

# Excessive alcohol consumption in young men: is there an association with their earlier family situation?

## A baseline-analysis of the C-SURF-study (Cohort Study on Substance Use Risk Factors)

Simon Steiner<sup>a</sup>, Dominik Schori<sup>b</sup>, Gerhard Gmel<sup>c</sup>

<sup>a</sup> Division of General Internal Medicine, Bern University Hospital and University of Bern, Switzerland

<sup>b</sup> Institute of Social and Preventive Medicine, University of Bern, Switzerland

<sup>c</sup> Alcohol Treatment Centre, Department of Community Medicine and Health, Lausanne University Hospital, Switzerland

### Summary

**AIMS:** To determine whether parental factors earlier in life (parenting, single parent family, parental substance use problem) are associated with patterns of alcohol consumption among young men in Switzerland.

**METHODS:** This analysis of a population based sample from the Cohort Study on Substance Use Risk Factors (C-SURF) included 5,990 young men (mean age 19.51 years), all attending a mandatory recruitment process for the army. These conscripts reported on parental monitoring and rule-setting, parental behaviour and family structure. The alcohol use pattern was assessed through abstention, risky single occasion drinking (RSOD), volume drinking and dependence. Furthermore, the impact of age, family socioeconomic status, educational level of the parents, language region and civil status was analysed.

**RESULTS:** A parental substance use problem was positively associated with volume drinking and alcohol dependence in young Swiss men. Active parenting corresponded negatively with RSOD, volume drinking and alcohol dependence. Single parent family was not associated with a different alcohol consumption pattern compared to standard family.

**CONCLUSION:** Parental influences earlier in life such as active parenting (monitoring, rule-setting and knowing the whereabouts) and perceived parental substance use problem are associated with alcohol drinking behaviour in young male adults. Therefore, health professionals should stress the importance of active parenting and parental substance use prevention in alcohol prevention strategies.

**Key words:** *parenting; family structure; alcohol use; young adult men*

### Introduction

In adolescents and young adults, the use of substances like alcohol, tobacco, cannabis and other illicit substances is a

common phenomenon. Alcohol is quantitatively the most widely used substance that is consumed by adolescents and young adults especially in developed countries [1]. In this age group, epidemiological data show a continuous increase of alcohol consumption up to intoxication in several European countries [2, 3]. Often, excessive consumption of alcohol begins in adolescence. One report of the ESPAD-study (European School Survey on Alcohol and other Drugs) showed that more than half of the students at the age of 13 years or younger have already consumed alcohol [4]. According to the HBSC-study (Health Behaviour in School-aged Children) several countries had a significant increase in the proportion of 15-year-olds having been drunk twice or more times in their life [2]. In a Swiss population study similar to ours, subjects who reported first alcohol intoxication before age 15 were more likely to present risky single occasion drinking (RSOD), volume drinking, current cannabis use and other illicit drug use [5]. Therefore, alcohol prevention has to start early in life.

Switzerland has a relatively high rate of alcohol consumption per capita in comparison with other European countries [6, 7]. According to data from 2011, the average consumption was about 10.6 g pure alcohol per day for men 15 years and older, and 4.7 g pure alcohol for women in this age group, more than 50% above the global average [7]. The number of alcohol-dependent persons in Switzerland was conservatively estimated at about 250,000, representing approximately 3.9% of the population aged 15 and higher [6].

Alcohol consumption contributes to morbidity and mortality worldwide and is the third largest risk factor for disease burden in developed countries [8]. In adolescents and young adults, however, excessive alcohol consumption is the biggest risk factor for mortality and morbidity in developed countries. In Switzerland, it was estimated that 8.7% of all deaths among 15 to 74 year olds and 20.9% of all deaths among 15 to 24 year old men are attributable

