**Table S1.** Associations of drinking frequency and drinking volume with obesity

|  |  |  |  |
| --- | --- | --- | --- |
|  | | N | Odds ratio (95% CI) |
| *Drinking frequency* | |  |  |
|  | ≥5 times a week | 18,638 | 1.0 (reference)\* |
|  | 1-4 times a week | 47,964 | 1.21 (1.15, 1.27) |
|  | 1-2 times a month | 13,733 | 1.53 (1.43, 1.62) |
|  | <1 time every couple of months | 14,829 | 1.61 (1.52, 1.71) |
|  | Ex-drinker | 4,083 | 1.34 (1.23, 1.47) |
|  | Never drinker | 6,796 | 1.03 (0.95, 1.11) |
| *Drinking volume* | |  |  |
|  | Harmful | 1,745 | 1.0 (reference)† |
|  | Hazardous | 5,005 | 0.95 (0.81, 1.12) |
|  | Within guidelines | 14,141 | 0.78 (0.68, 0.90) |
|  | Drinker, but not in last 7 days | 25,155 | 0.55 (0.46, 0.66) |
|  | Ex-drinker | 1,073 | 0.69 (0.54, 0.88) |
|  | Never drank | 1,954 | 0.50 (0.40, 0.63) |
| *Drinking frequency, with adjustment for drinking volume* | | |  |
|  | ≥5 times a week | 8,994 | 1.0 (reference) |
|  | 1-4 times a week | 22,142 | 1.45 (1.33, 1.57) |
|  | 1-2 times a month | 6,274 | 1.98 (1.78, 2.21) |
|  | <1 time every couple of months | 6,350 | 2.07 (1.86, 2.30) |
|  | Ex-drinker | 1,872 | 1.73 (1.49, 2.0) |
|  | Never drinker | 3,273 | 1.29 (1.14, 1.47) |

\*Participants in the reference group reported drinking alcohol at least five times a week in the last 12 months. †Participants in the reference group reported drinking a harmful volume of alcohol in the last seven days. The reference category for the dependent variable was normal BMI. Multinomial regression models were adjusted for age, sex, smoking, physical activity, longstanding illness, psychological distress, socioeconomic status, and total alcohol units in the last seven days. Underweight individuals were removed. Normal weight was defined as BMI 18.5-24.9 kg·m-2, overweight as BMI 25-<30 kg·m-2, obesity as BMI ≥ 30 kg·m-2, and underweight as BMI <18.5 kg·m-2.

**Table S2.** Associations of drinking frequency and drinking volume with overweight

|  |  |  |  |
| --- | --- | --- | --- |
|  | | N | Odds ratio (95% CI) |
| *Drinking frequency* | |  |  |
|  | ≥5 times a week | 18,638 | 1.0 (reference)\* |
|  | 1-4 times a week | 47,964 | 1.09 (1.05, 1.14) |
|  | 1-2 times a month | 13,733 | 1.12 (1.06, 1.17) |
|  | <1 time every couple of months | 14,829 | 1.06 (1.01, 1.12) |
|  | Ex-drinker | 4,083 | 0.95 (0.87, 1.03) |
|  | Never drinker | 6,796 | 0.93 (0.87, 099) |
| *Drinking volume* | |  |  |
|  | Harmful | 1,745 | 1.0 (reference)† |
|  | Hazardous | 5,005 | 1.07 (0.94, 1.21) |
|  | Within guidelines | 14,141 | 0.92 (0.82, 1.02) |
|  | Drinker, but not in last 7 days | 25,155 | 0.67 (0.58, 0.77) |
|  | Ex-drinker | 1,073 | 0.70 (0.57, 0.68) |
|  | Never drank | 1,954 | 0.61 (0.51, 0.73) |
| *Drinking frequency, with adjustment for drinking volume* | | |  |
|  | ≥5 times a week | 8,994 | 1.0 (reference) |
|  | 1-4 times a week | 22,142 | 1.14 (1.07, 1.22) |
|  | 1-2 times a month | 6,274 | 1.26 (1.15, 1.37) |
|  | <1 time every couple of months | 6,350 | 1.18 (1.08, 1.29) |
|  | Ex-drinker | 1,872 | 1.04 (0.92, 1.18) |
|  | Never drinker | 3,273 | 0.96 (0.87, 1.07) |

