumption in D. Overall, the Kruskal–Wallis test indicated significant differences across scenarios A,B, C and D (p = .0004), driven mainly by higher values in scenario D.

scenarios. Specifically, for boys, the median attribution for risky consumption was 137.1 grams per occasion, while for girls' participants, the median was 92.6 grams per occasion (figure 3).

Across scenarios, alcohol consumption (grams) was consistently higher among people classified as hazardous drinkers according to AUDIT-C compared with non-hazardous drinkers. This pattern was most pronounced in combined scenarios A+B and C+D, where hazardous drinkers showed significantly higher median consumption in the total sample (A+B: 44.4 vs 23.8 grams, p = 0.0057; C+D: 52.8 vs 30.1 grams, p = 0.0001), with similar trends observed in both girls and boys. Differences were less consistent in scenario E, where, although median consumption remained higher among hazardous drinkers, differences were not statistically significant. Overall, alcohol consumption increased across scenarios from A+B to C+D and was highest in scenario E, with consistently higher values in boys than girls.

Figure 3
Medians, 25th and 75th percentile of self-perceived alcohol consumption by scenario and gender. A+B= Scenarios A+B (responsible alcohol consumption or moderate alcohol consumption); C+D=Scenarios C+D (responsible alcohol consumption or moderate alcohol consumption when going out to a party) and Scenario E (risky (and therefore harmful) consumption for their health)



Note. * Compared to groups A+B and C+D, significant differences were observed in both girls (p = .0045) and boys (p = .0311), with higher alcohol consumption in scenarios C+D.

Table 2
Medians and 95% confidence intervals of grams of alcohol by scenario and considering whether the person is a hazardous drinker or not, measured using the AUDIT-C test

	Girls			Boys			Total		
	n	Median	p-value	n	Median	p-value	n	Median	p-value
Scenario A+B									
Hazardous drinker	12	29.4	.1010	16	61.5	.0518	28	44.4	.0057
No Hazardous drinker	47	22.4		23	26.4		70	23.8	
Scenario C+D									
Hazardous drinker	27	52.2	.0009	11	76.7	.0255	38	52.8	.0001
No Hazardous drinker	41	28.4		17	45.8		58	30.1	
Scenario E									
Hazardous drinker	10	99.7	.3933	5	160.9	.5913	15	104	.2661
No Hazardous drinker	17	85.5		16	126.4		33	92.6	

Note. A= Scenario A (responsible alcohol consumption); B= Scenario B (moderate alcohol consumption); C=Scenario C (responsible alcohol consumption when going out to a party); Scenario D (moderate alcohol consumption when going out to a party) and Scenario E (risky (and therefore harmful) consumption for their health).

Discussion

Our study yielded several key findings. First, the amounts of alcohol perceived by young people as moderate and responsible drinking would be considered risky by the World Health Organization (20 grams for women and 40 grams for men). Second, these moderate or responsible drinking amounts increase when represented in a party setting. Third, the median amount of alcohol young people consider to be risky consumption is 102 grams per drinking occasion. Finally, hazardous drinkers tend to perceive responsible or moderate consumption as involving higher alcohol quantities compared to non-hazardous drinkers, particularly in a party environment.

Before delving deeper into the discussion, it is essential to highlight the study's strengths and limitations. Among the strengths, it is important to note that this is the first study to examine the true meaning of moderate and responsible drinking. Additionally, the study uses an experimental design with five randomly assigned groups and objective measurements of alcohol consumption (in grams). Regarding the limitations of the study, it should be noted that the investigation encompassed a total of 242 participants, all of whom were university students. This restriction may compromise the generalizability of the findings, as alcohol consumption and knowledge about its consequences may vary among non-university-aged individuals.

Scientific evidence indicates a link between alcohol advertising and increased alcohol consumption in society, particularly among young people (Anderson et al., 2009; Bosque-Prous et al., 2014; Ellickson et al., 2005; Smith & Foxcroft, 2009). The primary goal of any industry is to sell its products, a goal that often conflicts with public health strategies, especially when the product may harm health. To mitigate the adverse consequences of alcohol consumption, it is imperative to reduce its consumption (Madden & McCambridge, 2021). The alcohol industry employs diverse strategies to promote its products, one of which is to enhance the appeal of alcohol by associating it with positive experiences. Through alcohol advertising, the industry cultivates an image of alcohol being associated with positive emotions, sports, friendship, and other desirable experiences, thereby conditioning consumers to associate alcohol with these feelings (Connor et al., 2014).

When the industry engages in self-regulation, it often utilizes messages that promote moderate or responsible drinking. However, our study found that young people perceive these concepts as involving high amounts of alcohol, which would be classified as risky drinking. This suggests that relying on young people to define their understanding of moderate and responsible alcohol consumption may not be the most effective strategy for health prevention. This finding aligns with conclusions from other studies on labeling and health messages on alcohol packaging promoted by industry. When industry self-regulates, labeling regulations often exhibit significant shortcomings (Tinawi et al., 2018).

