Journal of Adolescent Health 75 (2024) 620–625

ELSEVIER

JOURNAL OF ADOLESCENT HEALTH

www.jahonline.org

Original article

Age of Onset and DSM-5 Alcohol Use Disorder in Late Adolescence — A Cohort Study From Sweden

Jonas Raninen, Ph.D. [a,b,*], Sarah Callinan, Ph.D. [b], Gerhard Gmel, Ph.D. [c,d,e,f], Geir Scott Brunborg, Ph.D. [a,g], and Patrik Karlsson, Ph.D. [h]

[a] *Department of Clinical Neuroscience, Karolinska Institutet, Stockholm, Sweden*
[b] *Centre for Alcohol Policy Research, La Trobe University, Melbourne, Australia*
[c] *Addiction Medicine, Lausanne University Hospital and University of Lausanne, Lausanne, Switzerland*
[d] *Research Department, Addiction Switzerland, Lausanne, Switzerland*
[e] *Centre for Addiction and Mental Health, Institute for Mental Health Policy Research, Toronto, Ontario, Canada*
[f] *Alcohol and Research Unit, University of the West of England, Bristol, United Kingdom*
[g] *Department of Child Health and Development, Norwegian Institute of Public Health, Oslo, Norway*
[h] *Department of Social Work, Stockholm University, Stockholm, Sweden*

Article history: Received October 26, 2023; Accepted June 5, 2024
Keywords: Alcohol; Adolescent; Survey; DSM-5; Cohort

A B S T R A C T

Purpose: To examine if the prevalence of Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition alcohol use disorder (AUD) differs between two groups with different age of onset of alcohol use and if endorsement of different AUD criteria differs between the two groups.
Methods: A two-wave longitudinal prospective cohort survey conducted in Sweden (2017–2019) with a nationwide sample of 3,999 adolescents aged 15/16 years at baseline (T1), and 17/18 years at follow-up (T2); 2,778 current drinkers at T2 were analysed. Participants were categorized into early onset of drinking (drinking already at T1 54.3%) or late onset (not drinking at T1 but at T2, 45.8%). AUD was measured with questions corresponding to the 11 Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition criteria for AUD. Potential confounding factors measured at T1 were sex, sensation-seeking, impulsivity, emotional symptoms, peer problems, conduct problems, and hyperactivity.
Results: The early onset group had a higher prevalence of AUD at T2 compared to the late onset group (36.3% vs. 23.1%, $p < .001$). The higher risk of AUD remained significant in a linear probability model with control for additional confounding factors ($\beta = 0.080$, $p < .001$). All individual criteria were reported more in the early onset group, and there was no evidence of differential item functioning.
Discussion: The age of onset of alcohol use was a significant predictor of AUD in late adolescence among Swedish adolescents. Those with an earlier onset of alcohol use had a higher prevalence of AUD and of all individual criteria. The items in the scale were similarly predictive of AUD in both groups.

IMPLICATIONS AND CONTRIBUTION

The age of onset of alcohol use is a robust risk factor for later alcohol use disorder (AUD) with an earlier age of onset leading to a higher risk of AUD. Delaying the onset of alcohol use among adolescents should reduce AUD and the harms associated with it.

Alcohol use is the leading risk factor for disease and injury globally for 15-year-olds to 49-year-olds [1]. A review article of the literature regarding age of first drink and adult alcohol problems concluded that there is not enough evidence to say that

Conflicts of interest: The authors have no conflicts of interest to declare.

* Address correspondence to: Jonas Raninen, Ph.D., Karolinska Institutet, SE-171 77, Stockholm, Sweden.
E-mail address: jonas.raninen@ki.se (J. Raninen).

1054-139X/
https://doi.org/10.1016/j.jadohealth.2024.06.007

starting to drink earlier leads to adult alcohol problems [2]. This review by Maimaris and McCambridge covered the broader term "alcohol problems" including also later risky drinking [2]. A more recent review, covering specifically predictors of alcohol use disorder (AUD) also came to the conclusion that there is a paucity of longitudinal studies examining if age of onset predicts AUD [3]. The few studies that exist have shown that early onset of alcohol use predicted AUD in young adulthood [4], that the risk of alcohol dependence decreased for each year that onset was delayed [5], but that an early age of first drink was not significantly associated with alcohol dependence after adjusting for other risk behaviours [6].