\*Participants in the reference group reported drinking alcohol at least five times a week in the last 12 months. †Participants in the reference group reported drinking a harmful volume of alcohol in the last seven days. The reference category for the dependent variable was normal BMI. Multinomial regression models were adjusted for age, sex, smoking, physical activity, longstanding illness, psychological distress, socioeconomic status, and total alcohol units in the last seven days. Underweight individuals were removed. Normal weight was defined as BMI 18.5-24.9 kg·m-2, overweight as BMI 25-<30 kg·m-2, obesity as BMI ≥ 30 kg·m-2, and underweight as BMI <18.5 kg·m-2.

**Table S3.** Associations of drinking frequency with overweight and obesity in 49,530 men and 56,526 women\*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Drinking frequency | | N | Overweight odds ratio (95% CI) | Obesity odds ratio (95% CI) |
| *Men* | |  |  |  |
|  | ≥5 times a week | 11,234 | 1.0 (reference) | 1.0 (reference) |
|  | 1-4 times a week | 24,442 | 1.04 (0.98, 1.09) | 1.13 (1.06, 1.21) |
|  | 1-2 times a month | 5,076 | 0.99 (0.92, 1.07) | 1.23 (1.12, 1.36) |
|  | <1 time every couple of months | 4,394 | 0.83 (0.77, 0.90) | 1.18 (1.07, 1.30) |
|  | Ex-drinker | 1,719 | 0.81 (0.72, 0.92) | 0.98 (0.85, 1.13) |
|  | Never drinker | 2,665 | 0.75 (0.69, 0.83) | 0.63 (0.56, 0.72) |
| *Women* | |  |  |  |
|  | ≥5 times a week | 7,404 | 1.0 (Ref) | 1.0 (Ref) |
|  | 1-4 times a week | 23,528 | 1.18 (1.11, 1.25) | 1.36 (1.26, 1.46) |
|  | 1-2 times a month | 8,660 | 1.25 (1.16, 1.35) | 1.89 (1.73, 2.06) |
|  | <1 time every couple of months | 10,439 | 1.24 (1.16, 1.33) | 2.03 (1.87, 2.20) |
|  | Ex-drinker | 2,364 | 1.08 (0.97, 1.21) | 1.76 (1.56, 1.99) |
|  | Never drinker | 4,131 | 1.11 (1.01, 1.21) | 1.47 (1.33, 1.64) |

\*Participants in the reference group reported drinking alcohol at least five times a week in the last 12 months. The reference category for the dependent variable was normal BMI. Multinomial regression models were adjusted for age, ~~sex,~~ smoking, physical activity, longstanding illness, psychological distress, socioeconomic status, and total alcohol units in the last seven days. Underweight individuals were removed. Normal weight was defined as BMI 18.5-24.9 kg·m-2, overweight as BMI 25-<30 kg·m-2, obesity as BMI ≥ 30 kg·m-2, and underweight as BMI <18.5 kg·m-2.

**Table S4.** Association between drinking frequency and abdominal obesity\*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Drinking frequency | Whole sample (n=71,990) | | Men (n=33,803) | | Women (n=38,187) | |
| N | Odds ratio  (95% CI) | N | Odds ratio  (95% CI) | N | Odds ratio  (95% CI) |
| ≥5 times a week | 13,168 | 1.0 (reference) | 7,943 | 1.0 (reference) | 5,225 | 1.0 (reference) |
| 1-4 times a week | 32,495 | 0.97 (0.93, 1.02) | 16,613 | 1.01 (0.95, 1.08) | 15,882 | 0.94 (0.87, 1.01) |
| 1-2 times a month | 9,324 | 0.99 (0.93, 1.05) | 3,459 | 1.00 (0.91, 1.10) | 5,865 | 0.98 (0.90, 1.08) |
| <1 time every couple of months | 9,914 | 1.09 (1.02, 1.16) | 2,948 | 0.99 (0.89, 1.09) | 6,966 | 1.15 (1.06, 1.25) |
| Ex-drinker | 2,692 | 1.24 (1.13, 1.37) | 1,146 | 1.09 (0.94, 1.27) | 1,546 | 1.35 (1.19, 1.54) |
| Never drinker | 4,397 | 1.18 (1.08, 1.27) | 1,694 | 1.19 (1.05, 1.34) | 2,703 | 1.24 (1.11, 1.29) |