to alcohol [7]. Harmful alcohol use is often associated with risk behaviours such as use of other substances (tobacco, cannabis, other illicit drugs), violence, sexual risk behaviour and motor vehicle accidents [3, 5, 9, 10]. Alcohol consumption by minors can lead to numerous consequences, including academic problems, delinquency or other judicial consequences, or unintended pregnancy [3]. Adverse consequences extend into the social environment (family, friends, employers, educational institutions, society) and have high social costs [11, 12]. Previous studies described the family environment as risk factor for the development of problematic alcohol use among adolescents and young adults [13–15]. The family and the role of the parents can have an influence on the addictive behaviour of the offspring in different ways: family structure such as growing up in a single – or two-parent family, the level of education of the parents, their socio-economic position, the parental control of leisure behaviour and reaction to detected substance use, parental affection and support, satisfaction with the relationship with the parents and known parental substance abuse [4, 13, 16–18]. Reviews describe the relevance of the family environment [15, 19] and emphasise an intact family structure and an active supportive parental behaviour as a protective factor and disruption in normal family functioning as a negative factor for adolescent substance use. In the existing literature, there is no uniform way to define and examine parenting. We used a quantitative parenting variable consisting of the following elements: monitoring, rule-setting and knowing the whereabouts. This combination of parenting parameters has been formerly used and was identified as predictive of college student drinking [20]. We did not investigate gender-specific parenting by differentiating between mother or father authoritativeness as recommended by others [21]. Neither did we examine up to what degree higher active parenting influences alcohol consumption patterns.

The aim of this study was to determine in a population-based sample of Swiss men whether their earlier family situation was associated with alcohol consumption at the age of around 20 years. The earlier family situation parameters included active parenting (monitoring, rule-setting and knowing the whereabouts), single parent family and a parental substance use problem. We hypothesise that active parenting, living with both parents and no known parental alcohol or drug problem are associated with lower alcohol consumption of the son.

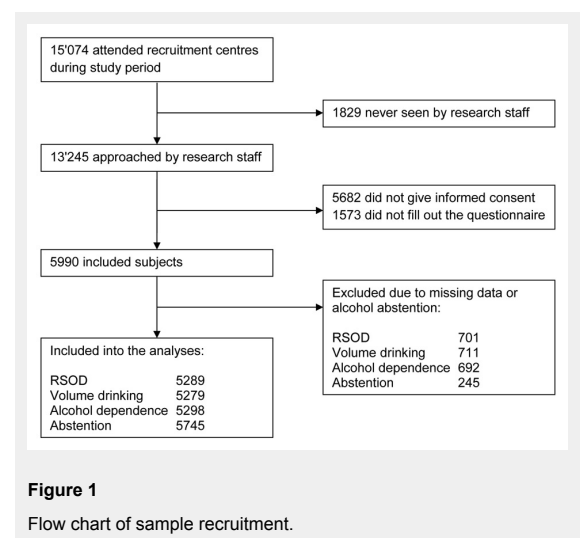
## Methods

### Study Design

This study was a retrospective observational cross-sectional analysis of baseline data from the Cohort Study on Substance Use Risk Factors (C-SURF) [22, 23]. C-SURF is a prospective cohort study in Switzerland aimed at investigating the use of alcohol, tobacco, cannabis and other drugs in young men. Between August 2010 and November 2011 the participants were recruited during a mandatory army conscription process in three out of six recruitment centres in Switzerland, covering 21 of 26 Swiss cantons. Virtually

all Swiss men must go through this recruitment process to determine their eligibility for military, civil or no service around the age of 19. As there is no pre-selection to army conscription, a representative sample of young Swiss men was thereby eligible for the study. Representativeness was not given for Switzerland as a whole because, for example, the canton Zurich and the Italian-speaking canton Ticino were missing. However, the study covered all French-speaking cantons and a wide range of German-speaking cantons, including more urban regions (e.g., Basel) and more rural regions (e.g., Uri). As virtually all young men pass the conscription procedures, the sample included socio-economically advantaged conscripts as well as conscripts from poorer family backgrounds. This was an advantage over many studies mainly using college students [24–26]. The conscripts were informed that the study was not connected with the army in any way and that they received a remuneration of CHF 30 for completing the questionnaire. All participants gave written, informed consent, as required by the Ethics Committee for Clinical Research at the Lausanne University Medical School, which approved the study (protocol number 15/07). Conscripts who provided informed consent were invited to fill out a questionnaire about socio-demographic status, family situation, physical and mental health, alcohol, tobacco, cannabis, other substances or drugs, recreational activities, sexuality and personality. The English version of the C-SURF questionnaire is freely accessible on the C-SURF webpage ([http://www.c-surf.ch/img/pdf/q1\\_baseline\\_en.pdf](http://www.c-surf.ch/img/pdf/q1_baseline_en.pdf)).

