Intake of alcoholic beverages and associations with sociodemographic and lifestyle factors in a representative, national sample of the Swiss population

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Introduction

Today, alcoholic beverages are a routine part of the social interaction for many societies, but largely underestimated are the negative impacts of alcohol consumption on both physical and mental health and society overall. Alcohol is an addictive toxin and psychoactive substance and implicated in 3 million deaths worldwide each year, and attributed to 5.1% of the global burden of disease [a]. Lifetime alcohol is associated with a higher risk of certain cancers, overall mortality, and cardiovascular diseases [b]. Given these health risks, we aimed to describe alcoholic beverage consumption from the perspective of total intake, types, and quantify amounts of pure alcohol consumed. We also investigated associations between alcohol intake and sociodemographic, lifestyle, and anthropometric factors by using data from the Swiss National Nutrition Survey menuCH.

Methods

Study design

We analyzed data from the first national, representative sample of the National Nutrition menuCH survey consisting of 2057 adults from three main language-speaking regions, carried out between January 2014 and February 2015 at ten research centers in Switzerland. Food and beverage consumption of study participants was assessed by two non-consecutive 24-hour dietary recalls (HDR) performed by trained dietitians, distributed across all seasons and weekdays. Participants answered a questionnaire leading to data on sociodemographic, dietary, and lifestyle habits. Besides, their anthropometric measurements were taken.
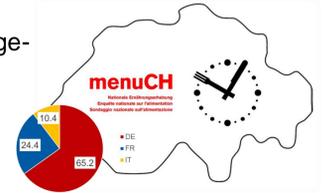
Data analysis

In our data analysis, three subgroups of the menuCH sample were formed based on drinking levels and according to guidelines for safe alcohol intake: below 12g or 24 g of alcohol per day for women and men, respectively, i.e. one standard drink [120ml wine, 300ml beer, 40ml liquor] for women and two for men following the BAG guideline c). We assessed the mean daily intake of alcoholic beverages (g/day) and alcohol (pure) intakes, both standardized for energy intake (g/1000 kcal) to account for differences in energy requirements between individuals. Energy contributions of all categories of beverages were calculated as a percentage (%) of total energy. All results were weighted for age, gender, marital status, major areas of Switzerland, nationality, household size, and weekday and season (for consumption data). Statistical difference tests were done between the main variables (Kruskal-Wallis and Mann-Whitney-Wilcoxon) on unweighted data. Multivariable linear regression was used to investigate the determinants of ethanol intake, including sociodemographic and lifestyle factors: gender, language regions, age, BMI, nationality, education, marital status, household income, physical activity, smoking, overall health status, currently on a diet, weekday and season.
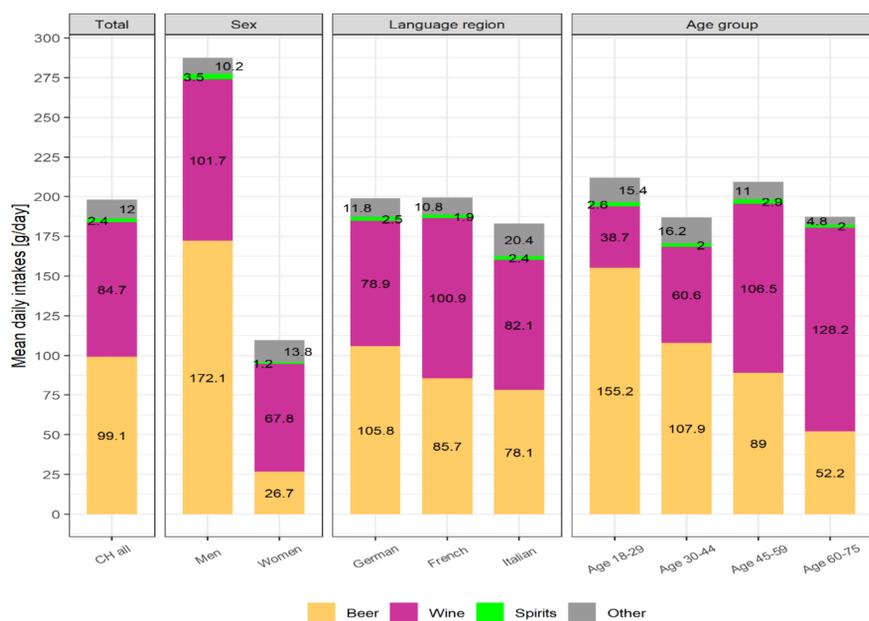
Results

Table 1: Proportion of study participants based on pure alcohol intake[2]: no alcohol, below 'safe' daily limit and above 'safe' daily limit (n=2057)