\* Participants in the reference group reported drinking alcohol at least five times a week in the last 12 months. The reference category for the dependent variable was normal waist-hip ratio. Logistic regression models were adjusted for age, ~~sex,~~ smoking, physical activity, longstanding illness, psychological distress, and socioeconomic status. Abdominal obesity was defined as a waist-hip ratio >0.90 in men and >0.85 in women.

**Table S5.** Associations between drinking frequency and overweight and obesity in 41,134 adults with adjustment for fruit and vegetable consumption and other potential confounders\*

|  |  |  |  |
| --- | --- | --- | --- |
| Drinking frequency | N | Risk of overweight (95% CI) | Risk of obesity  (95% CI) |
| ≥5 times a week | 7,434 | 1.0 (reference) | 1.0 (reference) |
| 1-4 times a week | 17,999 | 1.11 (1.04, 1.18) | 1.22 (1.13, 1.31) |
| 1-2 times a month | 5,133 | 1.12 (1.02, 1.22) | 1.48 (1.34, 1.63) |
| <1 time every couple of months | 6,286 | 1.03 (0.95, 1.12) | 1.56 (1.42, 1.71) |
| Ex-drinker | 1,613 | 0.96 (0.84, 1.10) | 1.28 (1.11, 1.48) |
| Never drinker | 2,669 | 0.98 (0.88, 1.09) | 0.96 (0.85, 1.09) |

\*Participants in the reference group reported drinking alcohol at least five times a week in the last 12 months. The reference category for the dependent variable was normal BMI. Multinomial regression models were adjusted for age, sex, smoking, physical activity, longstanding illness, psychological distress, socioeconomic status, and fruit and vegetable intake. Underweight individuals were removed. Normal weight was defined as BMI 18.5-24.9 kg·m-2, obesity as BMI ≥ 30 kg·m-2, overweight as BMI 25-<30 kg·m-2, and underweight as BMI <18.5 kg·m-2.

**Table S6.** Associations between drinking frequency and overweight and obesity after excluding those with diabetes or cardiovascular disease (n=93,542)\*

|  |  |  |  |
| --- | --- | --- | --- |
| Drinking frequency | N | Risk of overweight (95% CI) | Risk of obesity  (95% CI) |
| ≥5 times a week | 16,476 | 1.0 (reference) | 1.0 (reference) |
| 1-4 times a week | 43,431 | 1.04 (1.00, 1.09) | 1.18 (1.12, 1.24) |
| 1-2 times a month | 12,279 | 0.98 (0.93, 1.04) | 1.43 (1.34, 1.53) |
| <1 time every couple of months | 12,507 | 0.89 (0.85, 0.94) | 1.46 (1.37, 1.56) |
| Ex-drinker | 3,133 | 0.85 (0.78, 0.93) | 1.25 (1.13, 1.39) |
| Never drinker | 5,716 | 0.85 (0.79, 0.91) | 0.96 (0.88, 1.05) |

\*Participants in the reference group reported drinking alcohol at least five times a week in the last 12 months. The reference category for the dependent variable was normal BMI. Multinomial regression models were adjusted for age, sex, smoking, physical activity, longstanding illness, psychological distress, socioeconomic status ~~social occupational class~~, and fruit and vegetable intake. Underweight individuals were removed. Normal weight was defined as BMI 18.5-24.9 kg·m-2, obesity as BMI ≥ 30 kg·m-2, overweight as BMI 25-<30 kg·m-2, and underweight as BMI <18.5 kg·m-2.