Of the 15,074 conscripts who presented to one of the three recruitment centers, 1,829 were never seen by the research staff because they were randomly selected for another study or because they were not informed by the military staff about the study. Of the remaining conscripts, 57.1% (7,563) provided informed consent. There were only small differences regarding substance use between consenters and non-consenters [27], and differences went into different direction (e.g., more smokers but fewer alcohol consumers among non-consenters). Among consenters, 79.2% (5,990) subsequently filled out the questionnaire (German speaking 82.2%, French speaking 74.3%). To sum up, the study was not a convenience sample as it was intended to



**Figure 1**  
Flow chart of sample recruitment.

enroll all conscripts in these three centres. Non-response and lack of informed consent of some participants compromised representativeness to a small degree. Enrolment and response rate of the C-SURF-study were further described and investigated by Studer et al. [28]. Figure 1 shows the sample recruitment.

## Measures

### Outcomes

Alcohol use was assessed with four different measures: alcohol abstinence, risky single occasion drinking (RSOD), volume drinking and alcohol dependence.

Alcohol abstinence was defined as reported lifetime abstinence or the combination of less than 12 drinks per lifetime and no consumption of an alcoholic beverage during the last 12 months. Abstinence from alcohol consumption was investigated by asking the following questions: 'did you ever drink alcohol (in your lifetime)?', 'did you ever consume at least 12 alcoholic standard drinks (in your lifetime)?' and 'did you drink at least one alcoholic standard drink in the last 12 months?'.

RSOD was defined as having six or more standard drinks of about 10 grams per standard drink ( $\geq 60$  g alcohol) on one occasion at least monthly. This corresponded with the meaning of binge drinking introduced by Wechsler and colleagues [29, 30] with five or more US standard drinks (a standard drink being 12 grams of pure ethanol) on a single occasion. We assessed RSOD by asking 'How often do you drink six or more alcoholic beverages on one occasion?'. The answer categories were: 'every day or almost every day', 'every week', 'every month', 'less than once a month' and 'never'.

Volume drinking was defined as a weekly average intake of at least 210 g pure alcohol (equivalent to 21 or more standard drinks) [31, 32]. Pictures of standard drinks with approximately 10 g of pure ethanol were provided, e.g., 250 ml beer, 100 ml wine, 275 ml mixed drinks with high-proof alcohol or 50 ml of aperitifs.

Volume drinking was assessed by asking on the frequency and on the quantity of alcohol usually drunk per drinking day using the following questions: 'On how many days per week do you usually drink alcohol?' and 'How many alcoholic standard drinks do you consume on average during a day, on which you drink alcohol?'

Alcohol dependence was defined according to DSM-IV as a presentation of at least three of seven criteria occurring at any time during a 12-month period [33]. These criteria were transformed into questions like 'Did it happen in the last 12 months that you spent a great deal of time in activities necessary to obtain, to use or to recover from the effect of drinking?' [34].

### Exposures

Single parent family was defined as living with parents being divorced or having separated permanently sometimes before the 18<sup>th</sup> birthday. The conscripts answered in dichotomised answer categories 'yes' or 'no'.

Parental problematic substance use was defined as the conscripts' perception of an alcohol or drug substance problem

of his mother or father or both. We combined the answer categories 'no', 'alcohol' and 'drugs' of each parent into a dichotomised variable 'yes' or 'no'.

To examine the parental influence through rule-setting, monitoring and knowing the whereabouts, a parenting-variable was defined with a sum of scores from four questions: 'My parents were setting clear rules, what I could do at home', 'My parents were setting clear roles, what I could do outside of home', 'My parents knew with whom I spent the evenings', 'My parents knew where I spent my evenings'. Each question scored 0 to 4 points with the answers 'almost never', 'rarely', 'sometimes', 'often', 'almost always'. The range of the parenting variable was 0 to 16 with higher numbers describing higher active parenting (more rule-setting, monitoring and knowing the whereabouts) and lower numbers describing passive parenting (less rule-setting, monitoring and knowing the whereabouts). Questions have been developed for the ESPAD-survey [35], and were used in a recent study on the same sample [36].

### Confounders

Analyses were adjusted for the following potential confounding variables: age, language region, marriage or solid partnership, financial situation of the family, and highest completed education of either parent. The confounding variables were selected based on previous evidence and clinical experience. The financial situation of the family was measured by the recruits' perception of their own family's socio-economic circumstances with the following question: 'How do you rate the financial situation of your family compared to other families in Switzerland?' We recoded the response categories in the categories: worse off, average, better off.

### Statistical analysis

Baseline characteristics of the examined population were described using means, proportions and frequencies. For each outcome, we estimated unadjusted and fully adjusted logistic regression models [37] to assess the associations between the outcome and the exposure variables and confounders. Results were reported as odds ratios (OR) with associated 95% confidence intervals (CI). Parameters were considered statistically significant when the CI did not include 1, corresponding to a p-value  $< 0.05$ . We used the Wald-test to determine whether the categorical variables significantly contributed to the outcomes and Nagelkerke R-square to assess goodness of fit [37]. We only included those cases which had no missing values. All analyses were performed using the statistical software package SPSS (version 19.0).

