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AIM Digest
Frampton House
Frampton, Dorchester
Dorset DT2 9NH
 T: +44 (0)1300 320 869
 E: info@aim-digest.com

Websites:

www.alcoholinmoderation.com
www.drinkingandyou.com
www.alcoholresearchforum.org

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 Please contact Zoe.westwood@aim-digest.com for information about AIM's subscription levels.
 Please make cheques/drafts in British pounds sterling, dollars or Euros payable to AIM Digest at the above address

Helena Conibear – **Executive Director**
 T: +44 (0)1300 320 869
 E: helena.conibear@aim-digest.com

Alison Rees – **Editor**
 E: alison.rees@aim-digest.com

Zoe Westwood – **Finance and Subscriptions**
 E: zoe.westwood@aim-digest.com

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Estonia

The share of Estonians buying alcohol in Latvia fell to 23 percent in 2020 - the lowest in four years, a study from the Estonian Institute of Economic Research (EKI) shows. However, there are now concerns rising fuel taxes may send drivers over the border. In 2020, border trade was affected by both the reduction in excise duty rates the year before as well as the pandemic.

Latvia

Saeima deputy, Kaspars Ģirģens, has called for a reduction in the permissible drink drive limit for alcohol to zero. Currently the blood alcohol concentration limit is 0.05 grams of alcohol in every 100ml of blood).

Ģirģens has submitted the proposal to the responsible Saeima Economic, Agricultural, Environmental and Regional Policy Committee for the draft law regarding amendments to the Road Traffic Law.

Lithuania

Representatives of Lithuania's Customs Department have said that alcohol smuggling volumes soared in Lithuania in 2020. Customs officers seized 14.5 tons of illegal alcohol last year, up from 2.5 tons in the previous year. The State Border Guard Service reports that Lithuania's border guards discovered 526 cases of smuggling last year, up from 494 in 2019 and detained 631 suspected smugglers, up from 583 in 2019.

Netherlands

The mayor of Amsterdam, Femke Halsema, is looking to introduce an alcohol and laughing gas ban for parks in the Dutch capital, in the hopes that this will prevent parks from having to be closed to the public as part of measure to prevent the spread of COVID-19 infections.

India

In Dehli, the legal drinking age has been reduced from the existing 25 years to 21 in the new excise policy announced by the Deputy Chief Minister Manish Sisodia. An age gating system will be introduced in bars and restaurants serving alcohol. This means that where alcohol is being served, nobody under the legal age will be permitted to enter.

Ireland

The Irish Government intends to introduce minimum unit pricing for alcohol by Christmas, according to Frank Feighan, Minister of State at the Department of Health. A law to impose a basement price on alcohol – with the aim of discouraging excess drinking – was approved in 2018 but has not yet been implemented.

France

In France, Prime Minister Jean Castex has banned the consumption of alcohol in outdoor public spaces. In addition, gatherings of more than six people on riverbanks or in squares will be banned as part of the limited nationwide lockdown to be imposed to reduce the spread of COVID-19 infections.



Part II: Alcohol and breast cancer – a study in weak associations by Erik Skovenborg MD

While smokers' risk of lung cancer is 20 times higher (equal to 2000% higher) than that of nonsmokers, cancer epidemiology is, to a large extent, the determination of small effects and weak associations and poses major challenges. In comparison, a dose-response meta-analysis of alcohol and risk of postmenopausal breast cancer found a significant increased risk of 0.09 times (equal to 9%) per 10 grams per day compared to nondrinkers. (World Cancer Research Fund/American Institute for Cancer Research. Continuous Update Project Expert Report 2018. Diet, nutrition, physical activity and breast cancer. Available at dietandcancerreport.org)

Sir Bradford Hill has proposed some features of the association we should consider before deciding that the most likely interpretation of the association is causation. (Hill AB. The environment and disease. Association or causation? *J R Soc Med* 2015;108(1):32-37.) With these nine features as aids to thought we will look at the proposed causal association of light alcohol consumption and breast cancer with a critical eye. Part I of this paper (published in our March edition) looked at the first of the nine viewpoints "from all of which we should study association before we cry causation" – Strength – with the conclusion that the alcohol-breast cancer association is weak and several bias and effect modifiers have been identified. Now we continue with the next eight features on the list.

Consistency. Next on Bradford Hill's list of features to be specially considered is the consistency of the observed association. Has the association been repeatedly observed by different persons, in different places, circumstances and times?

- The majority of the case-control studies and cohort studies published to date have shown a (modest) positive association between alcohol consumption and breast cancer. However, there is a considerable lack of consistency in results of the association between alcohol intake and breast cancer risk in retrospective as well as prospective observational studies. A large number of case-control studies have shown no association (n=34), non-significant positive associations (n=23) or negative associations (n=6). Regarding cohort studies 15 studies have shown no association, 12 studies a non-

significant positive association and 1 study a negative association; e.g. among 2,764 women followed > 40 years in the Original Framingham Cohort and 2,284 followed up to 24 years in the Offspring Cohort, light consumption of alcohol or any type of alcoholic beverage was not associated with increased breast cancer risk. (Zhang et al. Alcohol consumption and risk of breast cancer: The Framingham Study revisited. *Am J Epidemiol* 1999;149(2):93-101.)

- It is likely that overall breast cancer risk in relation to alcohol intake varies among different ethnic groups and different regions. A meta-analysis of 4 case-control studies conducted in China found a significant inverse association between alcohol consumption and breast cancer risk. (Li Y et al. Association between alcohol consumption and cancers in the Chinese population: a systematic review and meta-analysis. *PLoS One* 2011;6:e18776.) Among the Japanese population, a qualitative review of the existing evidence has indicated that the association between alcohol consumption and breast cancer risk remains inconclusive. (Nagata C et al. Alcohol drinking and breast cancer risk: an evaluation based on a systematic review of epidemiologic evidence among the Japanese population. *Jpn J Clin Oncol* 2007;37:568-74.)
- Cohort studies with less than 10 years of follow-up gave estimates 11% higher than cohort studies with longer follow-up periods. (Curtis Ellison et al. Exploring the Relation of Alcohol Consumption to Risk of Breast Cancer. *Am J Epidemiol* 2001;154:740-47.)
- In the dose-response meta-analysis of 22 studies (n=35,221 cases) for postmenopausal breast cancer, high heterogeneity was observed. (dietandcancerreport.org)
- Two recent Mendelian Randomization studies did not find evidence for a causal relationship between genetically predicted alcohol consumption and risk of breast cancer.
 - a) Zhu et al. Alcohol consumption and risk of breast and ovarian cancer: A Mendelian Randomization study. *Cancer Genetics* 2020;245:35-41.
 - b) Ong et al. Evaluating the role of alcohol consumption in breast and ovarian cancer



susceptibility using population-based cohort studies and two-sample Mendelian randomization analyses. *Int J Cancer* 2021;148(6):1338-1350.

Specificity of the association is a strong argument in favour of causation. Harmful alcohol has been linked to more than 200 diseases and injury conditions including several other types of cancer while up to two drinks a day decreases kidney cancer. In comparison, the death rate of smokers is higher than the death rate of non-smokers from many causes of death, but specificity is demonstrated by the magnitude of the association of smoking and lung cancer. However, importance of the characteristic of specificity should not be over-emphasized.

Temporality. The question of temporal relationship of the association is particularly relevant with diseases of slow development. Regarding the association between alcohol consumption and breast cancer risk temporality is more a consideration of the extent to which alcohol affects breast cancer onset or breast cancer progression. There is no evidence of reverse causation (that early stages of breast cancer lead to change of drinking patterns) in the association of alcohol and breast cancer.

Biological gradient refers to the presence of a unidirectional dose–response curve.

- In the collaborative reanalysis of individual data from 53 epidemiological studies, including 58,515 women with breast cancer, the relative risk of breast cancer increased with alcohol intake, increasing by 7.1% for each additional 10 g per day intake of alcohol consumed on a daily basis. Compared to women who drank no alcohol the relative risk was 1.03 for women whose alcohol consumption was 5-14 g/d, 1.13 for 15-24 g/d, 1.21 for 25-34 g/d, 1.32 for 35-44 g/d and 1.46 for >45 g/d. (Hamajima et al. Alcohol, tobacco and breast cancer – collaborative reanalysis of individual data from 53 epidemiological studies, including 58 515 women with breast cancer and 95 067 women without the disease. *British Journal of Cancer* 2002;87:1234-45.)
- Regular intake of wine with meals: A population-based case-control study of alcohol and breast cancer (250 cases and 499 controls) was conducted among women under the age

of 75 residing in the Province of Vercelli, in northwestern Italy; an area where wine drinking is widespread and regarded by most as an acceptable habit. Wine is sometimes produced by the family for personal consumption and, in general, is economically affordable. In line with Italian customs, wine is consumed mainly during meals, in place of other drinks. As a consequence, levels of alcohol consumption were quite substantial; about 40% of the total study population, or more than 55% of drinkers, reported consumptions of alcohol in excess of 15 g/day and more than 20% of drinkers reported consumptions of 30 g/day or above. The dietary questionnaire was designed primarily for the purpose of estimating alcohol consumption in European countries, such as France, Spain, and Italy, where wine consumption is widespread and habitually consumed during meals. The questionnaire was therefore structured by meals. In comparison with abstainers (30% of women in the study) and after adjustment for potential confounders, no appreciable association was evident for alcohol consumptions as high as 30-40 g/day. Alcohol intake from wine (g/day) and RR (95% CI) of breast cancer: 0: 1.0, >0-10: 0.9 (0.5-1.5), >10-20: 1.2 (0.8-1.9), >20-30: 1.1 (0.7-3.0), >30-40: 1.4 (0.7-3.0), and >40: 2.1 (1.1-3.7). (Toniolo P et al. Breast cancer and alcohol consumption: a case-control study in northern Italy. *Cancer Res* 1989;49:5203-06.)

- The alcoholism paradox: Barmaids, who have a raised mortality from cirrhosis, have a low proportional mortality from breast cancer. (Office of Population Censuses and surveys. Women's occupational mortality 1970-72 (Series DHI no. I). London: HM Stationary Office 1985.) In a number of studies (3 from Sweden, 2 from Denmark, 1 from UK and 1 from the US) alcoholic women with a very high intake of alcohol had only a very modest increase (relative risk around 1.15) in breast cancer incidence compared to the general female population. (Kuper et al. Alcohol and breast cancer risk: the alcoholism paradox. *British Journal of Cancer* 2000;83:949-51). In a Russian retrospective case-control study of alcohol and cause-specific mortality in 48,557 adult deaths, the only significantly inverse association was with mortality from breast cancer (519 deaths), which was substantially



lower in the few women in the highest alcohol category (mean > 5 bottles of vodka or equivalent per week) than in women from the lower alcohol consumption categories. (Zaridse D et al. Alcohol and cause-specific mortality in Russia: a retrospective case-control study of 48 557 adult deaths. *Lancet* 2009; 373:2201-14.) The alcoholism paradox has not been explained away by confounding factors.

Plausibility. "It will be helpful if the causation we suspect is biologically plausible", Bradford Hill said in his President's Address. "But this is a feature I am convinced we cannot demand. What is biologically plausible depends upon the biological knowledge of the day."

Tumor initiation and growth.

Cancer develops when the normal processes that regulate cell behaviour fail and a cell becomes the ancestor of a group of cells that share its functional abnormalities. More than one mutation is generally required to lead to cancer and most cancers result from the accumulation of genetic damage in cells over time. (Vogelstein B, Kinzler KW. Cancer genes and the pathways they control. *Nat Med* 2004;10:789-99.)

- Oncogenes are mutated in ways that render the gene constitutively active or active under conditions in which the wild-type gene is not. A mutation in an oncogene is analogous to a stuck accelerator in an automobile; the car still moves forward even when the driver removes his foot from it.
- Tumor-suppressor genes mutations reduce the activity of the gene product. A mutation in a tumor-suppressor gene is analogous to a dysfunctional brake in an automobile; the car doesn't stop even when the driver attempts to engage it.
- Stability genes keep genetic alterations to a minimum, and thus when they are inactivated, mutations in other genes occur at a higher rate.

Mutations in these three classes of genes can occur in the germline, resulting in hereditary predispositions to cancer (e.g. inactivation of stability genes BRCA1 and BRCA2), or in single somatic cells, resulting in sporadic tumors. The cells of solid tumors must accumulate several rate-limiting mutations in cancer genes to achieve malignant status. These mutations occur over

time, with each mutation engendering a clonal expansion resulting in a large number of cells that then form a substrate for subsequent mutations. It requires 30-40 years for a typical epithelial cell to accumulate the multiple genetic alterations required to progress to metastatic disease. Data-driven approaches provide a consistent estimate of contribution of extrinsic factors of 70-90% in most common cancer types. (Wu S et al. Substantial contribution of extrinsic risk factors to cancer development. *Nature* 2016;529(7584):43-47.) While numerous behavioral, reproductive, and medical breast cancer risk factors have been established, questions remain regarding the strength of associations with these, and other risk factors, due in part to the etiological heterogeneity among breast cancer subtypes.

A primary tumor starts from one single cell and monoclonality has been shown for the majority of human tumors. The first tumor cell multiplies exponentially with time: 1-2-4-8-16-32, and so forth. If the tumor cells have a diameter of 10 μm , the clone will have reached a volume of about 1 cm^3 after 32 cell generations. The net growth of the tumor volume plotted on a semilogarithmic scale, it is linear and the inclination of the slope may be called the tumor volume doubling time (TVDT). (Friberg S, Mattson S. On the Growth Rates of Human Malignant Tumors: Implications for Medical Decision Making. *J Surg Oncol* 1997;65:284-97.) It takes 22 cell divisions (doublings) to reach a tumor size of 2 mm = the mammographically threshold size for diagnosis. About 32-33 doublings is needed for a tumor to reach a size of 109 cell and a volume of 1 cm^3 = a tumor size that may give rise to symptoms and become detectable on palpation. With a TVDT of 150 days and assuming a constant generation time, the tumor is then about 12 years old.

Serial mammographies of untreated breast cancers during an observation period from 2 to 9 years showed great interindividual variability of the growth rates for different cancers of the breast, with TVDTs ranging from 88 days to 523 days. The average doubling time was 280 days, which means that more than 18 years were required from the first tumor cell (10 μm in diameter) to produce a tumor with a diameter of 2 mm (the lowest detection level). (Fournier D v et al. Growth rate of 147 mammary carcinomas. *Cancer* 1980;45:2198-2207.) In a study of faster growing interval breast



cancers average estimated TVDT was 167 days (95% CI 151-186). High grade, ER negativity and younger age were associated with shorter durations of TVDT. (MacInnes EG et al. Radiological audit of interval breast cancers: Estimation of tumour growth rates. *The Breast* 2020;51:114-19.)

Tumor induction and latent periods

Induction refers to the period between causal action and tumor initiation, and latent period to the period between disease initiation (when the cancer reaches a certain critical point of being irreversible without treatment) and detection. A causal model should contain a specification of the time required for an effect to become manifest and (with the evidence on breast cancer TVDT in mind) interpretation of some epidemiological data may need be reconsidered. If a tumor reaches the diagnostic level when it is 10 years old, it is not likely to have been initiated by a suspected carcinogen to which the patient was exposed only 5 years earlier. The causative agent must be searched for more than 10 years before the diagnosis. (Rothman KT. Induction and latent periods. *Am J Epidemiol* 1981;114:253-59.) In an analysis of the Copenhagen City Heart Study, in which alcohol intake was measured four times, 9,318 Danish women with no previous diagnosis of cancer were followed for breast cancer for 27 years, from 1976 to 2002. During follow-up, breast cancer was diagnosed in 476 women. The association between alcohol intake at first measurement (baseline alcohol intake) and breast cancer was positive and approximately linear. When alcohol intake was updated during follow-up, no association was observed between breast cancer and alcohol intake. It is suggested that this difference in results may be attributable to long latency time between alcohol intake and breast cancer occurrence. (Thygesen LC et al. Use of baseline and updated information on alcohol intake on risk for breast cancer: importance of latency. *Int J Epidemiol* 2008;37:669-77.)