The promotion of varied messages is imperative, given their capacity to influence the risky perception and drinking behavior of young individuals. Contemporary evidence underscores the significance of promoting labeling that incorporates nutritional information and health-related messages (Martin-Moreno et al., 2013). Nevertheless, information regarding standard drinks and serving sizes is only efficacious when integrated with comprehensive health education initiatives (Jones & Gregory, 2009; Martin-Moreno et al., 2013). It is imperative to acknowledge the profound social normalization of alcohol, necessitating the meticulous design and implementation of prevention messages by experts in the field. The efficacy of these messages is contingent on individual characteristics, as evidenced by research demonstrating the variability in response to identical messages (Aiken et al., 2018; Noel et al., 2018). In the UK, for instance, research indicates that only approximately one-third of participants recall having seen product-related information, health messages, or warnings on alcohol packaging in the past month (Critchlow et al., 2020).

A notable finding of the present study is the variability of perceptions concerning moderate, responsible, and risky drinking, which is contingent upon individual drinking patterns. This phenomenon may be attributed to the experiences of young individuals in the hours following alcohol consumption (Merrill et al., 2018). In this context, alcohol tolerance emerges as a potentially substantial factor. Tolerance is defined as the phenomenon in which an individual requires a greater quantity of alcohol to elicit the same physiological effects over time (Elvig et al., 2021). If young individuals assess problematic alcohol consumption based on the most immediate consequences, it could potentially lead to adverse outcomes in the future, given the potential for increasing tolerance. These findings are consistent with prior research conducted in U.S. colleges (Noel et al., 2018) and among adults in Canada (Sanchez-Ramirez et al., 2018), which found a lower perception of alcohol-related harms in individuals with higher levels of alcohol use.

The challenge of combating the normalization of alcohol consumption is attributable to the profound integration of alcohol into societal norms. Alcohol is ubiquitous and easily accessible, as evidenced by numerous studies (Ares-Maneiro et al., 2026; Martin-Turrero et al., 2026; Sureda et al., 2018). Consequently, the most efficacious strategies concentrate on reducing their accessibility and affordability. It is imperative to implement measures that make alcohol harder to obtain while also emphasizing strategies aimed at denormalizing its (Hobday et al., 2017; Knai et al., 2015; Villalbí et al., 2014). Additionally, it is crucial to acknowledge that alcohol consumption is influenced by multiple factors, and preventive strategies must address known risk factors specific to young populations. For instance, the characteristics of an individual's place of residence have been shown to significantly impact the alcohol environment, thereby shaping drinking behaviors (Ares-Maneiro et al., 2026; Font-Ribera et al., 2013; Molina-de la Fuente et al., 2021; Obradors-Rial et al., 2020).

Conclusions

Our findings suggest that messages promoting moderate and responsible drinking are interpreted by young people as endorsing the consumption of large quantities of alcohol. Therefore, it is crucial that preventive messages regarding substance use are not left to the discretion of the industry but are instead guided and overseen by professionals specializing in addiction prevention.

Declaration of interest

The authors of this manuscript declare no conflicts of interest. Albert Espelt is associate editor of the Addictions Journal but was not involved in the editorial process. Xisca Sureda currently holds the position of Government

Delegate for the Spanish National Plan on Drugs. Her current role had no influence on the funding decision, study design, data collection, analysis, interpretation of results, or the decision to publish this work. The research was conducted with full scientific independence, and the author declares no conflicts of interest related to her institutional position.

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Institutional Review Board Statement

The study was approved by the Institutional Review Board (or Ethics Committee) of the Open University of Catalonia (code 20190320_mbosquep_alcohol).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Contributions

Albert Espelt and Iñaki Galán contributed to the conceptualization and methodology of the study. Aina Lafon-Guasch was responsible for the pilot phase investigation and project administration, with contributions from Ester Teixidó-Compañó, Marina Bosque-Prous, and Albert Espelt. Marina Bosque-Prous, Ester Teixidó-Compañó, Ester Colillas-Malet, Núria Obradors-Rial, and Albert Espelt contributed to the methodology, investigation, resources, and project administration, including the coordination of fieldwork and data collection. Albert Espelt conducted the formal analysis, curated the data, prepared the original draft of the manuscript, and supervised the integration of comments and contributions from all co-authors throughout the revision process. Xisca Sureda and all co-authors contributed to validation and writing – review & editing of successive versions of the manuscript. All authors approved the final version of the manuscript and agreed to be accountable for all aspects of the work. This study was developed within the Alcohol Working Group of the Spanish Society of Epidemiology.

Generative artificial intelligence

Generative artificial intelligence was used to improve the English writing of the manuscript. Specifically, the software DeepL was used for English language editing and refinement.

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