## Results

The socio-demographic characteristics and alcohol use patterns of the sample are shown in table 1. The mean age of the examined conscripts was 19.51 years (SD 1.27, range 18 to 31 years). 83.5% of all were 20 years old or younger. The mean age of the French speaking participants was somewhat higher than the mean age of those speaking German: 19.79 years (SD 1.31) versus 19.17 years (SD 1.11). Alcohol consumption was very common in this sample of

young men in Switzerland. Only 5.8% of all examined Swiss conscripts reported being abstinent from alcohol. Among the non-abstainers, 50.1% reported RSOD behavior and 6.9% reported volume drinking. Alcohol dependence was found in 11%.

Tables 2 to 5 report the results of the logistic regression models for each outcome. RSOD was negatively associated with active parenting (OR 0.94, 95% CI 0.93–0.96) but not associated with single parent family and only as a tendency with parental problematic substance use (OR 1.24, 95% CI 0.99–1.56) in the adjusted multiple logistic regression model. Younger people and persons whose parents had a tertiary school education were more likely to report RSOD. RSOD was also negatively associated with the self-perceived financial situation of the family. We found no association of RSOD with marital status or language.

Volume drinking was negatively associated with active parenting (OR 0.92, 95% CI 0.89–0.95) and positively asso-

ciated with parental problematic substance use (OR 1.86, 95% CI 1.30–2.66) in the adjusted model. Volume drinking was not associated with single parent family and any of the confounders.

Dependence was negatively associated with parenting (OR 0.94, 95% CI 0.92–0.97) and positively associated with parental problematic substance use (OR 1.76, 95% CI 1.30–2.39) in the adjusted model. Dependence was not associated with single parent family. Persons from the German language region were more likely to report alcohol dependence than those from the French region. The other confounders were not associated with alcohol dependence. Alcohol abstinence was not associated with single parent family, parental problematic substance use and parenting in the adjusted model. Among the confounders, age and self-perceived financial situation of the family were positively associated with abstinence, tertiary parents' education was negatively associated with abstinence.

**Table 1:** Baseline characteristics of the analysed sample.

	total n*	%
Age		
18 years and younger	1091	18.2
19 years	2467	41.2
20 years	1445	24.1
21 years	562	9.4
over 22 years	423	7.1
Region		
French	3314	55.3
German	2676	44.7
Partnership		
marriage or steady partnership	302	5.1
single or non-steady partnership	5636	94.9
Family factors		
parents separated	1505	25.6
parents not separated	4373	74.4
parental alcohol or drug problem	412	6.9
no parental alcohol or drug problem	5547	93.1
Parent's highest education		
mandatory	376	6.4
vocational training	2069	35.2
grammar school	912	15.5
tertiary	2515	42.8
Family finance		
lower than average	2627	44.1
average	2473	41.5
above average	862	14.5
Alcohol use		
abstainer	349	5.8
non-abstainer	5635	94.2
Volume drinking (at least 21 drinks/week)		
volume drinker	375	6.9
not volume drinker	5097	93.1
RSOD (at least 6 drinks once/month)		
RSOD	2746	50.1
no RSOD	2739	49.9
Alcohol dependence (DSM IV)		
non-dependence: score 0–2	4888	89.0
dependence: score 3–7	606	11.0
<b>Notes:</b>		
*	the number of subjects (n) varies between the subscale scores due to missing data	
RSOD	risky single occasion drinking	
DSM IV	Diagnostic and Statistical Manual of Mental Disorders, 4th Edition	

The analysis of RSOD, volume drinking and dependence did not include the abstinent participants, therefore the number of analysed subjects was lower for these outcomes.

Due to missing data the number of analysed participants varied slightly between outcomes.