Regarding alcohol as a risk factor for breast cancer, the question is whether alcohol is a weak cumulative breast carcinogen or a breast tumor growth promotor or both. (Brooks PJ, Zakhari S. Moderate Alcohol Consumption and Breast Cancer in Women: From Epidemiology to Mechanisms and Interventions. *Alcohol Clin Exp Res* 2013;37:23-30.) If alcohol acts as a cumulative carcinogen and alcohol consumption by postmenopausal women is a surrogate measure of lifetime alcohol

consumption, then assessing alcohol consumption in postmenopausal women monitors lifetime exposure to a presumably cumulative carcinogen. If we presume that the only effect of alcohol drinking was to increase the growth rate of preexisting tumors, then the relationship between breast cancer risk and alcohol drinking would be limited to more recent drinking.

Some epidemiological studies suggest that drinking alcohol during adolescence and early adulthood has a strong impact on breast cancer risk (Liu Y et al. Alcohol Intake Between Menarche and First Pregnancy: A Prospective Study of Breast Cancer Risk. *J Natl Cancer Inst* 2013;105:1571-78. Romieu I et al. Alcohol intake and breast cancer in the European prospective investigation into cancer and nutrition. *Int J Cancer* 2015;137:1921-30.), while Swanson et al. found that only contemporary drinking (average intake during the recent 5-year interval) was associated with risk. (Swanson CA et al. Alcohol Consumption and Breast Cancer Risk among Women under Age 45 Years. *Epidemiology* 1997;8:231-37.) The results from 21,523 postmenopausal women who participated in the Diet, Cancer, and Health Study in two consecutive examinations in 1993-98 and 1999-2003 showed that women who increased their alcohol intake over the five-year period had a subsequent higher risk of breast cancer than women with stable alcohol intake. For women who reduced their alcohol intake over the five-year period, none of the hazard ratios was significantly associated with breast cancer. (Dam MK et al. Five year change in alcohol intake and risk of breast cancer and coronary heart disease among postmenopausal women: prospective cohort study. *BMJ* 2016;353:i2314.)

The results from a prospective observational study of 105,986 women enrolled in the Nurses' Health Study followed up from 1980 until 2008 with an early adult alcohol assessment and 8 updated alcohol assessments supports the lifetime carcinogen hypothesis, however when examined separately, alcohol consumption in early adulthood (18-40 years) and after 40 years were both strongly associated with the risk of breast cancer. These findings are consistent with a tumor-promoter type as well as a cumulative carcinogen type mechanism for alcohol and breast cancer. (Chen WY et al. Moderate alcohol consumption during adult life, drinking patterns, and breast cancer risk. *JAMA* 2011;306:1884-90.)



Potential mechanisms for alcohol and breast cancer carcinogenesis

Ethanol is thought to potentially cause breast cancer through several mechanisms: by its metabolite acetaldehyde – a mutagenic and carcinogenic compound that causes formation of DNA adducts and inhibits DNA repair mechanisms, by cytochrome P450 2E1 mediated generation of ROS (reactive oxygen species), by enhancing levels of estrogen, by interference with one-carbon metabolism and by ethanol-induced dysregulation of epigenetic regulation of gene expression (particularly abnormal DNA methylation). All the above-described mechanisms by which ethanol is involved in breast carcinogenesis are important and support the complexity of the interaction between alcohol and breast cancer risk. (Dumitrescu RG et al. The etiology of alcohol-induced breast cancer. *Alcohol* 2005;35:213-25.)

- Acetaldehyde rapidly binds to DNA and produces DNA adducts, which results in DNA point mutations, DNA crosslinks and chromosomal aberrations. (Garcia CL et al. Relationship between DNA lesions, DNA repair and chromosomal damage induced by acetaldehyde. *Mutat Res* 2009;662:3-9.) Aldehydes are omnipresent in nature and are generated during normal metabolism. Most aldehydes are highly reactive and to prevent DNA damage, organisms have evolved aldehyde dehydrogenase enzymes that efficiently convert aldehydes into less noxious products. (Joenje H. Alcohol, DNA and disease. *Nature* 2011;475(7354):45-6.) Human breast epithelium is equipped with ADH and ALDH enzymes with a ratio of ADH to ALDH activity about 13:1. Class I ADH isoenzyme is the main ethanol-metabolising isoenzyme in breast tissues. (Jelski W et al. The activity of class I, II, III and IV alcohol dehydrogenase isoenzymes and aldehyde dehydrogenase in breast cancer. *Clin Exp Med* 2006;6:89-93.) The concentration of ethanol in the mammary parenchyma after ingestion of alcoholic beverages is supposed to equivalent to the BAC ranging from 2 to 10 mM (9 to 46 mg alcohol/100 ml blood) after moderate social drinking. Triano et al. found that ethanol metabolism in breast tissue homogenates is inhibited by ethanol in concentrations above 10 mM, so that after consumption of larger amounts of alcohol,

other mechanisms for detoxification of ethanol would need to come into play. Cytochrome P450 2E1 is inducible by ethanol and has been shown to be expressed in human breast tissue. Reactions catalyzed by Cytochrome P450 2E1 enzymes are particularly prone to generate reactive oxygen species. (Triano EA et al. Class I Alcohol Dehydrogenase Is Highly Expressed in Normal Human Mammary Epithelium but not in Invasive Breast Cancer: Implications for Breast Carcinogenesis. *Cancer Research* 2003;63:3092-3100.)

- ADH and ALDH single nucleotide polymorphisms (SNPs).

Alcoholdehydrogenase(ADH)andacetaldehyde dehydrogenase (ALDH) are subject to genetic variability by single nucleotide polymorphisms (SNPs). ADH polymorphisms associated with fast metabolism would result in higher systemic acetaldehyde levels that could potentially affect breast tissue. Only large changes in kinetic properties are likely to contribute to a relevant change in breast cancer risk. For example, for ADH1B rs1229984, the increase in velocity of ethanol turnover is almost by a factor of 90 in variant allele homozygotes compared with wild-type homozygotes. (Hurley TD et al. Genes encoding enzymes involved in ethanol metabolism. *Alcohol Res* 2012;34:339-44.) A meta-analysis of 12 case–control studies showed no direct effect on breast cancer risk of these ADH SNPs. (Wang L et al. Lack of association of ADH1C genotype with breast cancer susceptibility in Caucasian population: a pooled analysis of case-control studies. *Breast* 2012;21:435-39.) In a large prospective cohort study with a considerably high coverage of 76% of common genetic variability in ADH1B and 96% in ADH1C, alcohol intake was associated with overall postmenopausal breast cancer risk as well as with subtypes defined by ER and PR status, however, no significant effect modification of this association by ADH1B and AHD1C variability was observed. (Hahn M et al. Alcohol drinking, ADH1B and ADH1C genotypes and the risk of postmenopausal breast cancer by hormone receptor status: the Netherlands Cohort Study on diet and cancer. *Carcinogenesis* 2018;39:1342-51.)

The ALDH2 rs671 polymorphism dramatically reduces ALDH2 enzyme activity: In carriers of



the ALDH2*2/*2 homozygous and ALDH2*1/*2 heterozygous genotypes the enzyme activity is nearly 0% and 17–38% of the normal activity, respectively. The ALDH2*2 variant is essentially absent among the Europeans, but is highly prevalent among East Asians: an estimated 560 million East Asians are carriers of ALDH2*2. Only three studies have examined the role of ALDH2*2 in the development of breast cancer and all found no association between ALDH2*2 and risk of breast cancer and observed no significant interaction between ALDH2*2 and alcohol consumption on the risk of breast cancer. (Chang et al. ALDH2 polymorphism and alcohol-related cancers in Asians: a public health perspective. *Journal of Biomedical Science* 2017;24:19.)

- **Estrogens.** Estrogens stimulate the division of breast epithelial cells, which increases the risk of mutation thereby inducing or promoting breast cancer. A positive association between estrogens and breast cancer risk has been found in premenopausal women (Key T et al. Sex hormones and risk of breast cancer in premenopausal women: a collaborative reanalysis of individual participant data from seven prospective studies related to elevated incidence of breast cancer in humans. *Lancet Oncol* 2013;14:1009-19.) and postmenopausal women (Key T et al. Endogenous sex hormones and breast cancer in postmenopausal women: reanalysis of nine prospective studies. *J Natl Cancer Inst* 2002;94:606-16.) In comparison to abstainers, pre-menopausal women who consumed 91.4 g alcohol/week showed an 18% increase in serum estradiol. (Muti P et al. Alcohol consumption and total estradiol in premenopausal women. *Cancer Epidemiol Biomarkers Prev* 1998;7:189-93.) In postmenopausal women, after ovarian estrogen production has ceased, tissues such as adipose tissue, which express aromatase (an enzyme that converts androgens into estrogens) become the major source of estrogen. A meta-analysis of prospective studies among postmenopausal women showed that alcohol intake is positively associated with sex hormones, with the strongest association for dehydroepiandrosterone sulfate (DHEAS) – an androgen that can be metabolized to estrogen in the breast by aromatase. (Key TJ et al. Circulating sex hormones and breast

cancer risk factors in postmenopausal women: reanalysis of 13 studies. *Br J Cancer* 2011;105:709-22). Ethanol stimulates proliferation of both normal breast tissue and ER+ breast cancer cells directly, causing a 10- to 15-fold increase in transcriptional activity of ER. Most studies observe an overall stronger association with ER+ and/or PR+ tumors compared with ER– and/or PR– tumors, for the highest versus the lowest alcohol consumption group. (Jung S et al. Alcohol consumption and breast cancer risk by estrogen receptor status: in a pooled analysis of 20 studies. *Int J Epidemiol* 2016;45:916-28.) The analysis of 2160 serum estradiol measurements in 275 postmenopausal women from the ELITE trial found higher BMI and alcohol use associated with higher estradiol levels, whereas current and past smoking were associated with lower estradiol levels. (Sriprasert I et al. Factors Associated With Serum Estradiol Levels Among Postmenopausal Women Using Hormone Therapy. *Obstet Gynecol* 2020;136:675-84.) While results of some studies indicate that postmenopausal women who are drinkers and use hormone replacement therapy (HRT) have an increased risk of breast cancer (Hvidtfeldt UA et al. Risk of Breast Cancer in Relation to Combined Effects of Hormone Therapy, Body Mass Index, and Alcohol Use, by Hormone-receptor Status. *Epidemiology* 2015;26:353-61.), findings from other studies do not support the effect of alcohol on HRT-related breast cancer risk. (Allen NE et al. Moderate Alcohol Intake and Cancer Incidence in Women. *J Natl Cancer Inst* 2009;101:296-305.) Estrogen and alcohol independently have been observed to contribute to angiogenesis – a regulated process used by breast cancer tumors to ensure a constant supply of oxygen and nutrients. (Maniyar R et al. Ethanol enhances estrogen mediated angiogenesis in breast cancer. *Journal of Cancer* 2018;9:3874-85.)

- **Folate deficiency.** Folate is a B vitamin that donates its methyl group for homocysteine remethylation to methionine as part of one-carbon metabolism. In turn, methionine is the methyl donor for DNA methylation via S-adenosyl methionine. Results from the Shanghai Breast Cancer Study (whose participants are not regular alcohol drinkers) support a protective role for folate: Dietary folate



intake was inversely associated with breast cancer risk with an adjusted OR of 0.71 (95% C, 0.56–0.92) observed among women who were in the highest quintile of intake. (Shrubsole MJ et al. Dietary folate intake and breast cancer risk: results from the Shanghai Breast Cancer Study. *Cancer Res* 2001;61:7136-41.) Alcohol can adversely affect folate metabolism by inhibiting the intestinal absorption, reducing the hepatic storage and increasing the renal excretion. (Halsted CH et al. Metabolic interactions of alcohol and folate. *J Nutr* 2002;132(8S):2367S–2372S). Modeling both exposures together revealed highly significant, independent associations between alcohol and folate and DNA methylation profile. (Christensen BC et al. Breast Cancer DNA Methylation Profiles Are Associated with Tumor Size and Alcohol and Folate Intake. *PLoS Genet* 2010;6(7):e1001043.) A meta-analysis of 16 prospective studies with a total of 744,068 participants and 26,205 breast cancer patients and 26 case–control studies with a total of 16,826 cases and 21,820 controls that have evaluated the association between folate intake and breast cancer risk, suggested that folate may have preventive effects against breast cancer risk. Prospective studies indicated a U-shaped relationship for the dietary folate intake and breast cancer risk. Women with daily dietary folate intake between 153 and 400 mg showed a significant reduced breast cancer risk compared with those <153 mg, but not for those >400 mg. The case–control studies also suggested a significantly negative correlation between the dietary folate intake level and the breast cancer risk. (Chen P et al. Higher dietary folate intake reduces the breast cancer risk: a systematic review and meta-analysis. *Br J Cancer* 2014;110:2327-38.)

Coherence: “In short, the association we observe may be one new to science or medicine and we must not dismiss it too light-heartedly as just too odd. As Sherlock Holmes advised Dr Watson, ‘when you have eliminated the impossible, whatever remains, however improbable, must be the truth.’ On the other hand, the cause-and-effect interpretation of our data should not seriously conflict with the generally known facts of the natural history and biology of the disease - in the expression of the Advisory Committee to the Surgeon-General it should have coherence.”

Experiment: “Occasionally it is possible to appeal to experimental, or semi-experimental, evidence. For example, because of an observed association some preventive action is taken. Does it in fact prevent? The dust in the workshop is reduced, lubricating oils are changed, persons stop smoking cigarettes. Is the frequency of the associated events affected? Here the strongest support for the causation hypothesis may be revealed.”

Analogy: “In some circumstances it would be fair to judge by analogy. With the effects of thalidomide and rubella before us we would surely be ready to accept slighter but similar evidence with another drug or another viral disease in pregnancy.”

“Here then are nine different viewpoints from all of which we should study association before we cry causation. What I do not believe - and this has been suggested - is that we can usefully lay down some hard-and-fast rules of evidence that must be obeyed before we accept cause and effect. None of my nine viewpoints can bring indisputable evidence for or against the cause-and-effect hypothesis and none can be required as a *sine qua non*. What they can do, with greater or less strength, is to help us to make up our minds on the fundamental question - is there any other way of explaining the set of facts before us, is there any other answer equally, or more, likely than cause and effect?” (Bradford Hill A. The Environment and Disease: Association or Causation? *Proc R Soc Med* 1965;58(5):295-300.)

Erik Skovenborg is a Danish physician with a special interest in the health benefits of moderate alcohol consumption. His published work includes *In Vino Sanitas*, 1990; *Lead in Wine throughout the Ages*, 1994; *Wine and Health – Myths and Facts*, 2000. Member of the Social, Scientific and Medical Council of AIM (Alcohol in Moderation) from 1992 and co-founder of the Scandinavian Medical Alcohol Board (SMAB) in 1994. Chairman of the 1996 Copenhagen “Health and Alcohol Symposium” and the 1998 Stockholm “Women and Alcohol Symposium”. For many years Erik Skovenborg has lectured extensively on alcohol and health to medical professionals and the general public and he is currently researching the effects of a moderate consumption of beer, wine and spirits.

Our next edition, will feature the concluding part of this paper ‘Alcohol and breast cancer - the case for action’.



Effects of alcohol consumption on risk of stroke and systemic embolism among subjects with atrial fibrillation

Reddiess P, Aeschbacher S, Meyre P, Coslovsky M, Kühne M, Rodondi N, et al, for the BEAT-AF and Swiss-AF investigators. Alcohol consumption and risk of cardiovascular outcomes and bleeding in patients with established atrial fibrillation. *CMAJ* 2020;193:E117-E123. doi.org/10.1503/cmaj.200778

Authors' Abstract

Background: Little is known about the association between alcohol consumption and risk of cardiovascular events in patients with established atrial fibrillation (AF). The main aim of the current study was to investigate the associations of regular alcohol intake with incident stroke or systemic embolism in patients with established AF.

Methods: To assess the association between alcohol consumption and cardiovascular events in patients with established AF, we combined data from 2 comparable prospective cohort studies that followed 3852 patients with AF for a median of 3.0 years. Patients were grouped into 4 categories of daily alcohol intake (none, > 0 to < 1, 1 to < 2 and ≥ 2 drinks/d). The primary outcome was a composite of stroke and systemic embolism. Secondary outcomes were all-cause mortality, myocardial infarction, hospital admission for acute heart failure, and a composite of major and clinically relevant nonmajor bleeding. Associations were assessed using time-updated, multivariable-adjusted Cox proportional hazards models.