In the Swedish general adult population, the highest rate of AUD was found among 17–29-year-olds [7], a commonly found result also internationally [8–10]. The fact that AUD peaks at such a young age challenges the traditional idea that AUD is the result of several years of detrimental drinking, as this view would mean that AUDs would be rare among young people. This paper used longitudinal data from a nationwide Swedish cohort to examine if the prevalence of AUD differs between groups with different age of onset of alcohol use.

The high prevalence of AUD among young people may be the result of false positives [11–13] and some researchers have even suggested that there should be a separate "adolescent alcohol dependence" since several of the criteria used for measuring AUD is part of normative drinking among young people and/or the result of a natural progression of drinking during this part of life [11]. Withdrawal, quit/control, craving, and skipping activities have been found to be uncommon and of less importance when measuring AUD among young people [14]. A review and meta-analysis concluded that tolerance is a low-threshold criterion for young people, while withdrawal is not [15]. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) conceptualization of AUD, using 11 criteria with a cut-off of 2, also means that there are a large number of different combinations of criteria can result in at least mild AUD, implying a large heterogeneity within the group.

Against this background it is plausible, and even reasonable, to expect that the expression of AUDs among young people will differ depending on when they started drinking. Those with more recent onset of drinking should be more likely to report increases in tolerance, while those with a longer experience of drinking should be more likely to report problems with quit/control or cravings. Understanding the different ways that early and late onset drinkers might answer these types of questions is important to understand the best ways to identify heavy drinkers and reduce the negative consequences caused by drinking in this age group.

There is unfortunately a dearth of studies examining the association between age of onset and different AUD criteria [16]. A recent review concluded that there is a need for high quality, large longitudinal studies that examine how early drinking onset is associated with the etiology of AUDs [3]. In addition to the onset of drinking, a meta-analysis showed that externalizing symptoms such as attention deficit hyperactivity disorder, antisocial behaviour, and conduct disorder have a positive association with later AUD [17]. The same meta-analysis also showed a positive association between internalizing symptoms, such as depression and anxiety, and later AUD, although the results were inconsistent compared to what was the case with externalizing symptoms [17].

In this study, we used data from a large nationwide longitudinal study to examine if the expression of AUD among adolescents aged 17–18 years depended on the age at which they started drinking. We estimated the prevalence of AUD in two groups with different age of onset of drinking and if the age of drinking onset was a robust predictor of later AUD after controlling for a range of potential confounders. Furthermore, we examined item endorsement and composition of the DSM-5 measure of AUD in the two groups with different age of onset of drinking.

Materials and Methods

The data were derived from the first and the second waves of a prospective longitudinal study, Futura01, which is a nationwide prospective longitudinal study of Swedish adolescents attending ninth grade of compulsory school in 2017. The baseline data collection (T1) was carried out as a paper-and-pen questionnaire during school hours when the respondents were in the ninth grade, which is the final year of compulsory school in Sweden. The second data collection (T2) was performed in 2019 as a web survey or postal survey, and respondents were here followed whether they continued with academic preparatory school, vocational school, started working, or did neither. Both data collections have been carried out during spring, between March and June, toward the end of the school year in Sweden.

At T1, 500 schools were randomly selected using a probability proportional to size procedure and one class within each of these schools was then selected. The participation rate was 68.6% at the school level. No statistically significant differences were found between participating and nonparticipating schools with regards to parental education level, immigrant background, and students' average grades. The students present the day of the data collection were informed about the study procedure and 5,730 students agreed to participate in the study, 778 did not want to participate, and 269 did not answer the question about consent. Among those who agreed to take part in the study, some were excluded due to providing incorrect or unreadable social security numbers ($n = 154$), nonresponse on central questions ($n = 19$), or unreliable responses ($n = 8$) resulting in a baseline sample of 5,541 and a participation rate of 82% [18]. At T2, the invitation to participate was mailed to each respondent's registered home address and the retention rate was 72% ($n = 3,999$), with 83% completing the questionnaire online and 17% completing a postal questionnaire. At T1, the respondents were aged 15–16 years depending on what month of the year they were born, and at T2, they were aged 17–18 years. The legal drinking age in Sweden is 18 years for on-premise outlets and 20 years for off-premise outlets. The data collection and overall study design was approved by the regional ethical review board of Stockholm (2017/103-31/5).