**Table 2:** Unadjusted and adjusted models for RSOD.

Exposures		unadjusted			adjusted		
		OR	95% CI	p-Value	OR	95% CI	p-Value
Single parent family	yes vs no	0.97	(0.86–1.10)	0.610	0.94	(0.82–1.07)	0.344
Parental drug or alcohol problem	yes vs no	1.13	(0.91–1.39)	0.279	1.24	(0.99–1.56)	0.059
Parenting	per increase scale 0 – 16	0.95	(0.94–0.97)	<0.001	0.94	(0.93–0.96)	<0.001
<b>Confounders</b>							
Age				<0.001 <sup>a</sup>			<0.001 <sup>a</sup>
	18: reference	1			1		
	19	1.02	(0.88–1.18)		1.02	(0.88–1.19)	
	20	0.94	(0.80–1.11)		0.95	(0.80–1.12)	
	21	0.74	(0.60–0.92)		0.75	(0.60–0.94)	
	>21	0.58	(0.45–0.74)		0.59	(0.46–0.77)	
Language	German vs French	1.08	(0.97–1.20)	0.157	0.99	(0.89–1.12)	0.922
Married	yes vs no	0.76	(0.59–0.97)	0.030	0.79	(0.61–1.02)	0.074
Parents' Education				<0.001 <sup>a</sup>			<0.001 <sup>a</sup>
	mandatory	0.53	(0.41–0.68)		0.54	(0.42–0.71)	
	vocational training	0.95	(0.84–1.07)		0.97	(0.86–1.10)	
	grammar school	0.85	(0.73–1.00)		0.87	(0.74–1.03)	
	tertiary: reference	1			1		
Family finance				0.008 <sup>a</sup>			0.021 <sup>a</sup>
	below average	1.30	(1.10–1.53)		1.28	(1.07–1.52)	
	average	1.22	(1.03–1.44)		1.25	(1.05–1.49)	
	above average: reference	1			1		

**Notes:**

N = 5289

a: Wald-test: test of significance for categorical variables

unadjusted: bivariate logistic regression analysis – adjusted: multivariate logistic regression analysis

Parenting: sum of score from four questions (each 0–4), higher numbers meaning higher active parenting (monitoring, rule-setting, knowing the whereabouts)

Reference: reference group for OR calculations with polytomous categorical or ordinal variables

**Table 3:** Unadjusted and adjusted models for volume drinking.

Exposures		unadjusted			adjusted		
		OR	95% CI	p-Value	OR	95% CI	p-Value
Single parent family	yes vs no	1.28	(1.01–1.62)	0.040	1.09	(0.84–1.40)	0.527
Parental drug or alcohol problem	yes vs no	1.97	(1.41–2.77)	<0.001	1.86	(1.30–2.66)	<0.001
Parenting	per increase scale 0 – 16	0.92	(0.89–0.95)	<0.001	0.92	(0.89–0.95)	<0.001
<b>Confounders</b>							
Age				0.155 <sup>a</sup>			0.092 <sup>a</sup>
	18: reference	1			1		
	19	1.20	(0.89–1.62)		1.13	(0.83–1.53)	
	20	1.11	(0.80–1.55)		1.02	(0.72–1.44)	
	21	0.72	(0.44–1.19)		0.63	(0.38–1.05)	
	>21	0.84	(0.50–1.43)		0.74	(0.43–1.28)	
Language	German vs French	0.98	(0.79–1.22)	0.860	0.97	(0.77–1.22)	0.796
Married	yes vs no	1.09	(0.68–1.77)	0.715	1.03	(0.63–1.67)	0.921
Parents' Education				0.507 <sup>a</sup>			0.429 <sup>a</sup>
	mandatory	0.80	(0.47–1.39)		0.76	(0.43–1.33)	
	vocational training	1.05	(0.82–1.34)		1.06	(0.82–1.36)	
	grammar school	1.20	(0.88–1.63)		1.20	(0.88–1.64)	
	tertiary: reference	1			1		
Family finance				0.750 <sup>a</sup>			0.566 <sup>a</sup>
	below average	0.99	(0.71–1.38)		1.16	(0.81–1.66)	
	average	1.08	(0.77–1.51)		1.21	(0.85–1.71)	
	above average: reference	1			1		

**Notes:**

N = 5279

a: Wald-test: test of significance for categorical variables

unadjusted: bivariate logistic regression analysis – adjusted: multivariate logistic regression analysis

Parenting: sum of score from four questions (each 0–4), higher numbers meaning higher active parenting (monitoring, rule-setting, knowing the whereabouts)

Reference: reference group for OR calculations with polytomous categorical or ordinal variables