Results: Mean age (\pm standard deviation) was 71 \pm 10 years (28% were women and 84% were on oral anticoagulants). We observed 136 confirmed strokes or systemic emboli. Compared with nondrinkers, adjusted hazard ratios for the primary outcome event were 0.87, 95% confidence interval (CI) 0.55–1.37 for > 0 to < 1 drinks/d; 0.70, 95% CI 0.39–1.25 for 1 to < 2 drinks/d; and 0.96, 95% CI 0.56–1.67 for ≥ 2 drinks/d (p for linear [quadratic] trend 0.71 [0.22]). There was no significant association between alcohol consumption and bleeding, but there was a nonlinear association with heart failure (p for quadratic trend 0.01) and myocardial infarction (p for quadratic trend 0.007).

Interpretation: In patients with AF, we did not find a significant association between low to moderate alcohol intake and risk of stroke or other cardiovascular events. Our findings do not support special recommendations for patients with established AF with regard to alcohol consumption.

Forum Comments

Forum members realized that there are no data in this paper on the effect of alcohol on the initial development of atrial fibrillation (AF), as all

subjects had some level of AF at the beginning of the study. They noted that levels of alcohol intake for each subject were taken at baseline and then at each annual examination to update alcohol exposure; this was done to take into account changes in alcohol intake over time (even though the authors state that “there was very little change in the distribution of alcohol intake over time”). Further, the authors included in their analyses an appropriate, long list of potential confounders or modifiers of effect. Thus, it is considered that, overall, this was a well-done study. However, Forum members thought it unfortunate that the effects of alcohol consumption on the presence or absence of AF during follow up were not reported.

Forum member Finkel stated: “I think that recurrence/persistence of AF is a big issue. It is believed by many to be precipitated by alcohol, even in small quantities, either as a paroxysmal or stable arrhythmia (Voskoboinik, et al, 2016; Voskoboinik, et al, 2020). While this study seems well done, I note that it included subjects who at baseline were diagnosed with ‘paroxysmal, persistent, or permanent atrial fibrillation,’ and I find no information on the relationship of quantity or pattern of drinking with subsequent control of AF. This is a big issue, for AF is common and may have major sequelae. Most physicians probably agree that excessive drinking may predispose toward AF, and that moderation or abstinence may help in its alleviation. Acknowledging the other substantial cardiovascular benefits of moderate drinking, thoughtful physicians believe that the risk of adverse events associated with light to moderate alcohol consumption in gradual aliquots is often exaggerated. Some modify their views.”

Reviewer Ellison agreed with Finkel that it is problematic that there are no results in this paper on the effects of alcohol intake on AF itself. “While subjects who ‘had only short, potentially reversible AF episodes’ were not included in the two parent studies, the current paper reports that almost one-half of all subjects in their analyses (56.5% in one study and 44.8% in the other) had a diagnosis of ‘paroxysmal AF’ at baseline. It would have been helpful to know specifically if alcohol consumption was related to subsequent persistence or disappearance of AF, based on the results of the yearly follow-up examinations.



"The primary outcomes of this study were the risk of two important adverse entities associated with AF, major stroke or systemic embolism and major bleeding episodes; the authors also reported effects of alcohol intake on hospitalization for heart failure, all-cause mortality, and myocardial infarction. It was noted that while the authors do not emphasize them, the most striking results of this study are the marked decrease in risk of all-cause mortality (fully adjusted HRs were 0.61 for light and 0.49 for moderate drinkers) and myocardial infarction (HRs 0.41, 0.39, respectively) associated with light and moderate drinking, in comparison with abstinence. For moderate drinkers, there was also a significant decrease in acute heart failure."

Reviewer Skovenborg wrote: "I agree that the results of the prospective cohort studies of patients with AF are plausible and encouraging. The group of nondrinkers had a low level of exercise, education and health perception and a high level of diabetes, renal failure and current falls; however, the relevant adjustments seems to be adequate and thorough."

"The lack of increased risk of bleeding from alcohol intake in the patients taking anticoagulants for AF is reassuring but not surprising. The same results were found in a study of 1,244 men enrolled in the Post-Coronary Artery Bypass Graft (CABG) Trial who had undergone previous coronary bypass surgery (Mukamal, et al). Moderate drinking did not adversely influence the safety of low-dose warfarin among men in this randomized trial, as measured by INR levels. There is even experimental evidence that (1) 10 and even 20 oz of daily mealtime wine has no effect on therapeutic hypoprothrombinemia (O'Reilly, 1979) and (2) intake of 296 mL/day of fortified wine during fasting has no effect on therapeutic levels of hypoprothrombinemia of normal humans (O'Reilly, 1981). The code word regarding use of alcoholic beverages for patients on oral anticoagulants is regular intake. Binge drinking is never sensible and even more dangerous combined with anticoagulant medication. I did note, however, that the AF patients in the two cohort studies described here did not include a large number of heavy or binge drinkers, so no data are available for such patients."

Forum member de Gaetano noted: "This study clearly shows that, independently of other

clinical outcomes, which can be influenced by different variables and factors, in patients with an established diagnosis of AF all-cause mortality is significantly reduced by moderate alcohol consumption, following a J shaped curve. This is indeed the great message of this paper. In all our studies we have constantly considered total mortality as a key outcome to be considered in alcohol consumption research."

Statistical problems in separating continuing alcohol consumption prior to AF with the initiation of alcohol intake following the diagnosis of AF: While the results of this paper are very interesting, reviewer Zhang pointed out problems in judging effects of alcohol among subjects who may, or may not, have been regular drinkers prior to the baseline observations. He wrote: "One should always consider potential collider bias, a kind of selection bias (Dahabreh & Kent). This may happen when studying a risk factor (here, alcohol) in relation to an outcome (here, bleeding or stroke), conditioning on a potential intermediate variable (here, atrial fibrillation). If alcohol consumption is associated with the risk of AF, and AF may affect the risk of bleeding or stroke, then the obtained effect estimate from such kinds of analysis may represent an 'indirect effect' (i.e., the effect of alcohol on the risk of bleeding/stroke but not necessarily through AF), and this effect estimate does not represent the total effect of alcohol on the risk of bleeding/stroke among AF patients. Unless one assesses the incident alcohol exposure, i.e., people who started to drink alcohol after the diagnosis of AF (which is unlikely) or changed their alcohol consumption after developing AF, studies using alcohol information measured before AF diagnosis and assessing its relation to the risk of bleeding or stroke generates an indirect effect estimate; this estimate tends to bias the results towards the null or sometimes in an opposite direction."

Added reviewer Ellison: "I agree with this problem. In other words, the presence of AF at baseline may relate to the subject's previous alcohol exposure, which could have led perhaps to an increase in the risk of AF, or perhaps a decrease in the risk of any underlying heart disease. Thus, the absence or presence of previous alcohol use among subjects with AF at baseline may have resulted to two different groups: those whose AF was somehow related to previous drinking and those whose AF was not related to previous drinking (as they were



abstainers). This makes it difficult to judge alcohol during follow up as a risk factor for subsequent AF and may even lead to paradoxical effects." As stated by Dahabreh & Kent, "Because risk factors often have congruent effects on the index and recurrent events, this negative association will tend to bias any estimation of the effect [of the exposure] on recurrence risk toward the null, unless there is a thorough accounting for all shared risk factors."

Having to rely on self-reported alcohol consumption. The present analyses, as are essentially all epidemiologic studies of the health effects of alcohol consumption, must rely on self-reported drinking. However, given that our estimation of the exposure to alcohol is known to be imprecise, it is remarkable that in almost all epidemiologic studies over many decades, self-reported alcohol levels have consistently been shown to relate to certain outcomes (cardiovascular disease, all-cause mortality), almost uniformly showing a J-shaped relationship (a decrease in risk with moderate drinking, usually an increase with heavier drinking).

Still, there have been attempts to obtain more precise estimates of exposure to alcohol. Klatsky and his colleagues, using data from the Kaiser-Permanente cohort, have shown that investigators can often use other information collected in their databases that relates to excessive alcohol intake (such as diagnoses of alcoholic use disorders, alcoholic cirrhosis, etc.) to estimate whether or not individuals are under-reporting their alcohol intake or giving realistic amounts (Klatsky, et al, 2006; Klatsky, et al, 2014). These investigators have concluded that many of the adverse effects attributed to light or moderate drinking (including most cancers and hypertension) occur only among subjects estimated to be under-reporters of their intake.

In reviewing the present paper, Forum member Mattivi writes: "I suggest that the time has come to include in observational cohort studies additional lab tests to complement the self-reported alcohol intake, in search of the possible presence of heavy or binge drinkers who are under-reporting their intake. Several biomarkers for intake of ethanol have been suggested, and possibly the detection of ethyl glucuronide in hair (alone or in combination with ethyl palmitate) is the most promising, since it is reflecting the consumption over a long period of time. As a biomarker of long-term alcohol use, in

addition to validating the self-reported measures of alcohol use it gives the additional possibility of detecting the presence of harmful drinking patterns (Iglesias, et al) and it has been shown capable of supporting the identification of severe and high intake (Bastiani, et al)."

References

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Voskoboinik A, Prabhu S, Ling L-B, et al. Alcohol and atrial fibrillation: A sobering review. *JACC* 2016;68:2567-2576.

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Forum Summary

The main aim of the current study was to investigate the associations of regular alcohol intake with incident stroke or systemic embolism in patients with established atrial fibrillation (AF), most of whom (84%) were on anti-coagulant therapy. The



authors used combined data from two prospective studies of subjects with AF, followed for an average of 3 years. While they excluded subjects with “only short, potentially reversible AF episodes (e.g., as after cardiac surgery or sepsis)” about one half of subjects in the study were diagnosed as having paroxysmal AF. Reported alcohol at baseline and at subsequent examinations was classified as none, > 0 to < 1 drink/day, 1 to < 2 drinks/day, and ≥ 2 drinks/day.

The primary outcome was a composite of stroke and systemic embolism. Secondary outcomes were all-cause mortality, myocardial infarction, hospital admission for acute heart failure, and a composite of major and clinically relevant nonmajor bleeding. In their analyses, they adjusted for age, sex, education, hypertension, history of heart failure, history of diabetes, BMI, smoking status, physical activity, history of stroke, history of coronary heart disease, oral anticoagulation, history of renal failure, AF type, and health perception. With annual assessments, the investigators updated all covariates over time, if appropriate.

The main results indicated no significant effect of alcohol consumption on the risk of the major outcomes (stroke or systemic embolism). However, there were significant decreases in risk for several secondary outcomes. For hospital admissions for heart failure, in comparison with non-drinkers the HR for moderate drinkers was 0.60 (CI 0.41-0.87); further, among moderate drinkers the HR for myocardial infarction was 0.39 (CI 0.20 – 0.78), and for all-cause mortality the HR was 0.49 (CI 0.35-0.69).

Forum members had two major concerns with the paper. First, the authors failed to report specifically how alcohol consumption was associated with increased or decreased presence of AF during follow up, even though approximately one-half of subjects had only paroxysmal AF at baseline. Determining if alcohol consumption affected subsequent AF would be information of importance to practitioners who are advising their patients with AF regarding alcohol consumption.

Secondly, it was pointed out by Forum members that the results may have been affected by what is known as collider bias: as moderate drinking shows an inverse association with coronary heart disease (which is strongly related to the presence of AF), subjects who consumed alcohol prior to the baseline diagnosis of AF were probably different

from those who had no prior alcohol exposure, and the results of combining these two groups (as was done in these analyses) may have been biased. Such bias usually tends to result in estimates of effect going toward the null.

While the reported results of no real effect of alcohol consumption on the risk of stroke or systemic embolism among patients with AF is encouraging, to decrease the risk of bias in future studies it will be important that such research attempts to separate subjects according to their prior use of alcohol before baseline measurements are assessed. The marked reduction in the risk of other major cardiovascular outcomes and total mortality, found in this study to be associated with light to moderate drinking, matches the results seen in most previous studies.

Comments from the following members were provided for this critique by the International Scientific Forum on Alcohol Research:

Giovanni de Gaetano, MD, PhD, Department of Epidemiology and Prevention, IRCCS Istituto Neurologico Mediterraneo NEUROMED, Pozzilli, Italy

R. Curtis Ellison, MD, Professor of Medicine, Section of Preventive Medicine & Epidemiology, Boston University School of Medicine, Boston, MA, USA

Ramon Estruch, MD, PhD, Hospital Clinic, IDIBAPS, Associate Professor of Medicine, University of Barcelona, Spain

Harvey Finkel, MD, Hematology/Oncology, Retired (Formerly, Clinical Professor of Medicine, Boston University Medical Center, Boston, MA, USA)

Fulvio Mattivi, MSc, CAFE – Center Agriculture Food Environment, University of Trento, via E. Mach 1, San Michele all'Adige, Italy

Erik Skovenborg, MD, specialized in family medicine, member of the Scandinavian Medical Alcohol Board, Aarhus, Denmark

Creina Stockley, PhD, MSc Clinical Pharmacology, MBA; Principal, Stockley Health and Regulatory Solutions; Adjunct Senior Lecturer, The University of Adelaide, Adelaide, Australia

Arne Svilaas, MD, PhD, general practice and lipidology, Oslo University Hospital, Oslo, Norway

Pierre-Louis Teissedre, PhD, Faculty of Oenology–ISVV, University Victor Segalen Bordeaux 2, Bordeaux, France

David Van Velden, MD, Dept. of Pathology, Stellenbosch University, Stellenbosch, South Africa

Yuqing Zhang, MD, DSc, Clinical Epidemiology, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA.



Association of alcohol intake with incidence and progression of diabetic retinopathy

A project examined the longitudinal association of baseline alcohol intake and frequency with the 6-year incidence and progression of diabetic retinopathy (DR) in a population-based cohort of Singaporean Indians.

656 participants with diabetes mellitus, gradable retinal photographs from baseline (2007-2009) and follow-up (2013-2015) examinations, information on alcohol intake and other relevant data from the Singapore Indian Eye Study were included. The mean age (SD) of participants was 58.8 years, and 54.4% were male.

At follow-up, 82 of 510 (16%) participants developed DR, and 45 of 146 (30.8%) had DR progression. 65 (12.7%) and 28 (19.1%) participants consumed alcohol in incident DR and progression categories, respectively. In multivariable analyses, those who consumed alcohol had nearly two-

thirds reduced odds of incident DR (OR (95% CI): 0.36 (0.13 to 0.98)) compared with those who did not. Participants with infrequent consumption of alcohol also had a reduction in odds of incident DR (0.17 (0.04 to 0.69)), compared with non-drinkers. No association was found between alcohol consumption and DR progression.

In this population of Singapore Indians, baseline alcohol intake, particularly infrequent consumption, was associated with lower risk of developing DR, compared with non-drinkers, in line with previous cross-sectional findings.

Source: Gupta P, Fenwick EK, Sabanayagam C, Gan ATL, Tham YC, Thakur S, Man REK, Mitchell P, Wong TY, Cheng CY, Lamoureux EL. Association of alcohol intake with incidence and progression of diabetic retinopathy. *Br J Ophthalmol*. 2021 Apr;105(4):538-542. doi.org/10.1136/bjophthalmol-2020-316360.

Mediterranean diet, alcohol-drinking pattern and their combined effect on all-cause mortality: the Seguimiento Universidad de Navarra (SUN) cohort

The health benefits of the Mediterranean diet (MedDiet) have been widely studied. However, controversy remains for one of its components: alcohol intake. A group of researchers aimed to assess the joint effect of adherence to the MedDiet and alcohol-drinking pattern on all-cause mortality.

Data was taken from 20,506 subjects from a prospective cohort of Spanish university graduates, the Seguimiento Universidad de Navarra (SUN) cohort. Adherence to the MedDiet was operationalized using four different dietary indexes and then categorized in low or high adherence, according to the median score. Alcohol-drinking pattern was evaluated with the previously defined the Mediterranean alcohol-drinking pattern (MADP), grouped into three categories of adherence (low, moderate and high adherence) and a fourth category for abstainers.

During a median follow-up of 12.1 years, there were 460 deaths. No statistically significant supra-multiplicative interaction between the two exposures was found. Low adherence to both the

MedDiet and Mediterranean alcohol-drinking pattern was associated with higher all-cause mortality compared to high adherence to both exposures [multivariable-adjusted hazard ratio (HR) = 2.02, 95% confidence interval (CI): 1.33-3.07]. Similar results were found for cancer mortality and cardiovascular mortality.

Although the combined effect of the MedDiet and MADP was not significantly higher than the product of their individual effects, a low adherence to both the MedDiet and Mediterranean alcohol-drinking pattern was associated with higher rates of all-cause mortality. The authors comment that this report also shows the usefulness of the dietary pattern approach applied to alcohol intake and of including the drinking pattern as another component of the MedDiet.