	No alcohol	< 12 (24) g[1]	> 12 (24) g[1]
Men	320 (34.3%)	331 (35.5%)	282 (30.2%)
Women	550 (48.9%)	290 (25.8%)	284 (25.3%)
Total	870 (42.3%)	621 (30.2%)	566 (27.5%)

[1]BAG (Bundesamt für Gesundheit) recommendation for daily limit for women and men, 12 g and 24 g.
[2]Based on average pure alcohol intake in two 24-HDRs

Figure 1: Mean daily intake of main alcoholic beverage categories in Switzerland, and by sex, language-region and age category (g/day, weighted[1])
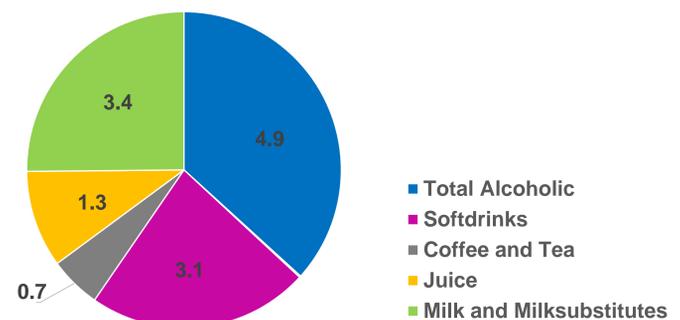

[1]Results were weighted for sex, age, marital status, major area, household size, nationality, season and weekday.
[2]All significance tests such as Kruskal-Wallis and Mann-Whitney-Wilcoxon were carried out on unweighted data.

➢ Men consumed significantly more alcoholic beverages than women in all categories except for the category of other drinks (e.g. cocktails, p < 0.05).
➢ Wine consumption increased significantly with age (p < 0.001)
➢ Higher intake of beer was in German-speaking region than in French-speaking whereas wine the other way round (p < 0.01)

Results

Figure 2: Energy contribution (%) of total alcoholic and non-alcoholic beverages

- Total Alcoholic
- Softdrinks
- Coffee and Tea
- Juice
- Milk and Milksubstitutes

·The values (%) show the contribution to total daily energy intake.
·Weighted for sex, age, marital status, major area, household size, nationality, season, and weekday.

Table 2: Associations between energy standardized alcohol intake and sociodemographic, anthropometric, and lifestyle factors, by multivariable linear regression (only showing significant results, n=2057)

Characteristics	Pure alcohol (g/1000kcal)	
	Coefficients	CI: 95%
Sex		
Men	0	ref.
Women	**-2.1**	**[-2.8 ; -1.4]**
Language Region		
German	0	ref.
French	**1.2**	**[0.4 ; 1.9]**
Italian	0.4	[-1.1 ; 1.8]
Age Groups (years)		
18-29	0.3	[-0.9 ; 1.4]
30-44	0	ref.
45-59	**2.2**	**[1.3 ; 3.0]**
60-75	**2.9**	**[1.8 ; 4.0]**
Smoking status		
Never smoked	0	ref.
Former smoker	**1.9**	**[1.1 ; 2.6]**
Current smoker	**4.1**	**[3.2 ; 4.9]**
Season		
Spring	**2.2**	**[1.5 ; 2.8]**
Summer	0	ref.
Fall	-0.2	[-1.1 ; 0.8]
Winter	1.2	[-0.1 ; 2.4]

*Adjusted for all study variables stated in background; and weighted for sex, age, marital status, major area, household size, nationality, season, and weekday; coefficients in bold are significant, p<0.05

Conclusions

- Alcoholic beverages contributed highest to the daily consumed energy compared to all other subcategories of beverages.
- More than 25 % of the study sample exceeded (recommended) safe levels of pure alcohol intake (24 and 12 g/day for men and women, respectively).
- Significant differences in alcoholic beverage consumption were found between sex, age, and language regions.
- Sex, Language Region, age, smoking status, and season were important determinants of pure alcohol intake.
- These findings could be used to improve public health interventions regarding alcohol intake, targeting these population subgroups, especially considering the aging population in Switzerland.

References: a) World Health Organization (WHO). (2018). *Global status report on alcohol and health.* http://www.who.int/substance_abuse/publications/global_alcohol_report/gsr_2018/en/ **b)** Ferrari, P., et al.(2014). European Prospective Investigation into Cancer and nutrition (EPIC) study. *BMJ Open, 4*(7). doi:10.1136/bmjopen-2014-005245. **c)** Bundesamt für Gesundheit (BAG). (2018). *Orientierungshilfe zum Alkoholkonsum.* Retrieved from https://www.bag.admin.ch/bag/de/home/das-bag/organisation/ausserparlamentarische-kommissionen/eidgenoessische-kommission-fuer-alkoholfragen-ekal.html