**Table 4:** Unadjusted and adjusted models for alcohol dependence.

Exposures		unadjusted			adjusted		
		OR	95% CI	p-Value	OR	95% CI	p-Value
Single parent family	yes vs no	1.22	(1.01–1.47)	0.041	1.11	(0.90–1.35)	0.330
Parental drug or alcohol problem	yes vs no	1.78	(1.33–2.36)	<0.001	1.76	(1.30–2.39)	<0.001
Parenting	per increase scale 0 – 16	0.94	(0.91–0.96)	<0.001	0.94	(0.92–0.97)	<0.001
<b>Confounders</b>							
Age				0.514 <sup>a</sup>			0.437 <sup>a</sup>
	18: reference	1			1		
	19	0.97	(0.76–1.22)		1.00	(0.78–1.27)	
	20	1.07	(0.83–1.39)		1.13	(0.86–1.48)	
	21	0.87	(0.61–1.24)		0.91	(0.63–1.33)	
	>21	0.78	(0.52–1.18)		0.79	(0.51–1.22)	
Language	German vs French	1.26	(1.06–1.49)	0.009	1.27	(1.06–1.53)	0.011
Married	yes vs no	0.85	(0.56–1.29)	0.438	0.82	(0.54–1.26)	0.374
Parents' Education				0.094 <sup>a</sup>			0.085 <sup>a</sup>
	mandatory	0.72	(0.47–1.09)		0.69	(0.45–1.07)	
	vocational training	0.82	(0.68–1.00)		0.80	(0.65–0.98)	
	grammar school	0.81	(0.62–1.04)		0.82	(0.63–1.06)	
	tertiary: reference	1			1		
Family finance				0.581 <sup>a</sup>			0.986 <sup>a</sup>
	below average	0.99	(0.76–1.28)		0.87	(0.78–1.35)	
	average	0.90	(0.69–1.18)		0.89	(0.77–1.34)	
	above average: reference	1			1		

**Notes:**

N = 5298

a: Wald-test: test of significance for categorical variables

unadjusted: bivariate logistic regression analysis – adjusted: multivariate logistic regression analysis

Parenting: sum of score from four questions (each 0–4), higher numbers meaning higher active parenting (monitoring, rule-setting, knowing the whereabouts)

Reference: reference group for OR calculations with polytomous categorical or ordinal variables

**Table 5:** Unadjusted and adjusted models for alcohol abstinence.

Exposures		unadjusted			adjusted		
		OR	95% CI	p-Value	OR	95% CI	p-Value
Single parent family	yes vs no	0.84	(0.64–1.09)	0.187	0.79	(0.59–1.05)	0.099
Parental drug or alcohol problem	yes vs no	1.14	(0.75–1.73)	0.547	1.01	(0.65–1.58)	0.973
Parenting	per increase scale 0 – 16	1.01	(0.98–1.05)	0.427	1.03	(0.99–1.07)	0.074
<b>Confounders</b>							
Age				<0.001 <sup>a</sup>			0.013 <sup>a</sup>
	18: reference	1			1		
	19	1.06	(0.74–1.50)		0.97	(0.67–1.38)	
	20	1.52	(1.05–2.18)		1.24	(0.84–1.82)	
	21	2.01	(1.31–3.08)		1.62	(1.03–2.53)	
	>21	2.39	(1.53–3.72)		1.72	(1.07–2.76)	
Language	German vs French	0.71	(0.57–0.90)	0.004	0.87	(0.68–1.12)	0.293
Married	yes vs no	0.98	(0.59–1.65)	0.943	0.80	(0.47–1.36)	0.404
Parents' Education				<0.001 <sup>a</sup>			<0.001 <sup>a</sup>
	mandatory	4.67	(3.33–6.56)		3.58	(2.49–5.15)	
	vocational training	1.24	(0.94–1.64)		1.13	(0.84–1.51)	
	grammar school	1.63	(1.17–2.27)		1.48	(1.05–2.08)	
	tertiary: reference	1			1		
Family finance				<0.001 <sup>a</sup>			<0.001 <sup>a</sup>
	below average	0.40	(0.29–0.54)		0.46	(0.33–0.65)	
	average	0.63	(0.47–0.84)		0.61	(0.45–0.83)	
	above average: reference	1			1		

**Notes:**

N = 5745

a: Wald-test: test of significance for categorical variables

unadjusted: bivariate logistic regression analysis – adjusted: multivariate logistic regression analysis

Parenting: sum of score from four questions (each 0–4), higher numbers meaning higher active parenting (monitoring, rule-setting, knowing the whereabouts)

Reference: reference group for OR calculations with polytomous categorical or ordinal variables



## Discussion

This study provides evidence that self-reported parental factors earlier in life are associated with self-reported alcohol use in approximately 20-year-old male Swiss adults.