Source: Morales G, Martínez-González MA, Barbería-Latasa M, Bes-Rastrollo M, Gea A. Mediterranean diet, alcohol-drinking pattern and their combined effect on all-cause mortality: the Seguimiento Universidad de Navarra (SUN) cohort. *Eur J Nutr*. 2021 Apr;60(3):1489-1498. doi.org/10.1007/s00394-020-02342-w.



Consumption of tea, alcohol, and fruits and risk of kidney stones

Research has suggested that tea, alcohol, and fruit consumption may reduce the risk of kidney stones. However, little is known whether such associations and their combined effect persist in Chinese adults, for whom the popular tea and alcohol drinks are different from those investigated in the previous studies.

A recent study included 502,621 participants from the China Kadoorie Biobank (CKB). Information about tea, alcohol, and fruit consumption was self-reported at baseline.

During a median of 11.1 years of follow-up, 12,407 cases of kidney stones were recorded. Tea, alcohol, and fruit consumption were found to be negatively associated with kidney stone risk, but the linear trend was only found in tea and fruit consumption. Compared with non-tea consumers, the HR (95% CI) for participants who drank ≥ 7 cups of tea per day was 0.73 (0.65-0.83). Compared with

non-alcohol consumers, the HR (95% CI) was 0.79 (0.72-0.87) for participants who drank pure alcohol of 30.0-59.9 g per day but had no further decrease with a higher intake of alcohol. Compared with less-than-weekly consumers, the HR (95% CI) for daily fruit consumers was 0.81 (0.75-0.87). Even for those who did not drink alcohol excessively, increasing tea and fruit consumption could also independently reduce the stone risk.

Among Chinese adults, tea, alcohol, and fruit consumption was associated with a lower risk of kidney stones.

Source: Wang H, Fan J, Yu C, Guo Y, Pei P, Yang L, Chen Y, Du H, Meng F, Chen J, Chen Z, Lv J, Li L, On Behalf Of The China Kadoorie Biobank Collaborative Group. Consumption of Tea, Alcohol, and Fruits and Risk of Kidney Stones: A Prospective Cohort Study in 0.5 Million Chinese Adults. *Nutrients*. 2021 Mar 29;13(4):1119. doi.org/10.3390/nu13041119.

Alcohol hangover across the lifespan: impact of sex and age

A study investigated the relationship between age and hangover frequency and severity.

An online survey, generated through Facebook, collected self-report data relating to alcohol consumption from 761 Dutch alcohol consumers aged 18–94 years (61.6% female).

Overall, young individuals consumed more alcohol than older drinkers, and men more than women. Significant interactions between age group and sex were found for both subjective intoxication and hangover severity, indicating that the sex differences in these variables were greatest in the younger age groups but became significantly smaller or absent in the older age groups. Partial correlations, correcting for estimated blood alcohol concentration (eBAC), revealed significant and negative partial correlations between age and subjective intoxication ($r = -0.444$), age and hangover severity ($r = -0.327$) and between age and hangover frequency ($r = -0.195$), i.e. subjective intoxication, hangover severity and

hangover frequency decline with age. With regard to sex differences, the observed correlations with age for the past month heaviest drinking occasion were stronger in men for subjective intoxication, hangover severity and hangover frequency.

Hangover severity declines with age, even after controlling for eBAC or the amount of alcohol consumed. Sex differences were greatest in the younger age groups but became significantly smaller or absent in the older age groups. The relationship between age and hangover severity is strongly mediated by subjective intoxication. Pain sensitivity, lower with aging, might be a mediator, the authors suggest.

Source: Joris C Verster, Noortje R Severeijns, Annabel S M Sips, Hama M Saeed, Sarah Benson, Andrew Scholey, Gillian Bruce, Alcohol Hangover Across the Lifespan: Impact Of Sex and Age, Alcohol and Alcoholism, 2021; agab027, doi.org/10.1093/alcalc/agab027



Consistency between self-reported alcohol consumption and biological markers among patients with alcohol use disorder

No systematic review has yet examined the consistency between self-reports of alcohol consumption and alcohol biomarkers among patients in treatment for alcohol use disorders (AUD). Researchers aimed to provide an overview of the consistency between self-reported alcohol intake and biomarkers among patients in treatment for AUD.

The electronic databases MEDLINE, PsycINFO, EMBASE, Cochrane Database of Systematic Reviews (CDSR) and CENTRAL were searched for all original studies that examined the validity of self-reported alcohol consumption using a biological marker in samples of patients with AUD. 13 eligible studies were included.

All the identified studies revealed inconsistencies between self-reporting and biomarkers. Under-reporting was the most common type of inconsistency across short-, intermediate- and long-term biomarkers. For short-term markers, under-reporting was indicated in 7 studies (n = 15-585) in a range from 5.5%-56.0% of the patients, and over-reporting in 2 studies (n = 34-65) in a range from 5.9%-74.1%. Only under-reporting was reported for intermediate-term, direct markers and was indicated in 2 studies (n = 18-54) in a

range from 5.0%-50.0% of the patients. Although the results for long-term biomarkers were not reported consistently across the studies, under-reporting was indicated in 3 studies (n = 73-1580) in a range from 0.1%-40.0% of the patients, and over-reporting in 2 studies (n = 15-1580) in a range from 13.0%-70.6%. Correlations between self-reported alcohol consumption and biological markers were strongest for the intermediate-term direct markers, ranging from moderate to strong. For short-term and long-term markers, the correlations were mostly weak.

The findings indicate that inconsistency between self-reported alcohol consumption and biomarkers may occur in a considerable proportion of patients with AUD. However, further studies applying more sensitive, specific, and easily assessable biological markers are warranted to confirm this preliminary synthesis.

Source: Grüner Nielsen D, Andersen K, Søgaard Nielsen A, Juhl C, Mellentin A. Consistency between self-reported alcohol consumption and biological markers among patients with alcohol use disorder - A systematic review. *Neurosci Biobehav Rev.* 2021 May;124:370-385. doi.org/10.1016/j.neubiorev.2021.02.006

Moderate consumption of beer and its effects on cardiovascular and metabolic health

There is growing interest in the potential health-related effects of moderate alcohol consumption and, specifically, of beer. A review provides an assessment of beer-associated effects on cardiovascular and metabolic risk factors to identify a consumption level that can be considered "moderate". The authors identified all prospective clinical studies and systematic reviews that evaluated the health effects of beer published between January 2007 and April 2020. Five of six selected studies found a protective effect of moderate alcohol drinking on cardiovascular disease (beer up to 385 g/week) vs. abstainers or occasional drinkers. Four out of five papers

showed an association between moderate alcohol consumption (beer intake of 84 g alcohol/week) and decreased mortality risk.

The reviewers concluded that moderate beer consumption of up to 16 g alcohol/day (1 drink/day) for women and 28 g/day (1-2 drinks/day) for men is associated with decreased incidence of cardiovascular disease and overall mortality, among other metabolic health benefits.

Source: Marcos A, Serra-Majem L, Pérez-Jiménez F, Pascual V, Tinahones FJ, Estruch R. Moderate Consumption of Beer and Its Effects on Cardiovascular and Metabolic Health: An Updated Review of Recent Scientific Evidence. *Nutrients.* 2021; 13(3):879. doi.org/10.3390/nu13030879



The effect of smoking and sex on the association between long-term alcohol consumption and metabolic syndrome

The effect of smoking and sex on the relationship between alcohol consumption and risk of developing metabolic syndrome (MetS) and its components has not been investigated.

A total of 5,629 Korean adults aged 40-69 years without MetS were recruited at baseline. Alcohol consumption was assessed biennially, and participants were classified as never, light, moderate, or heavy drinkers. Smoking status was examined at baseline and categorized into non-smokers and current smokers. Risk of incident MetS and its components according to alcohol consumption was examined by smoking status and sex using a multivariate Cox proportional hazards model.

During a follow-up of 12 years, 2,336 participants (41.5%) developed MetS. In non-smokers, light or moderate alcohol drinkers had a lower risk of developing MetS, abdominal obesity, hyperglycemia, hypertriglyceridemia, and low HDL-C compared with never drinkers. Heavy alcohol consumption was associated with a higher risk of incident elevated blood pressure (hazard

ratio [HR] 1.48; 95% confidence interval [CI], 1.07-2.06; P = 0.020) in men and abdominal obesity (HR 1.86; 95% CI, 1.06-3.27; P = 0.030) in women. However, in smokers, the inverse association of light or moderate alcohol consumption with hypertriglyceridemia and abdominal obesity was not present, whereas a positive association between heavy alcohol consumption and hyperglycemia (HR 1.39; 95% CI, 1.07-1.80; P = 0.014) was observed.

Light or moderate alcohol drinkers had a lower risk of developing MetS, abdominal obesity, hyperglycemia, hypertriglyceridemia, and low HDL-C compared with never drinkers. However, smoking status strongly affects the association between long-term alcohol consumption and MetS and its components by the amount of alcohol consumed, the authors conclude.

Source: Lee K, Giovannucci EL, Kim J. The Effect of Smoking and Sex on the Association Between Long-term Alcohol Consumption and Metabolic Syndrome in a Middle-aged and Older Population. *J Epidemiol.* 2021 Apr 5;31(4):249-258. doi.org/10.2188/jea.JE20190328.

Should fertile women quit drinking alcohol to produce better quality oocytes?

Alcohol consumption has been shown to affect both foetal health and pregnancy. In a study published in the journal *Zygote*, scientists from Cyprus assessed whether alcohol consumption affects oogenesis.

Antral follicle count (a measure of the ovarian reserve), maturation level of oocytes including morphological assessment and number of metaphase I (MI), metaphase II (MII) and germinal vesicle (GV) stage oocytes were obtained from young women (age < 30 years old).

In total, 20 healthy women who were social drinkers and 36 healthy women who did not consume alcohol were involved in this study. Women in both study and control groups were undergoing controlled ovarian stimulation.

The antral follicle count and the number and quality of the oocytes retrieved were evaluated and recorded. In total, 635 antral follicles, 1098 follicles and 1014 oocytes with 820 MII, 72 MI and

78 GV stage oocytes were collected from the social drinkers. In the control group, 628 antral follicles, 1136 follicles and 1085 oocytes with 838 MII, 93 MI and 102 GV stage oocytes were evaluated.

The results of this study showed that the antral follicle count was very similar in both groups. The number of oocytes and MII stage oocytes was slightly higher in the control group, although it was not a significant difference.

This study demonstrates that although the consumption of alcohol may have adverse effects post-implantation, it may not have a solid effect during oogenesis in young women. The results of this study are especially important in clinical settings as some women who are social drinkers undergo in vitro fertilization treatments.

Source: Ozbakir B, Tulay P. Should fertile women quit drinking alcohol to produce better quality oocytes? *Zygote.* 2021 Apr;29(2):176-178. doi.org/10.1017/S0967199420000696.



Polygenic risk score, healthy lifestyles, and risk of incident depression

Genetic factors increase the risk of depression, but the extent to which this can be offset by modifiable lifestyle factors is unknown. Researchers investigated whether a combination of healthy lifestyles is associated with lower risk of depression regardless of genetic risk.

Data were obtained from the UK Biobank and consisted of 339,767 participants (37-73 years old) without depression between 2006 and 2010. Genetic risk was categorised as low, intermediate, or high according to polygenic risk score for depression. A combination of healthy lifestyles factors-including no current smoking, regular physical activity, a healthy diet, moderate alcohol intake and a body mass index <30 kg/m²-was categorised into favourable, intermediate, and unfavorable lifestyles.

The risk of depression was 22% higher among those at high genetic risk compared with those at low genetic risk (HR = 1.22, 95% CI: 1.14-

1.30). Participants with high genetic risk and unfavourable lifestyle had a more than two-fold risk of incident depression compared with low genetic risk and favourable lifestyle (HR = 2.18, 95% CI: 1.84-2.58). There was no significant interaction between genetic risk and lifestyle factors. Among participants at high genetic risk, a favourable lifestyle was associated with nearly 50% lower relative risk of depression than an unfavourable lifestyle (HR = 0.51, 95% CI: 0.43-0.60).

The researchers concluded that genetic and lifestyle factors were independently associated with risk of incident depression. Adherence to healthy lifestyles may lower the risk of depression regardless of genetic risk.

Source: Cao Z, Yang H, Ye Y, Zhang Y, Li S, Zhao H, Wang Y. Polygenic risk score, healthy lifestyles, and risk of incident depression. *Transl Psychiatry*. 2021 Mar 29;11(1):189. doi.org/10.1038/s41398-021-01306-w.

Resveratrol in red wine could help to treat endometriosis

Researchers at the Iran University of Medical Sciences in Tehran have found that the anti-inflammatory properties of resveratrol, present in red wine and berries, could help to treat endometriosis.

Endometriosis is a condition where tissue similar to the lining of the womb starts to grow in other places, such as the ovaries and fallopian tubes. It can affect women of any age and can cause chronic pain, irregular bleeding and infertility. There is no cure for endometriosis, which is treated with anti-inflammatory medication.

The study aimed to find out how effective resveratrol – an antioxidant-rich compound was in treating the symptoms of endometriosis. The researchers tested the antioxidant in the lab on endometrial cells, collecting endometrial cells from 40 patients suffering from stage 3 or 4

endometriosis, along with 15 patients without the condition. After isolating the cells, the scientists treated them with varying amounts of resveratrol.

Three genes and the proteins they produce cause endometrial cells growing outside the uterus: vascular endothelial growth factor (VEGF), transforming growth factor-β (TGF-β) and matrix metalloproteinase-9 (MMP-9). The researchers found that resveratrol suppressed all three of the genes, controlling inflammation.

“According to the findings, resveratrol may ameliorate endometriosis progression through reducing the expression of these genes in endometrial cells,” the researchers report, adding that further research was needed.

Source: Arablou, T., Aryaeian, N., Khodaverdi, S. et al. The effects of resveratrol on the expression of VEGF, TGF-β, and MMP-9 in endometrial stromal cells of women with endometriosis. *Sci Rep* 11, 6054 (2021). doi.org/10.1038/s41598-021-85512-y



Meta-analysis of alcohol consumption and venous thromboembolism

The associations of alcohol consumption and venous thromboembolism (VTE) have been investigated widely, but the conclusions were inconsistent. The authors of a paper published in the Journal Of Public Health summarise the relationship of alcohol consumption and VTE.

Embase, Web of Science and the Cochrane Library databases were searched from inception to September 2019 and reviewed the reference list of relevant articles to identify studies assessing the association between alcohol consumption and risk of VTE. Fourteen cohorts and four case-control studies were included in a meta-analysis.

Compared with non-drinkers, the risk of VTE was decreased (RR: 0.93; 95% confidence interval [CI]

0.88-0.99) for alcohol drinkers. The pooled RRs of VTE were 0.91 (95% CI 0.84-0.99) for low to moderate alcohol intake (0.1-14.0 drinks/week) and 0.91 (95% CI 0.78-1.06) for high alcohol intake (>14.0 drinks/week) compared with non-drinker. Subgroup analysis showed liquor/spirit intake might slightly increase the risk of VTE (1.01; 95% CI 0.85-1.21) although the difference was not significant.

Source: Alcohol consumption in low to moderate was associated with a significantly lower risk of VTE. Zhang X, Chen X, Yang J, Du L, Zhou Y, Li K. Meta-analysis of alcohol consumption and venous thromboembolism. *J Public Health (Oxf)*. 2021 Apr 7:fdab045. doi.org/10.1093/pubmed/fdab045

Adolescents' perceived drinking norms toward alcohol misuse

A review brings together prior research on the relationship between adolescents' perceived subjective and descriptive drinking norms and their drinking intention and behaviours.

Four databases (CINAHL, PubMed, Cochrane, and Sociological Abstracts) were searched to identify relevant articles. Thirty-one peer-reviewed articles published from 2010 to 2020 were reviewed.

Results highlight that adolescents' perceived drinking norms derived from their parents and peers, such as approving or disapproving attitudes, significantly influence adolescents' drinking intention and behaviours. Moreover, pro-drinking messages, advertisements, and postings from electronic media (i.e., TV, movies,

and the Internet) and online social networks (e.g., Facebook, Instagram, and Twitter) shape adolescents' drinking intention and encourage adolescents to initiate alcohol consumption early and/or escalate their drinking.