Measurements

Alcohol use. Drinking status at both T1 and T2 was measured with the following question "Have you ever had a drink of alcohol? (disregard drinks below 2.8%, such as low-alcohol beer or weak cider)". The response options were "No," "Yes, during the past 30 days," "Yes, during the past 12 months," and "Yes, more than 12 months ago." At the respective time points, those reporting any lifetime use were coded as alcohol consumers. Respondents who indicated lifetime alcohol use at T1 were

categorized as 'Early onset,' while respondents who indicated no alcohol use at T1 and any lifetime alcohol use at T2 were categorized as 'Late onset.'

Alcohol use disorder. AUD was measured at T2 by asking if the respondents had experienced the 11 DSM-5 criteria during the past 12 months (See Table 1 for details). AUD was also divided into mild [7,8], moderate [9,10] and severe (6+) AUD. These questions were only asked to those reporting any alcohol use at T2.

Control variables. All control variables were measured at T1. Conduct problems, emotional symptoms, peer relationship problems, and hyperactivity inattention were measured with five items each from the Strengths and Difficulties Questionnaire (SDQ) [19] using the self-rated SDQ-Swedish version for 11–17-year-olds. The factor structure and validity of the SDQ based on these data are reported elsewhere [20]. A composite sum score (range 0–10) was created for each of the four SDQ variables with some items reverse-coded.

Impulsivity was measured with two items from the Brief Barratt Impulsiveness Scale [21], "I act on the spur of the moment" and "I do things without thinking," measured on a five-point Likert scale. Sensation seeking (SS) was measured using Brief Sensation-Seeking Scale-4 [22]. Brief Sensation-Seeking Scale-4 is a four-item measure of SS, capturing specific dimensions ("experience seeking," "disinhibition," "thrill and adventure seeking," "boredom susceptibility") hypothesized to underlie SS [22] with high internal consistency (alpha = 0.82).

We also included gender (female/male) as a control variable.

Statistical analysis

Participants were categorized into two groups based on their drinking status at both time points. These groups will be referred to from now on as 'Later onset' (no drinking during their lifetime at T1 and any drinking during their lifetime at T2) and 'Early onset' (any drinking during their lifetime at both T1 and T2). A third group could have been of interest here, 'Early quitters' those reporting alcohol use during their lifetime at T1 and then reporting no use at T2 (n = 104). This group, however, did not receive the DSM-5 questions at T2 and are therefore excluded from the analytical sample. Nondrinkers at both T1 and T2 (n = 1,024) were also excluded from further analyses, and those with missing information on any included variables (n = 93), resulting in a final analytical sample of 2,778.

Prevalence and differences in the severity of AUD between the two groups were compared using a chi-square test. We then used a linear probability model to examine differences in the probability of any AUD (2+ criteria) based on the age of onset of alcohol use in crude model and with controlling for additional variables in an adjusted model. The regression model also used cluster robust standard errors to compensate for the individuals being nested within school classes at T1. Finally, we examined item endorsement in these two groups and analysed the internal consistency of AUD in both groups to examine differences in item endorsement based on age of onset of alcohol use, that is, if the items making up AUD differed between the two groups. This was done by examining the prevalence of each item in the early and late onset groups separately and testing for differences using chi-square test. We then also carried out differential item functioning analyses with Cochran-Mantel-Haenszel statistic to examine if the responses to the individual items differed between the two groups after controlling for different total scores between groups; such differences would indicate that the items work differently in the groups. All analyses were done using SAS 9.4. The analyses were not preregistered, and all results are to be considered exploratory.

Results

The group with early onset of alcohol use consisted of 54.3% of the analytical sample (n = 1,507), while 45.7% was in the late onset group (n = 1,271). In the early onset group, 36.3% had at least mild AUD, and in the later onset group, 23.1% had at least mild AUD. Table 2 shows the distribution of AUD across the categories of severeness. In all categories, the prevalence of AUD was higher in the early onset group with about 1.5 times higher prevalence of AUD found in the early onset group compared to the late onset group.

The regression model with no potential confounders added (i.e., the crude model) in Table 3 indicated a significantly greater likelihood of AUD at T2 in the early onset group. This prospective association was somewhat attenuated after controlling for potential confounders, but the significant difference between the early and late onset groups remained in the fully adjusted model.