Both volume drinking and dependence were considerably more prevalent in young men who reported a parental alcohol or drug problem. Earlier studies already suggested that parental problematic substance use is a risk factor for substance misuse in adolescents [38–40]. The present study showed that this association persisted into early adulthood. The primary socialisation theory might shed light on a possible mechanism: it posits that the offspring might have been influenced through parental transmission of norms concerning substance use and familial availability of alcohol and tobacco [41]. Considering primary socialisation theory, parental substance use is an important factor for alcohol prevention in adolescents and young adults.

Active parenting was the most consistent parameter associated with significant lower at-risk alcohol consumption, in both RSOD and volume drinking. Active parenting was also associated with reduced alcohol dependence. This association persisted after controlling for the other parental factors and underlines active parenting as a protective factor. These results were consistent with other studies which emphasise parenting as a key variable in explaining the aetiology of alcohol-related problems [21, 42–44]. Research on familial or parental influences focused mainly on youth alcohol consumption [4, 13–15, 45–49]. The present findings added evidence to other studies that active parenting continued to be important and had an effect until early adulthood [9, 20, 21]. Parents are important as the primary socialisation agency to transmit prosocial norms [41]. However, parenting styles and approaches to adolescent alcohol consumption are variable [50]. To prevent problematic alcohol consumption in adolescents and young adults, it is reasonable to inform parents about the protective effect of active parenting and the negative influence of parental problematic substance use.

Present findings showed that growing up in a single parent family was not a risk factor for alcohol consumption. This correlation disappeared after correcting for the influence of parenting and parental problematic substance use. This finding is in line with previous studies, in which the influences of family structure and family composition were debated. Most studies showed that living in a single parent family was a strong exposure variable for young substance use disorders of adolescents [4, 14, 16, 40, 47, 48]. However, other studies found an unclear influence after correction for other family-variables or gender-specific differences [51–54]. This study did not differentiate between mother- or father-headed one-parent families.

In the sample of young Swiss men at the age of 20 years, alcohol use and problematic alcohol use with RSOD and volume drinking up to dependence was common. These findings corresponded well with other studies based on data of Swiss conscripts [5, 55].

The present study has several strengths and limitations. A main strength of our study is that it is based on a large sample of about 20-year-old Swiss men. Due to the detailed items of the questionnaire, the association between

parental factors and alcohol use patterns could be studied. A further strength is that the present study analysed very common exposures and outcomes. The examined parental factors and alcohol use measures have an influence on the individual, familial and societal level. Therefore, the results might be of use in future prevention programmes, public health strategies and research. The present study should be interpreted with some caution and has several considerable limitations. The results are based on a retrospective observational cross-sectional analysis of baseline data of the C-SURF-study. Analysis of cross-sectional data does not provide sufficient information to determine the direction of causality. Longitudinal research is necessary to evaluate potential causal relationships. In the future, prospective data of the C-SURF-study will provide more information. This study only examined young Swiss males of a certain age group. Therefore, generalisations of the results to females or to all Swiss males should not be made. Next, the results rely on self-assessed measures based on a questionnaire. Concerns regarding validity and reliability of self-report measures of alcohol consumption are justified and have been addressed in research [56–59]. To ensure a good measurement precision, these recommendations were included in the design of the C-SURF questionnaire. Furthermore, recent research of US college students from the same age group showed that self-reported data on parenting and alcohol consumption was reliable [20]. Another limitation is that parental parameters were assessed retrospectively, which makes a potential recall bias possible. With a response rate of 79.2% among the consenters, a non-response bias is possible, although strong efforts were made to maximise the response rate and to minimise potential false reports. Studer et al. examined a non-response bias in the same cohort [28]. They showed that non-responders did differ from late respondents: they were more abstemious, but there was no difference concerning volume drinking and RSOD. Taking these results into account, a correction of a non-response bias would probably lead to a higher magnitude of effect and strengthen our findings. As mentioned in the introduction, parenting is not defined in a uniform way in existing literature. This makes comparisons with other studies difficult. The present study did not specify up to which degree more active parenting was protective against at-risk alcohol consumption. Visser et al. found a significant association between overprotection and alcohol use [60].

Future research should include longitudinal data to explore an ongoing effect between parental factors and alcohol consumption and how parental influence and alcohol use patterns change over time. Also, we suggest analysing the association between parental factors and other substance use, such as tobacco, cannabis and other drugs. Furthermore, future research should address the implementation of parental information into practice, such as dissemination of parenting guidelines and the adoption of recommendations into daily life.