The authors comment that future interventions should focus on subjective drinking norms that stem from interpersonal relationships in combination with perceived descriptive drinking norms derived from various media exposure.

Source: Kantawong E, Kao TA, Robbins LB, Ling J, Anderson-Carpenter KD. Adolescents' Perceived Drinking Norms Toward Alcohol Misuse: An Integrative Review. *West J Nurs Res*. 2021 Mar 19:193945921998376. doi.org/10.1177/0193945921998376.

The association between child alcohol sipping and alcohol expectancies

Relatively little is known about child sipping of alcohol and its relation to beliefs about alcohol. Findings from a US study suggest that children are often given their first sip of alcohol by a parent and child alcohol sipping, irrespective of context, was uniquely related to positive alcohol expectancies.

The findings, published in the April issue of the journal *Drug and Alcohol Dependence*, are based on responses from more than 4,800 children who were part of the Adolescent Brain Cognitive Development, a longitudinal study of children in the United States.

The researchers found that 22% of the sample had sipped alcohol. Children reported sipping

beer most frequently, and the drink most often belonged to the child's father. Children who had sipped had higher positive alcohol expectancies than children who had not while accounting for variables related to alcohol expectancies. Child sipping was not significantly associated with negative expectancies and the context of the first sip of alcohol was not significantly associated with positive and negative expectancies.

Source: Mikela A. Murphy, Steven C. Dufour, Joshua C. Gray. The association between child alcohol sipping and alcohol expectancies in the ABCD study, *Drug and Alcohol Dependence*, Volume 221, 2021, 108624, ISSN 0376-8716. doi.org/10.1016/j.drugalcdep.2021.108624.



Risk factors associated with curiosity about alcohol use in the ABCD cohort

Curiosity and intent to use alcohol in pre-adolescence is a risk factor for later experimentation and use, yet little is known of how curiosity about use develops. Researchers examined factors that may influence curiosity about alcohol use, as it may be an important predictor of later drinking behaviour.

The research used cross-sectional data on 2,334 youth aged 10-11 from the ongoing Adolescent Brain Cognitive Development (ABCD) Study Year 1 follow-up. All participants were substance-naïve at time of assessment.

An analysis identified latent factors across common indicators of risk for early substance use (i.e., psychopathology and trait characteristics; substance use attitudes/ behaviours; neurocognition; family and environment). The associations between latent factors of risk for early substance use and curiosity about alcohol use, were estimated controlling for demographics and study site.

Two multidimensional factors were significantly associated with greater curiosity about alcohol use: 1) for inverse association, low internalizing

and externalizing symptomatology coupled with low impulsivity, perceived neighborhood safety, negative parental history of alcohol use problems, and fewer adverse life experiences and family conflict; and 2) for a positive association, low perceived risk of alcohol use coupled with lack of peer disapproval of use.

Taken together, perceptions that alcohol use causes little harm and having peers with similar beliefs is related to curiosity about alcohol use among substance-naïve 10-11-year-olds. The authors state that general mental health and environmental risk factors similarly increase the odds of curiosity for alcohol. Identification of multidimensional risk factors for early alcohol use may point to novel prevention and early intervention targets. Future longitudinal investigations in the ABCD cohort will determine the extent to which these factors and curiosity predict alcohol use among youth.

Source: Wade NE, Palmer CE, Gonzalez MR, Wallace AL, Infante MA, Tapert SF, Jacobus J, Bagot KS. Risk factors associated with curiosity about alcohol use in the ABCD cohort. *Alcohol*. 2021 May;92:11-19. doi.org/10.1016/j.alcohol.2021.01.002.

The influence of alcohol consumption on fighting, shoplifting and vandalism in young adults

Experimental studies support the conventional belief that people behave more aggressively whilst under the influence of alcohol. To examine how these experimental findings manifest in real life situations, a study used a method for estimating evidence for causality with observational data- 'situational decomposition' to examine the association between alcohol consumption and crime in young adults from the Avon Longitudinal Study of Parents and Children. Self-report questionnaires were completed at age 24 years to assess typical alcohol consumption and frequency, participation in fighting, shoplifting and vandalism in the previous year, and whether these crimes were committed under the influence of alcohol.

Situational decomposition compares the strength of two associations, (1) the total association

between alcohol consumption and crime (sober or intoxicated) versus (2) the association between alcohol consumption and crime committed while sober. There was an association between typical alcohol consumption and total crime for fighting [OR (95% CI): 1.47 (1.29, 1.67)], shoplifting [OR (95% CI): 1.25 (1.12, 1.40)], and vandalism [OR (95% CI): 1.33 (1.12, 1.57)]. The associations for both fighting and shoplifting had a small causal component (with the association for sober crime slightly smaller than the association for total crime). However, the association for vandalism had a larger causal component.

Source: Evans I, Heron J, Murray J, Hickman M, Hammerton G. The Influence of Alcohol Consumption on Fighting, Shoplifting and Vandalism in Young Adults. *Int J Environ Res Public Health*. 2021 Mar 28;18(7):3509. doi.org/10.3390/ijerph18073509. PMID: 33800640.



Trends in adolescent alcohol and other risky health- and school-related behaviours and outcomes in Australia

Adolescent drinking has been declining in Australia over the past two decades, but this trend may be part of a broader shift towards healthier lifestyles for adolescents. A recent study published in the Drug and Alcohol Review examined trends in the prevalence of multiple risky health- and school-related behaviours and outcomes to test whether this was the case.

Data on multiple behaviours and outcomes were collated from Australian government agencies and other relevant sources for 10–19-year-olds from the year 2000 onward.

Rates of substance use, youth offending and injuries due to underage driving declined over the study period. Some health-related behaviours (physical activity and diet) worsened between 2001 and 2017; however, obesity rates remained stable. Risky sexual behaviours increased in terms of early initiation of lifetime sexual intercourse and decreased condom use. However, sexual health outcomes improved with a reduction in teenage

pregnancies and there was a recent decline in sexually transmitted infection rates from 2011 onward. Suicide rates and rates of major depressive disorders increased. School attendance and engagement in full-time work or study remained stable.

The decline in adolescent drinking does not appear to correspond with increased engagement in healthier behaviours; however, it may be related to a more risk-averse way of living, the authors suggest. Future work could be directed towards identifying which social, economic, policy and environmental factors have impacted positive changes in risky behaviours. Public health efforts can then be directed towards behaviours or outcomes that have not yet improved.

Source: Vashishtha R, Pennay A, Dietze PM, Livingston M. Trends in adolescent alcohol and other risky health- and school-related behaviours and outcomes in Australia. *Drug Alcohol Rev.* 2021 Mar 14. doi.org/10.1111/dar.13269.

The development of drinking trajectories among Australian young adults

A second study compared drinking trajectories for two cohorts of adolescents and young adults, 10 years apart, to assess whether recent declines in adolescent drinking in Australia represent fundamental shifts in typical drinking behaviour.

Six waves of annually collected, responses from two cohorts of adolescents and young adults aged 15–25 in 2001 or 2011 were selected from the Household, Income and Labour Dynamics in Australia survey (HILDA). Latent class growth analysis was used to determine the best fitting drinking trajectories for both cohorts.

Light/abstaining, moderate/moderate-steady, and heavy drinking classes were observed in both cohorts, whereas an additional moderate-increasing class in the earlier cohort was absent from the recent one. The two lowest trajectories (light/abstaining and moderate/moderate-steady) appeared relatively stable across cohorts, despite

an increase in light/abstaining drinkers in the recent cohort. The heaviest drinkers, however, consumed substantially less in the recent cohort than the earlier one.

The authors found reduced consumption across drinking patterns, suggesting that youth drinking declines are not attributable to significant shifts in drinking behaviours; rather, adolescents and young adults are drinking in a similar, albeit significantly lower, fashion. The stability of these trajectories, and the continuation of these declines into adulthood, suggest that reductions in alcohol-related harm may be likely for recent cohorts across their life course.

Source: The Development of Drinking Trajectories Among Australian Young Adults. Geoffrey Leggat, Michael Livingston, Sandra Kuntsche, and Sarah Callinan. *Journal of Studies on Alcohol and Drugs* 2021 82:2, 237–245. doi.org/10.15288/jsad.2021.82.237

(See page 37 for M Livingstone's presentation at the NDARC Webinar series).



Alcohol consumption during a pandemic lockdown period and change in alcohol consumption related to worries and pandemic measures in Norway

Research published in the International Journal of Environmental Research and Public Health assessed alcohol consumption and hazardous drinking behaviour during the initial phase of pandemic measures in Norway and identified potential risk factors.

A cross-sectional study, which included 25,708 participants was conducted in Bergen, Norway, following the first six weeks of strict infection control measures.

Fifty-one percent of respondents reported economic or health-related worries due to COVID-19, 16% had been in quarantine, 49% worked/studied from home, 54% reported hazardous drinking behaviour, and 13% reported increased alcohol consumption. People aged 30-39 years had elevated odds of increased alcohol consumption during lockdown (OR 3.1, 2.4-3.8) compared to the oldest adults. Increased drinking was more frequent among people

reporting economic worries (OR 1.6, 1.4-1.8), those quarantined (OR 1.2, 1.1-1.4), and those studying or working at home (OR 1.4, 1.3-1.6). More than half of respondents reported hazardous drinking behaviour.

Increased alcohol consumption during lockdown was common among people with economic worries, people in quarantine, and people studying or working at home. The researcher comment that these data could be important when adjusting pandemic measures.

Source: Alpers SE; Skogen JC; Maeland S; Pallesen S; Kjetland Rabben A; Lunde LH; Fadnes LT, "Alcohol consumption during a pandemic lockdown period and change in alcohol consumption related to worries and pandemic measures", International Journal of Environmental Research and Public Health, Vol 18, No 3, 2021, Art No 1220, 11pp. doi.org/10.3390/ijerph18031220

Moderators of friend selection and influence in relation to adolescent alcohol use

Friendships form an important context in which adolescents initiate and establish alcohol use patterns, but not all adolescents may be equally affected by this context. A research project tested whether parenting practices (i.e., parental discipline, parental knowledge, unsupervised time with peers) and individual beliefs (i.e., alcohol descriptive norms, positive social expectations, moral approval of alcohol use) moderate friend selection and influence around alcohol use.

Social network and survey data from 12,335 adolescents (aged 11 to 17, 51.3% female) who were participating in the PROSPER project were analysed.

Adolescents who reported consistent parental discipline, less unsupervised time with peers, higher descriptive alcohol use norms, and less positive social expectations about alcohol use were less likely to select alcohol-using friends. Those who reported consistent parental discipline, better parental knowledge, lower descriptive alcohol use

norms, and less positive social expectations were more influenced by their friends' level of alcohol use. Thus, adolescents with these characteristics whose friends frequently use alcohol are at greater risk whereas those whose friends do not use alcohol are at lower risk of using alcohol.

The findings show that, although selection and influence processes are connected, they may function in different ways for different groups of adolescents. For some adolescents, it is particularly important to prevent them from selecting alcohol-using friends, because they are more susceptible to influence from such friends. These peer network dynamics might explain how proximal outcomes targeted by many prevention programs (i.e., parenting practices and individual beliefs) translate into changes in alcohol use.

Source: Hoeben EM, Rulison KL, Ragan DT, Feinberg ME. Moderators of Friend Selection and Influence in Relation to Adolescent Alcohol Use. *Prev Sci.* 2021 Mar 11. doi.org/10.1007/s11121-021-01208-9.



THC and CBD effects on alcohol use among alcohol and cannabis co-users

Conflicting evidence exists regarding the effects of cannabis on alcohol consumption, with some studies suggesting that cannabis is a substitute for alcohol, whereas others suggest that cannabis complements alcohol, thereby increasing drinking. Cannabidiol (CBD) has shown preclinical promise in decreasing alcohol consumption. A study explored the effects of cannabis containing different potencies of CBD and delta-9-tetrahydrocannabinol (THC) on alcohol consumption.

In the study, 120 cannabis and alcohol-using adults (mean age = 33.2 years, 39.2% female, 83.3% white) were assigned to use one of three legal-market cannabis strains (predominantly THC, predominantly CBD, and CBD + THC) ad libitum for 5 days. Data on drinking and cannabis use were collected at a baseline session pertaining to the 30 days prior to the ad libitum period, and

data regarding alcohol and cannabis use during the 5-day period were collected at follow-up (FU), immediately following the 5-day period.

The results showed that the CBD group drank fewer drinks per drinking day ($p < .05$), had fewer alcohol use days ($p < .05$), and fewer alcohol and cannabis co-use days ($p < .05$) compared with the other groups. No differences emerged between the THC and the CBD + THC group.

The researchers conclude that cannabinoid content should be considered in studies of alcohol and cannabis co-use. Findings are consistent with preclinical work, suggesting that CBD may be associated with decreased alcohol consumption.

Source: Karoly HC, Mueller RL, Andrade CC, Hutchison KE. THC and CBD effects on alcohol use among alcohol and cannabis co-users. *Psychol Addict Behav.* 2021 Mar 25. doi.org/10.1037/adb0000706.

Understanding the differential effect of alcohol consumption on the relation between socio-economic position and alcohol-related health problems

A study conducted in Sweden tested whether the harmful effects of average volume of alcohol consumption (AC) and heavy episodic drinking differ by socio-economic position, and if so, to what extent such differential effects can be attributed to an unequal distribution of harmful levels and patterns of drinking, health, life-style and social factors.

The study was based on 37 484 individuals, aged 25-70 years, responding to the Stockholm Public Health Cohort survey in 2002 or 2006, with record-linkage to national registers.

Self-reported information on occupational class (measure of socio-economic position), alcohol consumption, heavy episodic drinking as well as other health-related factors were extracted from the surveys. Average follow-up time was 13.3 years.

During follow-up, a total of 1,237 first-time events of alcohol-related health problems occurred. After initial adjustments, heavy drinking appeared to be more harmful to individuals with low socio-economic position compared with high socio-

economic position. Differences in heavy episodic drinking frequency explained the largest part of the differential effect of alcohol consumption. Engaging in weekly heavy episodic drinking was more harmful to individuals with low socio-economic position than high socio-economic position. Differences in alcohol consumption, together with other factors, explained a large part of the differential effect of heavy episodic drinking.

The greater adverse impact of alcohol consumption on health in Sweden on people with lower socio-economic position may be largely attributable to higher prevalence of heavy episodic drinking, as well as other behavioural and social risk factors, the authors conclude.

Source: Thern E, Landberg J. Understanding the differential effect of alcohol consumption on the relation between socio-economic position and alcohol-related health problems: results from the Stockholm Public Health Cohort. *Addiction.* 2021 Apr;116(4):799-808. doi.org/10.1111/add.15213. Epub 2020 Aug 31. PMID: 32738005.



Sobriety tags launched in England to tackle alcohol-related crime

Sobriety tags and drinking bans aimed at reducing alcohol-related crimes were launched in England on 31 March. Offenders who commit alcohol-driven crimes could be ordered to wear a tag which takes a sample of their sweat every 30 minutes and alerts the probation service if alcohol is detected. They face further court sentences or fines if caught breaching a ban.

The launch follows a successful rollout in Wales where more than 100 offenders have been tagged since the scheme launched in October. It has proven effective, with offenders staying sober on over 95% of days monitored and many have also

credited the scheme with helping them improve their lifestyle. Probation officers say the tags have helped the offenders stay away from crime.

Minister for Crime and Policing, Kit Malthouse MP said: These tags have already brought enormous benefit to Wales since they were introduced in October (and they) have helped probation officers in Wales steer offenders away from bad habits and get them the support they need to turn their backs on crime.

The scheme has already been trialled in Humberside, Lincolnshire, North Yorkshire and London.

25 Years of the Portman Group Code

The Portman Group's Code of Practice for the Naming, Packaging and Promotion of Alcoholic Drinks was first published 25 years ago, in 1996.

The Code, now on its sixth edition, seeks to ensure that alcohol is promoted in a socially responsible way, only to those aged 18 and over, and in a way that does not appeal particularly to those who are vulnerable. The Portman Group states that the Code has helped create an industry that works effectively within the context of a self-regulatory model, while encouraging design, innovation and creativity. This has been done in a cost-effective, responsive and effective way.

- Inexpensively – the 12 leading members of the industry are currently funding the model for all to be protected at no cost to the public purse;
- Responsively – there have been 6 updates to the Code over 25 years responding to changes in public attitudes and expanding its reach; all without recourse to Government or Parliamentary time;
- Effectively – over 160 products have been amended or removed from the market. Many hundreds more have been helped to adhere to the Code before appearing on shelves through the support of the Advisory Service.