Table 4 shows the endorsement for the individual AUD criteria for the two groups with different age of onset of alcohol

Table 1
Alcohol criteria labelling and wording of questions

Criterion name	Question wording
	During the past 12 months…
Tolerance	…did you drink more in order to get the same effect that you got when you first started drinking?
Withdrawal	…has it happened that your hands shake, you start sweating, or feel agitated when you cut down on drinking?
Larger/longer	…during the times when you drank alcohol, did you end up drinking more than you planned when you started?
Quit/control	…have you tried to reduce or stop drinking alcohol but failed?
Time spent	…on the days that you drank, did you spend substantial time obtaining alcohol, drinking, or recovering from the effects of alcohol?
Activities given up	…did you spend less time working, enjoying hobbies, or being with others because of your drinking?
Physical/Psychological problems	…have you continued to drink even though you knew that the drinking caused you health or mental problems?
Neglect roles	...has your drinking caused you more than once to miss a class, work or to fail to look after your family at home?
Hazardous use	...did you find yourself, more than once, in a situation that increased your chances of getting injured (using machines or around traffic) after you had been drinking alcohol?
Social/interpersonal problems	...did you continue your drinking habits even though your drinking had caused problems with your partner, friend, or acquaintances?
Craving	...have you had a strong desire or urge to drink alcohol?

Table 2
Prevalence and severity of AUD in the two groups with different onset of alcohol use

	Early onset (n = 1,507)	Late onset (n = 1,271)
No AUD	63.7	77.0
Mild AUD	27.3	17.7
Moderate AUD	6.8	3.9
Severe AUD	2.2	1.4

Chi-square statistics: DF 3, value 57.021, $p < .001$.
AUD = alcohol use disorder.

use. The most endorsed criterion in both groups was the larger/longer criterion, which 36.7% of the early onset group and 25.8% of the later onset group endorsed. Tolerance, craving, time spent drinking, and physical/psychological problems were also commonly endorsed criteria. The patterning of items endorsed was also similar in both groups, with all items endorsed more in the early onset group but with a similar difference across in both groups. The exception was that withdrawal and hazardous use was twice as often endorsed in the early onset group compared to the later onset group. It is also worth noting that for the two items quit/control and neglect roles, the differences were not statistically significant. The differential item functioning analyses also presented in Table 4, controlling for differences in overall level of endorsement, showed no significant differences regarding item functioning in the two groups as indicated by the Cochran-Mantel-Haenszel statistic. The Cronbach's alpha of the AUD scale was 0.676 in the early onset group and 0.711 in the late onset group, indicating that the items have similar internal consistency in both groups rather than different items playing more important roles in the two groups. The alpha would not be changed in any substantial way if either of the items were removed from the scale, in any of the groups.

Discussion

This study examined AUD among late adolescents in Sweden stratified by age of onset of alcohol use. The prevalence of AUD was found to be high in both groups, with 36.3% of those with early onset alcohol use meeting the criteria for DSM-5 AUD and 23.1% of those with later onset of alcohol use also meeting the criteria for AUD. While high, this is similar to what has previously been found in this age group [14]. When examining AUD in the two groups, we found a clear and consistent difference in the prevalence of AUD, endorsement of all individual criteria, and in the severity of AUD. The early onset group had approximately 50% higher on levels of all of the severity dimensions than later onset group. That age of onset is linked to a higher risk of future AUD has also been found in previous studies [3,4], but reviews have also found that the evidence base behind this is scarce and called for more high-quality longitudinal studies of the role of age of onset in predicting later AUD and what this means for the etiology of AUD [2,3].

Table 3
Linear probability model of any AUD (2+) in the analytical sample (n = 2,778)

Variable	Crude	SE	*p* value	Adjusted	SE	*p* value
Intercept	0.231	0.013	< .001	0.020	0.060	.743
Early onset	0.133	0.012	< .001	0.080	0.019	< .001
SDQ Conduct problems				0.020	0.008	.011
SDQ Hyperactivity-inattention				−0.001	0.006	.818
SDQ Emotional symptoms				0.017	0.004	< .001
SDQ Peer problems				−0.013	0.008	.100
Impulsivity				0.004	0.004	.275
Sensation seeking				0.008	0.002	< .001
Male (ref. Female)				0.016	0.020	.424

AUD = alcohol use disorder; SDQ = Strength and difficulties questionnaire; SE = standard error.