## Conclusions

The present study adds evidence that earlier parental influences seem to have an ongoing impact on alcohol use

patterns in young adult men, while most previous research documented the importance of parental influences on adolescent or college student drinking. In this observational cohort sample of young Swiss conscripts active parenting was a consistent protective measure associated with lower risk of RSOD, volume drinking and alcohol dependence. A parental problematic substance use was positively associated with volume drinking and alcohol dependence in the offspring. A single parent family was not a risk factor for alcohol use in young adult men in this Swiss sample. Alcohol prevention strategies should therefore stress the importance of active parenting and the consumption of alcohol and drugs by the parents.

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**Correspondence:** Simon Steiner, MD, Division of General Internal Medicine, Bern University Hospital and University of Bern, CH-3010 Bern, Switzerland, [simon.steiner\[at\]hin.ch](mailto:simon.steiner[at]hin.ch)

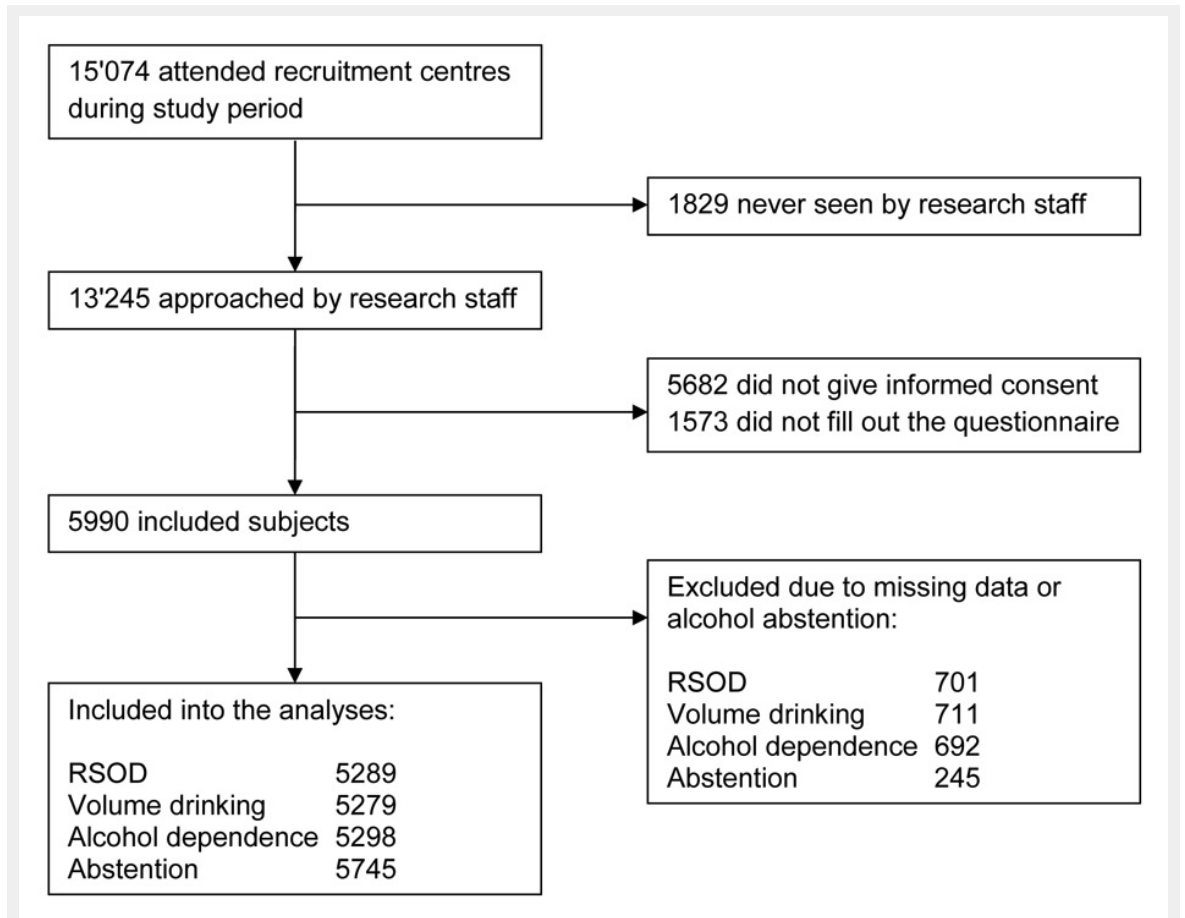
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Figures (large format)



**Figure 1**  
Flow chart of sample recruitment.