To mark the 25th anniversary of the Code, the Portman Group will be releasing a blog from the regulatory team each month, providing more insight, advice and transparency to the process. They are also looking back on 25 decisions over 25 years via Twitter. As part of the celebrations of 25 years of the Portman Group Code of Practice the

Group is launching the Taking Responsibility – Responsible Regulation of Alcohol seminar series. Over the course of the year, seminars will explore how alcohol is regulated, the key trends for the sector, and to provide greater transparency on the workings of the Code.

An inaugural event will be hosted looking at the success of the self-regulatory model, reviewing the changes from the past three years as the Code was revised and embedded, and looking forward to likely changes in the regulatory landscape for 2021.

portmangroup.org.uk/the-launch-of-the-responsible-regulation-of-alcohol-seminar-series/



Scotland minimum pricing review

The Scottish Government have committed to reviewing the minimum price for alcohol. In a written Holyrood question, Monica Lennon, Scottish Labour candidate for Hamilton, Larkhall and Stonehouse, asked the Scottish Government what "plans it has to review the unit price of alcohol, in light of its commitment to do so after two years of implementation."

Mairi Gougeon, Scotland's Public Health Minister, responded: "Work to review the minimum unit price level was paused in order to respond to the urgent demands of handling the Covid-19 pandemic in 2020. "This has restarted in order to review the level in the course of this year."

Using alcohol interlocks to reduce drink driving in the UK

In a report published in March, The Parliamentary Advisory Council for Transport Safety (PACTS) calls on the UK Government to develop and implement an alcohol interlock programme as soon as possible.

The report, 'Locking Out the Drink Driver: Using alcohol interlocks to reduce drink driving in the UK', reviews the experience of other countries with interlock programmes in Europe, the US, Canada, Australia and New Zealand. It also reviews the research on the effectiveness of alcohol interlocks.

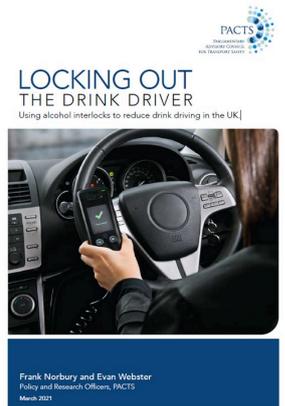
The report concludes that alcohol interlocks are much more effective than disqualification at reducing recidivism. If alcohol interlock programmes include rehabilitation measures, such as courses similar to the UK drink drive rehabilitation course, they reduce reoffending whilst fitted and after removal.

The PACTS concludes that alcohol interlocks can and should be introduced in the UK as part of the regime available to the courts for drink drive offenders. The more extensively they are applied, the greater the road safety benefits will be.

Commenting on the report, David Davies, Executive Director of the Parliamentary Advisory Council for Transport Safety, said: "We were shocked to find that one in six drink driving offences is committed by someone previously convicted. Since 2010, this amounts to over 100,000 offences – each of which is highly dangerous for the driver and other road users. Clearly the current system is not adequate."

"A number of other countries have introduced alcohol interlocks to prevent repeat drink driving and to bring down the number of deaths and injuries that result. Alcohol interlocks have proved highly effective. PACTS is calling on the government to give UK courts the powers to impose them without delay.

pacts.org.uk/news-and-publications/13550/



Call for trials of age-verification technology in alcohol sales

The Home Office and the Office for Product Safety and Standards have issued a call for proposals from technology providers to run trials of innovative age-assurance solutions regarding the retail sale of alcohol.

They are providing a 'regulatory sandbox' - a way to support experimentation and testing of innovative technology in live environments. It will enable industry and retail to test innovative approaches to age verification, such as digital ID and other products with age assurance attributes, in the specific context of the sale of alcohol under the Licensing Act 2003.

The government has now published the first working version of the digital ID and attributes trust framework. As this framework develops, the trials will contribute to this work by testing the practical use of age verification technology in real world situations and building our understanding of the implications.

A number of sessions have been set up to provide opportunities to discuss the sandbox and application process.

gov.uk/government/news/call-for-trials-of-age-verification-technology-in-alcohol-sales

Consultation on calorie information on pub drinks in the UK

The UK government is reported to have confirmed that, as part of the Department for Health and Social Care's Obesity Strategy, it will shortly be launching a consultation on mandatory calorie labelling on alcohol in the UK. The UK pubs trade body, the British Beer and Pubs Association has criticised the plan. Emma McClarkin, Chief Executive of the British Beer & Pub Association,

attacked the proposals as "outrageous", adding that "Proposals to force calorie labelling on pints sold in pubs are ludicrous – and especially outrageous at this difficult time. After more than a year of being forced to close fully or operate under severe loss-making restrictions, now is not the time to heap burdensome and expensive regulation on our pubs".

Underage drinking: key findings from the latest ESPAD Survey

SpiritsEurope have published a summary of the key findings from the latest European School Survey Project on Alcohol and Other Drugs (ESPAD).

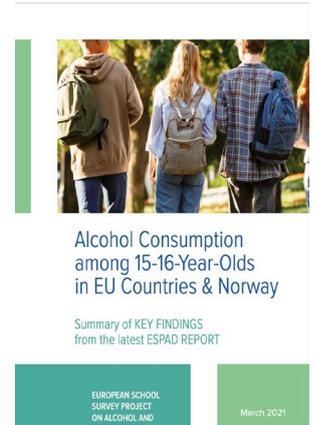
The ESPAD report is based on an anonymous survey that is regularly conducted among 100,000 students in 35 European countries. The latest ESPAD report for 2019 was published in December 2020.

According to SpiritsEurope, positive trends in underage drinking – less alcohol consumption, less binge drinking, less 15-16-year-olds ever to be drunk – are continuing across the EU. Alcohol consumption in the past 30 days has dropped 22% (vs. 2003 levels), heavy episodic drinking has decreased by 19% and frequent heavy episodic drinking by 24% (vs. 2007). 86% of respondents reported never being drunk in the past 30 days, the highest level since the start of ESPAD surveys in 1995.

The report highlights that the pace of improvements has somewhat slowed in the past four years and notable differences exist

between countries: certain positive trends are more pronounced in some countries, while they are less so in others. As demonstrated by these differences, the authors suggest that, there seems to be no one-size-fits-all approach to address the issue of underage drinking across Europe and conclude that targeted, country-specific interventions adapted to their respective social and cultural contexts seem best-suited to advance the positive trends further in the future. Further, concerted, multi-stakeholder efforts also seem to contribute to the positive trends observed.

spirits.eu/upload/files/publications/CPAS-004-2021%20ESPAD%202019%20Final%20layout.pdf



Community Alcohol Partnerships annual report

The latest annual report for the Community Alcohol Partnerships (CAP), highlights how despite the pandemic, communities around the country have come together to tackle underage drinking and promote the health and wellbeing of young people.

CAP is a Community Interest Company the aim of which is to initiate and support local partnerships of councils, police, retailers, schools, health providers and other community groups to reduce alcohol harm among young people, improve their health and wellbeing and enhance their communities. Their targeted approach brings effective national programmes to areas with greatest harms whilst facilitating the development of local action plans uniquely tailored for each project area. Action plans are based around three key themes: Alcohol education in schools and for parents; provision of activities for young people that promote their health and wellbeing; and retail signage and training to prevent underage purchase.

214 projects across the UK have been launched since CAP was founded in 2007. From evaluation returns covering the period 2016-2020, the average reductions in weekly drinking for 13-16 year olds

were 61%, 99% of retailers passed the Challenge 25 compliance test for alcohol sales, 86% of retailers did not sell alcohol when they suspected it was a “proxy” sale, there was a 50% reduction in young people hanging around shops and asking to adults buy alcohol for them and there was a 42% reduction in anti-social behaviour.

CAP’s short to medium term goals are: Rapid growth in priority areas to achieve near universal coverage of CAPs in all areas with above average underage harms (target is 300 CAPs) as quickly as possible; support to sustain the impact of CAPs via the CAP+ programme; and extending the remit of CAPs to provide continued coverage after children reach 18 years and become young adults.

communityalcoholpartnerships.co.uk/images/documents/CAP-Annual-Report-2020-9.pdf



Updated estimates of population alcohol consumption in Scotland

In March, Public Health Scotland published updated estimates of sales-based population level alcohol consumption.

Data providing greater coverage of alcohol sales in the independent retail sector, and including the year following the introduction of Minimum Unit Pricing (MUP), is now available and this has been used to update the per-adult sales estimates originally published in the 2020 MESAS Monitoring Report, and Public Health Scotland's statistical analysis of off-trade alcohol sales in the year following the implementation of MUP. The independent sector includes small retailers and grocery stores with fewer than 10 outlets and accounts for approximately 6% of all off-trade sales (by value).

In the updated analysis, undertaken in collaboration with the University of Glasgow, the estimated net effect of MUP was found to be a 3.5% reduction (95% confidence interval: 2.2% to 4.9%) in off-trade alcohol sales per adult in the year following implementation – after adjustment for sales in the control area (England & Wales), disposable income and substitution between trade sectors. Whilst slightly lower than previously reported, the report authors say that both the estimated net effect of MUP and the observed impact of MUP on different drink categories are comparable with their original findings, with reductions in cider, perry and spirits, while per adult sales of fortified wine and ready-to-drink

beverages increased. Unadjusted analyses show that per adult off-trade sales fell by 2% (95% confidence interval: 0.4% to 3.6%) in Scotland overall, while they rose by 2.4% (95% confidence interval: 0.8% to 4.0%) in England & Wales.

When using the updated dataset the estimates of population level alcohol consumption in Scotland were generally higher than previously reported. However the estimate in Scotland in 2019 remains at 9.9 litres of pure alcohol per adult, equivalent to 19.1 units of alcohol per adult per week and the lowest level of pure alcohol sold in Scotland since 1994.

Lucie Giles, Public Health Intelligence Principal at Public Health Scotland, said: "The incorporation of data giving improved coverage of alcohol sales in the independent sector allows for a more robust analysis of that sector and a more accurate estimate of population alcohol consumption. It enhances the robustness of our comprehensive evaluation of the impact of MUP in Scotland and the wider MESAS programme.

Public Health Scotland will continue to monitor and evaluate Scotland's alcohol strategy through the annual MESAS report and a statistical analysis of off-trade alcohol sales in the three years following the implementation of MUP will be published in 2022.

publichealthscotland.scot/news/2021/march/updated-estimates-of-population-alcohol-consumption/

Public health experts in New Zealand call for alcohol advertising law change to protect young

Auckland Regional Public Health Service says a change in the law is needed to protect young people from alcohol advertising. Auckland's public health body and three district health boards are calling for a revision of the laws around alcohol promotion, as they say the status quo is "failing to keep young people safe".

From April 1, the alcohol industry is expected to adhere to a revised Advertising Standards

Authority (ASA) Code for Advertising and Promotion of Alcohol for all new advertisements. However, Auckland Regional Public Health Service (ARPHS) said the Code is not a legal requirement for alcohol companies, nor is it independent of the alcohol industry. It argues that a change to the law, not the "voluntary" code, is needed to protect young people from alcohol advertising.



Britons return to the pub to see friends

in April, The Portman Group published new research showing that 68% of Brits who are planning on visiting pubs when they reopen, say the reason they are most looking forward to the reopening of pubs is to reunite with friends and family, rather than purchasing food and drink they cannot get at home. The second most cited reason for returning to the pub is to regain a sense of normality (57%).

Hospitality began to open across the UK, including outside in England from 12 April. While 50% of former UK pubgoers said they intended to visit the pub with the same frequency as before, 22% said they would be visiting less and 14% said they planned to visit the pub more often once restrictions were lifted. 71% of UK drinkers intend to drink the same when pubs reopen with 15% saying they plan to drink less than they did before the pandemic.

The survey also found that 69% of UK adults incorrectly believing that the UK population has increased its alcohol consumption over the last year,

and only 6% believing it drank less. The research shows that in reality, 78% either do not drink, or drink within the Chief Medical Officer lower-risk drinking guidelines (i.e. up to 14 units), and that 73% of UK drinkers say they are drinking the same or less compared to before the pandemic. In fact, 32% said they have reduced their drinking over the course of the pandemic. These findings align with much of the research completed during the pandemic, which shows that most UK adults have continued to drink moderately and responsibly.

Speaking about the research, Portman Group CEO, Matt Lambert, commented: "The reopening of hospitality is an important step towards normality. The alcohol industry is proud to play an important role in this, and we look forward to seeing loved ones reconnect over a drink while supporting their local. As people look forward to getting together with friends and family, we are confident they will continue to drink responsibly. Our research shows the moderate majority have done so throughout the pandemic.

One in three plan to drink out more post-pandemic

More than a third of consumers intend to drink out more often when lockdown restrictions are eased in England, according to a new study from the University of Sheffield.

Researchers polled 2,000 adults to explore their attitudes towards hospitality in the post-Covid environment. The findings are drawn from a new consumer loyalty insights report led by academics from the Sheffield Business School, in partnership with Sheffield-based hospitality CRM provider Airship.co.uk and hospitality gift card platform Toggle.

According to the research, 39% of people plan to eat and drink out more often when the lockdown restrictions are lifted, compared with before the pandemic. The figure rises to 66% among 18-24-year-olds and 55% in those aged between 25 and 34. Demand to visit hospitality venues

was strongest in the north east region, with 55% of residents intending to eat and drink out more frequently, followed by Yorkshire (45%) and London (44%). 30% of people said that they were also more inclined to join a loyalty scheme with a hospitality operator compared with before the pandemic. This rises to 52% among 18-24-year-olds.

James Ellerby, hospitality academic at Sheffield Hallam University, said: "Living under lockdown has forced changes in the way people live and new habits have been formed over the last year.

"However, the findings of this report highlight how customers are keen to return to eating and drinking within hospitality businesses once restrictions are eased.

shu.ac.uk/news/all-articles/latest-news/hallam-research-shows-rise-eating-out-post-pandemic



Sex and alcohol: young adults are taking risks without knowing the consequences

In February 2021 the National Organisation for FASD teamed up with OnePoll and 72Point to learn more about young people's understanding of the risk of sex, alcohol and pregnancy. 1,200 16-25 year olds across the UK were polled and the results show that young people dangerously mix sex and alcohol without understanding the consequences. While 32% said they were taught in school about how to get pregnant and the act of having sex, 85% did not learn about the risks of alcohol in pregnancy and 84% did not learn about binge drinking. Only 45% feel they know how to prepare for a healthy pregnancy when they are ready to have a family.

The 18-25 year olds reported risky behaviour such as having sex during a night of drinking alcohol (41%), forgetting to take or wear contraception during sex that could lead to pregnancy due to having had alcohol (18%), having sex and not remembering the next day if they used contraception due to drinking alcohol (13%). 39% of 18-25 year old females reported binge drinking at least monthly – with 9% binge drinking weekly, 7% 2-3 times a week and 1% daily. (Due to their age, the poll didn't ask 16-17 year olds these questions.)

Since the start of the pandemic 18% of 16-17 year olds say it's harder to access contraception and 10% of 16-17 year olds say they or their partner have become pregnant.

Sandra Butcher, Chief Executive for The National Organisation for FASD, said, "It's important to talk about the intersect of sex, alcohol and unplanned pregnancies, especially during the pandemic. This poll and our earlier research shows young people regularly flirt with this line of booze and sex without having all the facts. These poll results should concern us all and inspire us to start talking openly about sex and alcohol and everything that comes with it."

The survey showed that while 49% of 15-25 year olds are happy to talk about hangovers only 18% are comfortable talking about how to get pregnant, 33% about contraception, 31% about binge drinking and 22% about alcohol in pregnancy. 25% said 'we don't talk about sex, drugs and alcohol in our family'. 33% said they themselves are not comfortable talking about sex. Contraception was the only area where young adults were more at ease talking to their doctors (60% 18-21 year olds, 59% 22-25) versus their friends (47% 18-21; 52% 22-25) or mums (28% 18-21; 39% 22-25).

Butcher commented "Young people should be given information about the CMO guidance during contraception discussions with their GP or other medical professionals. What are we waiting for?"

Only 35% of 16-25 year olds realised that all people with Fetal Alcohol Spectrum Disorder(s?) have brain damage due to exposure to alcohol in utero. preventfasd.info/2021/03/01/risky_behaviour_poll/

Continuing decline in alcohol consumption in Germany during 2020

The measures taken to contain the coronavirus pandemic such as closed restaurants and bars, cancelled events and cross-border traffic limitations have led to a decline in the per capita alcohol consumption in Germany in 2020.