However, there does not appear to be any difference in the AUD construct between the two groups. The internal validity of the AUD scale is similar in both groups and all the individual items work well and contribute to the overall measurement of AUD. The endorsement patterns are also the same in both groups, so although there is a clear difference in the prevalence of each item between groups, the likelihood of experiencing any given symptom, once the overall endorsement rate within each group is controlled for, is the same. The most commonly endorsed items are also the same in both groups (Tolerance, Larger/longer, Time spent, Craving) as are the least endorsed items (Withdrawal, Quit/control, Hazardous use). Our results therefore do not suggest that there are any DSM-5 AUD criteria that would be especially associated with any of the age of onset groups. Rather, the results indicate that the individual items operate in a similar way in both groups.

It has previously been suggested that certain criteria are part of a natural progression of drinking during this life-phase and therefore they do not work well in distinguishing AUD among young people [11]. Criteria like tolerance, larger/longer, and withdrawal might be misinterpreted, and overly reported, by individuals early in their drinking careers [11,14] and therefore these items could be expected to operate differently among those with more recent drinking onset. Our result shows that this does not seem to be the case. In line with this idea though, we did find tolerance and larger/longer to be the two items with the highest prevalence. One interpretation here is that both groups are so early on in their drinking careers that the misinterpretation and over-reporting is present in both groups. Previous studies have shown that the prevalence of the larger/longer criterion drops in the mid-20s [9]. It might be that our two-year difference between groups is too short to meaningfully discriminate between the groups.

A previous study found that the withdrawal, quit/control, craving, and skipping activities criteria were uncommon among young people [14], and we also found withdrawal, quit/control, and skipping activities to be low prevalent in both groups. We did, however, find craving to be among the most endorsed criteria, both in the early and later onset groups. Future studies should examine if these criteria are persistently reported also in older ages or if this high prevalence is due to the wording of the question and the relatively young respondent's interpretation of 'urge and desire to drink.' The only two items that did not differ significantly in their endorsement between the two groups were Quit/control ($p = .051$) and Neglect roles ($p = .056$). This could perhaps be indicative of these items being less important in this age group, with younger people less inclined to have tried quitting drinking already and not having that many roles conflicting with their drinking. It at least shows that these items do not discriminate between groups with different age of onset of drinking.

A review of the predictors of AUD among young people [3] found that externalizing symptoms in adolescence were predictive of AUD among young adults, while internalizing symptoms were not. This review also suggested that shared

Table 4
Items endorsement and internal consistency for AUD in the two groups with different onset of alcohol use

Items (AUD criteria)	Items endorsed			DIF		Early onset	Late onset
	Early onset (n = 1,507)	Late onset (n = 1,271)	*p* value	CMH	Prob	Alpha[a] 0.676	Alpha[a] 0.711
Tolerance	24.1%	15.6%	< .001	0.003	0.954	0.658	0.694
Withdrawal	1.5%	0.6%	.035	0.460	0.498	0.670	0.703
Larger/longer	36.7%	25.8%	< .001	0.379	0.538	0.666	0.692
Quit/control	3.0%	1.9%	.051	0.111	0.740	0.652	0.695
Time spent	19.1%	12.8%	< .001	1.115	0.291	0.650	0.688
Activities given up	3.5%	2.1%	.036	0.013	0.910	0.647	0.694
Physical/Psychological problems	14.7%	10.2%	< .001	1.717	0.190	0.646	0.680
Neglect roles	3.3%	2.1%	.056	0.400	0.527	0.641	0.684
Hazardous use	2.5%	1.2%	.010	0.366	0.545	0.656	0.687
Social/interpersonal problems	3.6%	1.9%	.005	0.201	0.654	0.659	0.686
Craving	22.5%	13.4%	< .001	1.021	0.312	0.655	0.696

AUD = alcohol use disorder; CMH = Cochran-Mantel-Haenszel; DIF = Differential Item Functioning; Prob = the probability for the CMH.
[a] Alpha for total scale and alpha when individual items are excluded from scale.

vulnerability between externalizing behaviour and substance use disorders might underlie the association and render a genetic liability for both externalizing behaviours and AUD [17]. Our results show that the association between early onset and AUD was somewhat attenuated when controlling for additional confounders, including externalizing symptoms. This suggests that the difference between the early and later onset groups is only in part due to differences in background variables like externalizing symptoms, as a unique contribution of age of onset still persisted. We also found emotional (internalizing) problems to be significantly associated with an increased risk for AUD in the fully adjusted model, which is in contrast to what has previously been found [17].