The Federal Statistical Office (Destatis) reports that per capita consumption of beer, sparkling wine and spirits were down on 2019. In particular, there was a strong decline in beer sales during the lockdown months.

Sparkling wine sales were 3.2% lower compared with 2019. The average per capita consumption last year for sparkling wine was 3.3 litres and for spirits it was 2.1. This was a decrease of 2.1% and 0.9%, respectively, compared with 2019.

The most substantial decline was recorded in the per capita beer consumption; it fell by 5.4% to 86.9 litres, which was the strongest decline in the past 10 years. This means that the per capita beer consumption was down by five litres in 2020 compared with the previous year. By contrast, the consumption of so-called intermediate products, which mainly include wines to which alcohol was added, such as Sherry, Madeira or Port wine, increased for the fifth time in a row in 2020. The relevant per capita consumption was 0.2 litres, which was a 7.7% increase on 2019.

destatis.de/EN/Press/2021/03/PE21_148_799.html



Evaluation of alcohol education programme in Ireland

The results of Maynooth University's 3-year longitudinal evaluation of Drinkaware's Junior Cycle Alcohol Education Programme in Ireland shows positive impact.

13,000 students have participated in the programme to date and over 350 Junior Cycle students from 19 schools across the country, were surveyed as they participated in the programme over a three-year period (2018-2020). The study also collated the experiences and views of approximately 132 teachers who were involved in delivering the Junior Cycle Alcohol Education Programme (JC AEP).

The report found that as the students progressed through the JC AEP, the proportion who expressed no intention or interest in drinking, rose from 30% in 1st year to 54% in 3rd year. The findings also show that participation led to substantial and sustained improvements in students' knowledge and understanding of alcohol when compared with pre-programme delivery data. Students' knowledge of the impact of alcohol on overall health and wellbeing increased substantially and progressively from 22% pre-programme to 50% in 3rd year. A similar increase was found regarding students who reported 'knowing a lot' about alcohol's impact on mental health which also doubled from 23% pre-programme to 46% in 3rd year. 46% of participating students identified the negative impact of alcohol on physical and mental health as a reason why teenagers do not drink.

As the study followed participating students through the first three years of school, there was a marked shift across some of the results when comparing 2nd and 3rd year data (the tipping point). For instance, the 60% (approx.) of students who indicated that they had never drunk alcohol remained fairly stable between 1st and 2nd year, but then decreased sharply by 17% as students went from 2nd to 3rd year.

The report highlights the importance of parents' role in underage drinking. Parental permissiveness – even if this is only perceived by the student – and the ease with which alcohol can be accessed in the home setting, may either inhibit or enable underage drinking. 57% of 3rd year students had first consumed alcohol either in their own or someone else's home, most saying they did so with little difficulty whilst only 1 in 4 said they got into trouble with parents for drinking. In contrast

to the 44% in 3rd year who cited tolerant parental views regarding alcohol, 19% indicated that their parents do not like to see them drinking, and 17% of those in 3rd year who had not started drinking cited concerns over their parents' reaction as a deterrent to drinking.

The findings on the views of teachers, reflected a general consensus that parents/guardians should take primary responsibility for alcohol education (63%) and that they either were not fulfilling this role or needed support to do so.

The study found consistently high proportions of students in each year of the evaluation, rated the JC AEP highly; for example, 63% of students in Year 3 rated it as 'excellent', 'very good' or 'good'. 60% also said that they would recommend the programme to other students/schools. On average across the 3 years 96% of the teachers thought that the programme was 'excellent', 'very good' or 'good' and 93% would recommend it to other schools. Teachers also, in increasing numbers, enjoyed delivering the programme as it progressed across the three year (94% in year 3, 89% in Year 2, and 86% in year 1).

drinkaware.ie/wp-content/uploads/2021/03/Summary-Report-FINAL.pdf

New alcohol strategy in Norway

On March 11, the Norwegian government presented its new alcohol strategy, which has been designed to help achieve the government's objective of reducing per capita alcohol use by 10% by 2025. The development of an ambitious alcohol strategy was part of a decision in the Norwegian parliament (Storting) in 2018 and took three years to develop with the goal to provide concrete actions and direction on how to reach the alcohol policy related targets.

According to the published document, the Norwegian government will:

1. continue the main lines of alcohol policy;
2. support alcohol prevention in the municipalities;
3. reinforce early action against harmful alcohol use;
4. promote non-alcoholic arenas in collaboration with volunteering, sports, schools and the social partners;
5. strengthen knowledge and competence about alcohol;
6. prioritize research on disease development and alcohol-related injuries.

regjeringen.no



Significant drop in children drinking alcohol and smoking in Ireland

A report from the National University of Ireland Galway presents trends in the health and wellbeing of children in Ireland between 1998 and 2018.

The Irish Health Behaviour in School-aged Children (HBSC) study has been collecting data from school-aged children aged 10-17 since 1998. The most recent data collection took place in 2018 and was the sixth survey cycle of the study in Ireland. To date, HBSC Ireland has collected data from 62,720 school-aged children aged 10-17 years across the Republic of Ireland. This latest report describes the self-reported health status of children in Ireland over time in relation to key indicators: health behaviours, health outcomes, and the social contexts of their lives.

The report highlights an overall significant decrease in the proportion of children who report engaging in risky health behaviours such as smoking and drinking alcohol. There are also improvements in health behaviours such as fruit consumption and toothbrushing, but no increase in physical activity.

Between 1998 and 2018 there was a statistically significant decrease in the proportion of children who reported having ever been drunk (33.0% in 1998; 19.0% in 2018). There was a moderate decrease in the percentage of girls who reported having ever been drunk, and there was a large decrease for boys. The decrease was most evident among younger children and across all social class groups.

In the same period, there was a statistically significant decrease in the proportion of young people aged 15-17 who had ever drunk alcohol that reported having their first alcoholic drink at age 13 or younger (42.1% in 2002; 16.4% in 2018). The analysis also found a large decrease in the percentage of 15-17 year old girls and boys who reported that they were 13 or younger when they had their first alcoholic drink. The decrease is evident across all social class groups.

Figure 4: Percentage of 10-17 year olds who reported having ever been drunk, overall and by gender from 1998-2018

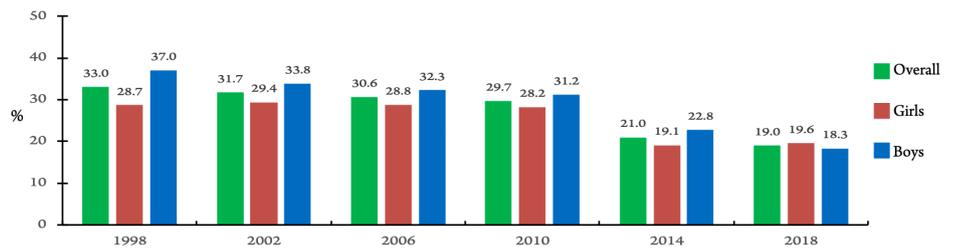
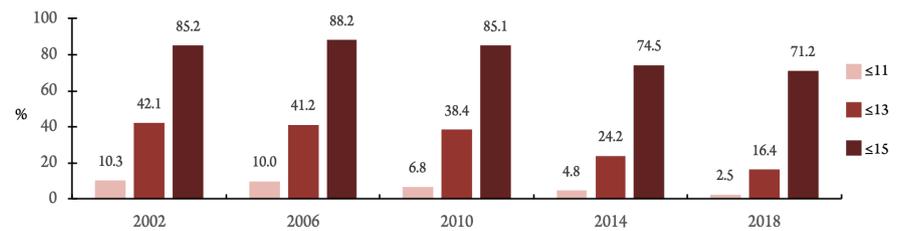


Figure 5: Age of first alcoholic drink in 15-17 year olds who reported ever having had an alcoholic drink, from 2002-2018



For health outcomes, there was a significant increase in having a headache at least weekly and feeling low at least weekly, both negative health outcomes. There was also a significant decrease in the proportion of children who reported feeling happy about their life at present and in high life satisfaction, both positive health outcomes. However, there was a statistically significant increase in the proportion of children who reported their health was excellent.

Trends are reported for four social contexts of children’s lives: family, school, peers and local area, with both positive and negative trends in all four contexts. There was an increase in those finding it easy to talk to their mother, easy to talk to their father, and easy to talk to friends, as well as in liking school, and having good places to spend free time. However, there was also an increase in the proportion of children who reported feeling pressured by school work and a decrease in the proportion of children living with both parents, having three or more friends of the same sex, and always feeling safe in the area where they live.

nuigalway.ie/media/healthpromotionresearchcentre/hbscdocs/nationalreports/HBSC-Trends-Report-2021.pdf



OEDA-COVIDO Survey in Spain

The Spanish Observatory of Drugs and Addictions has conducted a survey comparing lifestyles behaviours before and during the COVID pandemic. The survey included 9,000 people across Spain.

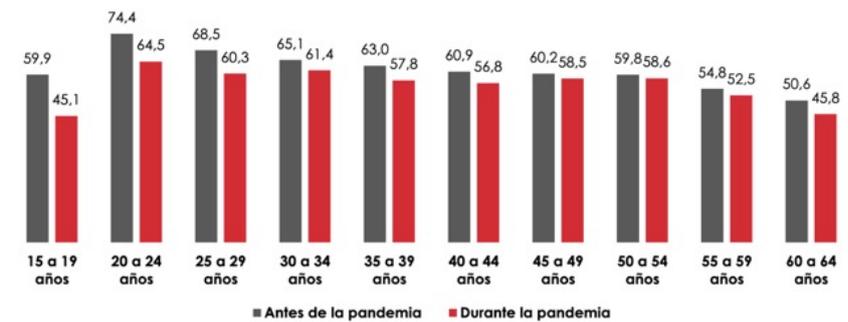
Prior to the Covid-19 pandemic, that is, before March 2020, the prevalence of alcohol consumption in those interviewed between 15 and 64 years of age was 62%. Consumption was higher in men than in women (70.6% v 53.4% respectively). These values decreased slightly during the pandemic, to 57.3% in the total population, 66.2% in men and 48.3% in women). Analyzing the results according to age, there was a lower consumption of alcoholic beverages in all age groups during the pandemic, with a greater decrease in younger groups

9.4% of the population reported daily consumption of alcoholic beverages in the last 30 days during the Covid-19 pandemic, being higher in men (13.7%) than in women (5.0%). Daily consumption of alcoholic beverages was more likely as age increases, with the exception of the 15-24 year group where the prevalence is higher than in the 25 group -34 years.

For those who have changed their pattern of drinking, 7.1% of the population have stopped consuming alcohol during the pandemic (more women than men), while 2.3% started to consume it. 3.3% have increased consumption, 30.1% have maintained the same consumption as before the pandemic and around 21.6% report drinking less. Among those who indicate that they have increased alcohol consumption during the pandemic, 93.6% report having increased the frequency of consumption and 51.3% the amount consumed.

Regarding drunkenness, in people aged 15 to 64 years the data show a statistically significant decrease during the pandemic in both sexes, going from 17.2% prior to the Covid-19 pandemic (20.9% in men and 13.4% in women) to 9.7% in the total of people surveyed between 15 and 64 years

Prevalencia del consumo de bebidas alcohólicas antes y durante la pandemia por Covid-19 en la población de 15 a 64 años, según edad (%). España, 2020.



of age during the pandemic (12.1% in men and 7.4% in women). Analyzing the results according to age, a lower prevalence of drunkenness was also observed during the pandemic in all sections, but the decrease was greater in the younger age groups.

Regarding the population over 64 years of age, the consumption of alcoholic beverages is lower than in the population aged 15 to 64 years in all cases. During the pandemic, the consumption of alcoholic beverages decreased in this population group in both sexes, both above and below 74 years. The consumption of alcoholic beverages was more prevalent in men before and during the pandemic. The prevalence of daily consumption of alcoholic beverages in the last 30 days during the pandemic was 13.3%.

Besides alcohol consumption the survey found that cannabis use fell across the board, as border closures made cannabis harder to find and more expensive, dissuading some casual users. The proportion of people saying they consumed sedatives not prescribed by a doctor grew to 3.1% from 1.9% before the pandemic. There was an even sharper rise among women and girls in the Observatory's survey - 4%, up from 2.3%. The time spent browsing the internet for leisure - rather than work or education - increased by an average of an hour daily. More than two in five people said their personal use of internet had grown since the pandemic struck. There was also a rise in 15-24 year-olds' betting online.

pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/COVID-19/20210326_Informe_ENCUESTA_OEDA-COVID_2020_def.pdf

WHO Europe report shows that eastern Member States are leading the way in alcohol policy

According to the authors of a WHO report, despite the WHO European Region experiencing an overall decrease in alcohol consumption levels, this trend is largely due to the progress achieved by a small number of countries mainly from the eastern part of the Region. With a few exceptions, western European countries, including countries within the European Union (EU), have made little or no progress in the reduction of alcohol consumption. The report "Making the WHO European Region SAFER. Developments in alcohol control policies, 2010–2019" was published on 15th April.

The report presents an overview of the current burden of disease attributed to alcohol in the Region and assesses the latest steps Member States have made towards implementing evidence-based and effective alcohol control measures. The authors analyse data gathered from 51 Member States. Of these countries, 34 reported decreases in alcohol consumption levels and 17 reported increases.

Per capita alcohol consumption has decreased significantly – by 12.5%, from 11.2 litres in 2010 to 9.8 litres in 2016. However, these improvements were mainly determined due to decreasing levels of drinking in the eastern countries of the Region, many of whom have introduced stricter alcohol control policies over the past years with half of the countries that have reduced their alcohol consumption by at least 10% being members or associate members of the Commonwealth of Independent States (CIS), a free association of sovereign states formed in 1991 by countries of the former Soviet Union.

In the same period, the 28 EU countries as well as Norway and Switzerland observed a reduction in alcohol consumption of only 1.5%.

The report suggests that overall alcohol consumption in the Region will remain close to current levels in the next 10 years, although the global COVID-19 pandemic has likely led to an overall decrease in alcohol use, mainly due to the closing of restaurants, bars and other serving locations. The authors argue that more monitoring and surveillance efforts are needed as preliminary data indicate that this decline is not uniform across consumer groups.

The report provides a detailed overview of the implementation of alcohol policies described in the 10 action areas of the European Action Plan to Reduce the Harmful Use of Alcohol 2012–2020 (EAPA), including the current status of implementation of the five action areas of the WHO-led SAFER initiative (1 strengthen restrictions on alcohol availability; 2 advance and enforce drink–driving countermeasures; 3 facilitate access to screening, brief interventions and treatment; 4 enforce bans or comprehensive restrictions on alcohol advertising, sponsorship and promotion; and 5 raise prices on alcohol through excise taxes and pricing policies).

Finally, the report analyses progress in policy implementation in the period 2016–2019, using the WHO alcohol policy composite indicators, which were developed to measure alcohol policy implementation in the 10 EAPA action areas.

euro.who.int/en/health-topics/disease-prevention/alcohol-use/publications/2021/making-the-european-region-safer-developments-in-alcohol-control-policies,-20102019-2021

Alcohol consumption in Finland decreased during the coronavirus crisis

Statistics published by the Finnish Institute of Health and Welfare (THL) demonstrate how alcohol consumption in the country dropped significantly last year, with per capita consumption reaching a record low.

A new report by THL shows that total alcohol consumption in the country decreased by an estimated 5.2% in 2020 compared to the previous year due to preventive measures against the COVID-19 virus. Consumption reduced the most during April–June, when restaurants were

temporarily shut and travel restrictions led to a drop in tourism. While the sale of alcoholic beverages in restaurants dropped by 40.6% last year, sales in grocery stores grew by 4%. Additionally, sales in Alko stores increased by 12%.

According to THL, the average consumption of alcohol in Finland has been declining since 2007. Last year, per capita consumption fell to the lowest it has been since the century began, with Finns over the age of 15 consuming an average of 9.2 litres of alcohol. thl.fi



New Canadian alcohol drinking guidelines planned for 2022

The Canadian Centre on Substance Use and Addiction (CCSA) is planning an update to their safe drinking guidelines. A six-week public consultation was launched March 8 as part of its initiative to update the existing guidelines.

Canada's Low-Risk Alcohol Drinking Guidelines were originally published in 2011 to help Canadians make informed decisions about drinking. Evidence on the association between drinking alcohol and physical, mental and social harms have evolved since then and the updates are intended to align the guidelines with the latest research on the risks and benefits associated with alcohol.

"The feedback gathered in this consultation will help us to learn about the experience of the public and stakeholders with the current guidelines," said Dr Peter Butt and Dr Catherine Paradis, co-chairs of the initiative in a statement.

Rita Notarandrea, CEO of the CCSA commented "We want to hear from a number of people in Canada and ensure that we receive a broad range of perspectives related to alcohol and alcohol consumption."

ccsa.limequery.com/863748?lang=en

Responsibility.org celebrates 30th anniversary

Responsibility.org is celebrating its 30th Anniversary this month as part of April's designation as "Alcohol Responsibility Month".

"Responsibility.org's anniversary provides us the opportunity to reflect on the progress we've made advocating for alcohol responsibility over the past 30 years while looking ahead to the future," said Chris Swonger, president and CEO of Responsibility.org and the Distilled Spirits Council of the United States (DISCUS). "Our mission remains an important one, and we are committed to strengthening a broad-sweeping culture of alcohol responsibility in the United States."

During Alcohol Responsibility Month, Responsibility.org will launch a number of interactive programmes and events. The month will kick off with programming featuring a digital campaign recognising the depth of progress made over the past three decades while emphasising the need for continued action. Throughout the month, Responsibility.org will also collaborate with stakeholders and influencers focused on creating innovative programmes and practical tools to promote responsible drinking and decreasing instances of underage drinking and impaired driving, including:

- Public service announcements from Attorneys General across 32 states and territories encouraging parents to talk with their kids to prevent underage drinking.
- Lunch & Learn with New York Times best-selling author Jessica Lahey who will discuss ways families can model responsible behaviours.

RESPONSIBILITY.ORG



- Expansion of Ask, Listen, Learn programme to include a new interactive digital exploration module that encourages kids to examine facts over myths when making healthy decisions.
 - Soft Launch of We Don't Serve Teens in partnership with the Federal Trade Commission
- Since Responsibility.org's inception in 1991, the organisation's work promoted responsible decision-making and behaviour. Specifically, in this period:
- Teen consumption of alcohol has dropped from 80% to 44%;
 - Drunk driving fatalities have declined 36 ; and
 - Binge drinking among America's youth has declined nearly 50%.

Currently, 87% of American adults self-report that they are confident they drink responsibly.

"In the past 30 years, we've made a lasting impact pushing for responsible drinking," said Lisa Graham Keegan, principal partner at The Keegan Company and chair of Responsibility.org's National Advisory Board. "We have three decades of progress upon which to build and will continue to do so in collaboration with our partners across all stakeholders. With this work, we hope to make America's roads safer, families healthier and communities stronger."

[Responsibility.org](https://responsibility.org)



Legislation to allow home delivery of alcohol in the US states

In the United States, New Mexico's governor Michelle Lujan Grisham signed a House bill in March to help small businesses and restaurants create a new revenue stream by selling alcoholic beverages for home delivery. Restaurants, retailers, craft distilleries, winegrowers and small brewers may apply for the alcohol delivery permit. The home deliveries will require ID checks.

The bill also allows restaurants to serve alcohol before 11 pm on Sundays and prohibits the sale of miniature bottles for off-site consumption and bans the sale of wine and spirits at gas stations in McKinley County (included at the urging of a centrist Democrat representing that area of north western New Mexico, citing high levels of alcoholism). Under the bill, HB 255, the state Department of Health will conduct a study about the effects of alcohol delivery in the state in the next several years.

The Alabama Senate has also approved an amended bill that would allow the home delivery of beer, wine and spirits. The Alabama Senate voted 28-0 in favour of changes to the alcohol delivery bill and legislation now awaits Governor

Kay Ivey's signature, which if approved, will go into effect October 2021.

Businesses that deliver alcohol would need a special license. The bill would allow up to up to 120 bottles of beer to be delivered to one customer in a 24-hour period, including no more than 2.3 gallons of whiskey or other spirits and no more than 12 standard bottles of wine. The bill requires liquor drop-off to someone 21 or older who signs for the delivery. The bill would not allow delivery in dry counties.

Lawmakers in Florida have also approved Senate Bill 148, which would allow Floridians to buy alcoholic drinks in to-go and delivery orders from restaurants with some restrictions. Only restaurants with special restaurant licenses — which have large, high capacity dining areas, can sell alcoholic drinks to-go under the bill. Other restrictions included in the bill: drinks sold for off-premises consumption can be no more than 32 ounces; they can't be a factory-sealed bottle of hard liquor and to-go and delivery orders of alcohol have to come with an order of food.

Éduc'alcool releases new scientific publication on alcohol and diabetes

People who drink alcohol moderately and regularly, i.e. about two standard drinks a day, three to four days a week, have a lower risk of developing diabetes. However, women who have more than 3.7 drinks a day and men who have more than 4.5 drinks a day are at much higher risk of developing the disease than people who have never drunk alcohol.

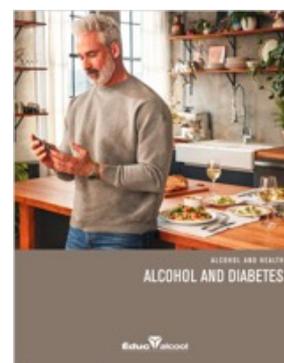
That is the conclusion of "Alcohol and Diabetes," the latest report in Éduc'alcool's Alcohol and Health series. The publication examines all the latest data regarding the link between moderate drinking, heavy drinking and diabetes, in general and in detail.

"This doesn't mean you should consider those amounts upper limits," advises Hubert Sacy, Director General of Éduc'alcool. "When you drink that much, you are at greater risk of developing diseases other than diabetes, in particular certain cancers and cardiovascular diseases. Furthermore, for people who are already diabetic, heavy drinking can lead to cardiovascular, kidney and vision problems, as well as an increased risk of hypoglycemia."

The subject is of interest to many Quebecers, since nearly one million of them are diabetic. In addition, Diabetes Quebec estimates that about a quarter of a million are not even aware they have the disease.

The new publication from Éduc'alcool was revised by Dr. Rémi Rabasa-Lhoret, MD, PhD, Full Research Professor and Vice President, Clinic and Clinical Research of the Montreal Clinical Research Institute (IRCM), where he also directs the Diabetes Clinic, the Metabolic Diseases research unit and the research platform on obesity, metabolism and diabetes. He is also a full professor in the Department of Nutrition, Faculty of Medicine, Université de Montréal; a physician in the Endocrinology Division, Medicine Department, CHUM; and holder of the J.A. DeSève and Lamarre Gosselin Chair in diabetes research.

educalcool.qc.ca/wp-content/uploads/2021/03/Alcohol-and-Diabetis.pdf



'Proppa Vibes' responsible drinking campaign in Jamaica

The alcohol industry in Jamaica is supporting the 'Proppa Vibes' campaign to promote responsible drinking for 2021 and beyond. The campaign, launched on March 25, is an extension of the 'Party Proppa' campaign, which ran in 2019 with industry-wide support.

Senior Public Affairs and Sustainability Director at JWN, Tanikie McClCarthy Allen commented that the campaign's concept has evolved with the social/lifestyle changes that have been normalised by the pandemic. The campaign, focuses on drinking responsibly with emphasis on at-home consumption.

'Disruptions in the entertainment industry, government restrictions made necessary by COVID-19, and general social distancing requirements have all led to smaller, more intimate and physically distanced gatherings...

'...as well as at-home consumption of alcoholic beverages becoming the 'new norm', 'Proppa

Vibes' reflects this new reality of entertainment and socialising,' she explained.

The campaign therefore takes into consideration the limitations and social dynamics brought on by the pandemic.

The 'Proppa Vibes' campaign utilises the reach of several influencers, with particularly strong followings on social media, to appeal to a wider demographic of consumers, with a particular emphasis on young adult drinkers.



Pernod Ricard to implement age-restriction labelling 3 years ahead of schedule

Despite a tough year for the sector, Pernod Ricard is continuing its prevention and education roadmap for the responsible consumption of its products. More than 150 initiatives are currently being developed in France and around the world by the Group, either alone or with other partners. Warning of the dangers of excessive or inappropriate consumption, protecting at-risk groups such as minors, promoting moderate consumption, and "drinking less but better" – these are just some examples of the Group's commitment over the last twenty years, when it introduced its first prevention programmes.

The latest initiatives include the addition of age-restriction labelling to all bottles produced by the Group's brands as of this year. This goal, announced in January 2020 was originally scheduled to be introduced in 2024. However, the Group has decided to bring this rollout forward by three years. Pernod Ricard is already a pioneer, with its decision in 2007 to add a warning symbol for pregnant women to all its bottles.

The latest Group's initiatives are structured along three lines: Training our employees and partners, Combatting under-age and binge drinking and Using digital to promote responsible drinking guidelines.

Coca Cola creates Global Responsible drinking policy

Coca Cola has created its own Global Responsible Drinking Policy ahead of the launch of a hard seltzer in Spain.

There are four components to the policy:

1. Responsibly marketing Coca Cola alcohol brands (underpinning this section is a detailed policy, see below).

2. Supporting local partnerships and communications programmes to help reduce and prevent the harmful use of alcohol.

3. Providing information to enable people to make informed choices.

4. Enabling Coca Cola employees and partners to be ambassadors for responsible consumption.

coca-colacompany.com/policies-and-practices/responsible-alcohol-marketing-policy

Alcoholic beverage producers, online platforms pledge responsible e-commerce in the Philippines

The Alcoholic Beverages Alliance of the Philippines (ABAPI) and leading e-commerce platforms in the country have pledged for the responsible sale of wines and spirits online. Alcohol sales on e-commerce platforms has seen a growth spike over the past several months after long quarantine restrictions and reduced operations of bars and restaurants caused by the COVID-19 pandemic.

The voluntary industry commitment aims to put safeguards in place across e-commerce platforms to uphold the responsible sales of alcohol online under the principle of self-governance with a strong focus on preventing minors from purchasing liquor online. Signatories to the agreement include members of ABAPI—an organization comprised of the leading international alcohol beverage producers, as well as importers and distributors in the country such as Diageo, Pernod Ricard, Moët Hennessy and Brown-Forman—owners of alcohol brands such as Johnnie Walker, Absolut Vodka, Hennessy and Jack Daniels. Many Online platforms have already signed the responsible alcohol e-commerce.

ABAPI member-companies pledge to encourage online retailers to put safeguards in place to prevent minors from purchasing liquor through e-commerce. This includes sharing industry best practices and helping e-retailers in terms of training and capacity-building. The pledge promotes responsible practices in the online sale and delivery of alcohol and encompasses

not only producers and e-retailers but the entire chain including third-party logistics and delivery companies. It is open to other stakeholders that share the same responsibility values and intend to contribute and commit to the responsible e-commerce of alcohol.

“Leading alcohol and online retailers worldwide have committed to work together to develop and enhance safeguards to protect minors from online alcohol sales and deliveries. This pledge is our way of making the global commitment more relevant in the Philippines. We are delighted to partner with leading online retailers and e-commerce platforms in the country in this ground-breaking coalition to enhance standards for the online sale and delivery of alcohol, said John O’Sullivan, President of ABAPI and Managing Director of Pernod Ricard Philippines.

Online platforms, for their part, pledge to promote responsible drinking by putting warning messages or prompts, adopt age-screening processes and other safeguards to reduce the risk of minors having access to liquor.

All signatories also commit to support the sale of legitimate in online channels by providing a channel for partners to report sellers of counterfeit, illegal or unauthorized alcohol products.

The responsible alcohol e-commerce pledge in the Philippines is an offshoot of global efforts to create a safe and properly regulated marketplace for alcohol products.

Youth drinking declines in New Zealand- what have we learned?

Dr Michael Livingston, a quantitative alcohol researcher, who has worked at the Centre for Alcohol Policy Research, the National Drug and Alcohol Research Centre and now the National Drug Research Institute in New Zealand presented at the NDARC Webinar series on Thursday 8 April, 2021. Dr Livingston’s work spans alcohol policy evaluation, alcohol epidemiology and survey methods.

Since the early 2000s, adolescent drinking in Australia and in many high income countries has fallen dramatically. For example, among 14-17 year old Australians, the rate of risky drinking has fallen from 30% in 2001 to 9% in 2019. This seminar summarised a programme of work looking to understand these trends, addressing the potential causes of these declines, the implications for adult drinking and harm and next steps for research.

[youtube.com/watch?v=KFbuh_SmHLs](https://www.youtube.com/watch?v=KFbuh_SmHLs)



AIM – Alcohol in Moderation was founded in 1991 as an independent not for profit organisation whose role is to communicate “The Responsible Drinking Message” and to summarise and log relevant research, legislation, policy and campaigns regarding alcohol, health, social and policy issues.

AIM Mission Statement

- To work internationally to disseminate accurate social, scientific and medical research concerning responsible and moderate drinking
- To strive to ensure that alcohol is consumed responsibly and in moderation
- To encourage informed and balanced debate on alcohol, health and social issues
- To communicate and publicise relevant medical and scientific research in a clear and concise format, contributed to by AIM’s Council of 20 Professors and Specialists
- To publish information via www.alcoholinmoderation.com on moderate drinking and health, social and policy issues – comprehensively indexed and fully searchable without charge
- To educate consumers on responsible drinking and related health issues via www.drinkingandyou.com and publications, based on national government guidelines enabling consumers to make informed choices regarding drinking
- To inform and educate those working in the beverage alcohol industry regarding the responsible production, marketing, sale and promotion of alcohol
- To distribute AIM Digest Online without charge to policy makers, legislators and researchers involved in alcohol issues
- To direct enquiries towards full, peer reviewed or referenced sources of information and statistics where possible
- To work with organisations, charities, companies and associations to create programmes, materials and policies built around the responsible consumption of alcohol.

AIM Social, Scientific And Medical Council

Helena Conibear, Executive and Editorial Director, AIM-Alcohol in Moderation, UK

Professor Alan Crozier, Research Associate, Department of Nutrition, UC Davis, US

Professor R. Curtis Ellison, MD, Professor of Medicine, Section of Preventive Medicine & Epidemiology, Boston University School of Medicine, Boston, MA, US

Harvey Finkel MD, Clinical Professor of Medicine (oncology and haematology), Boston University School of Medicine, US

Professor Adrian Furnham, Professor in Psychology and occupational psychology, University College London, UK

Giovanni de Gaetano, MD, PhD, Head of the Department of Epidemiology and Prevention, IRCCS Istituto Neurologico Mediterraneo NEUROMED, Pozzilli, Italy

Tedd Goldfinger FACC, FCCP, President, Desert Heart Foundation, Tucson, University of Arizona, US

Lynn Gretkowski MD, Obstetrics and Gynaecology, Faculty member Stanford University, US

Professor Dwight B. Heath, Anthropologist, Professor Emeritus of Anthropology, Brown University, US

Professor OFW James, Emeritus Professor of Hepatology, Newcastle University, UK

Arthur Klatsky MD, adjunct investigator at the Kaiser Permanente Northern California Division of Research, US

Ellen Mack MD, Oncologist

Professor JM Orgogozo, Professor of brain science, Institut de Cerveau, University of Bordeaux, France

Stanton Peele PhD, Social Policy Consultant, US

Prof Susan J van Rensburg MSc, PhD, Emeritus Associate Professor in the Division of Chemical Pathology, Tygerberg Hospital, University of Stellenbosch, South Africa

Dr Erik Skovenborg, Scandinavian Medical Alcohol Board

Creina S Stockley PhD, MBA, Principal, Stockley Health and Regulatory Solutions; Adjunct Senior Lecturer, The University of Adelaide

Arne Svilaas MD, PhD, Chief Consultant, Lipid Clinic, Oslo University Hospital, Oslo, Norway.

Professor Pierre-Louis Teissedre, PhD, Faculty of Oenology–ISVV, University Victor Segalen Bordeaux, France

Dag Thelle MD, PhD, Senior Professor of Cardiovascular Epidemiology and Prevention, University of Gothenburg, Sweden; Senior Professor of Quantitative Medicine at the University of Oslo, Norway

David P van Velden MD, Dept of Pathology, Stellenbosch University, Stellenbosch, South Africa

David Vauzour PhD, Senior Research Associate, Department of Nutrition, Norwich Medical School, University of East Anglia, Norwich, UK