Future studies should examine how different criteria and severities of AUD are linked to persistence of AUD. That is, if there are certain criteria that are linked to the progression and persistence of AUD, while other criteria would be linked to more transient AUD that passes on its own, a sort of 'adolescent limited' AUD. It should also be examined if the different levels of severity introduced in the DSM-5, with mild, moderate, and severe AUD, are differently associated with persistence of AUD.

With our results clearly indicating that an earlier onset of alcohol use is associated with a higher risk of AUD, it is possible that delayed onset could reduce the prevalence of AUD and associated harms. With no differences in the nature of AUD between the two groups, there is however no indication in our results that practitioners need to factor in the age of onset when, for example, planning treatment of AUD for young people. The same can be said regarding our theoretical and scholarly understanding of AUD, the age of onset of alcohol use does seem to impact the risk and prevalence of AUD, but not how AUDs manifest, at least when the people involved are still young.

Our results are based on self-reported survey information, which needs to be kept in mind when interpreting the results. One major limitation of this for the present study is the measurement of age of onset, drinking behaviour in this age group changes and many start to drink around the age of 15–18 years. Our late onset group can therefore be made up of those who started to drink weeks after the first round of data collection, which would make them more like the early onset group, and those who started to drink only in the weeks prior to the second data collection. This group is therefore likely to be heterogeneous and this might have diluted our results somewhat. The same can be said of the early onset group, but for them we at least know that they have been drinking for two years at T2. The longitudinal design is also a strength of the study, with us not relying on retrospective estimations of the age of onset from the respondents. The nationwide baseline sample, the large number of participants, and the good response and retention rates also help in generalizing our results back to the target population of Swedish adolescents. It also lowers the risk of our results being driven by a biased sample. Our study also included both females and males, with limitations of some previous studies being that they are gender homogenous [14]. We were also able to include several known confounders that were measured with high-quality validated instruments at baseline.

Conclusions

Previous studies have shown mixed results regarding the contribution of age of onset for later AUD [3] and review articles on the topic have therefore concluded that there is a need for more high-quality longitudinal studies to improve our understanding of how the age of onset is related to AUD. The present study provides evidence for a unique contribution of the age of onset for later AUD, even after controlling for a wide range of explanatory variables with known associations to AUD. The age of onset of alcohol use is a significant predictor of AUD in late adolescence among Swedish youth.

There were no indications that the composition of AUD differed between the two groups with different onset of alcohol use, with no significant difference in the reported criteria between groups. An early age of onset thus increases the risk of getting AUD in late adolescence but does not impact what kind of criteria that are reported to fulfill AUD.

Funding Sources

This work has been supported by funding from Systembolaget Research Council on Alcohol (SRA) 2021-0019 and The Swedish Research Council for Health, Working Life and Welfare (FORTE) 2021-01725. The funders played no role in the study design, analysis or interpretation, or in the decision to submit the paper for publication.

References

[1] Griswold MG, Fullman N, Hawley C, et al. Alcohol use and burden for 195 countries and territories, 1990–2016: A systematic analysis for the global Burden of disease study 2016. Lancet 2018;392:1015–35.

[2] Maimaris W, McCambridge J. Age of first drinking and adult alcohol problems: Systematic review of prospective cohort studies. J Epidemiol Community Health 2014;68:268–74.

[3] Meque I, Salom C, Betts KS, Alati R. Predictors of alcohol use disorders among young adults: A systematic review of longitudinal studies. Alcohol Alcohol 2019;54:310–24.

[4] Windle M, Windle RC. The measurement of adolescent alcohol problems via item response theory and their 15-year prospective associations with alcohol and other psychiatric disorders. Alcohol Clin Exp Res 2017;41:399–406.

[5] Grant BF, Dawson DA. Age of onset of drug use and its association with DSM-IV drug abuse and dependence: Results from the national longitudinal alcohol Epidemiologic survey. J Subst Abuse 1998;10:163–73.

[6] King KM, Chassin L. A prospective study of the effects of age of initiation of alcohol and drug use on young adult substance dependence. J Stud Alcohol Drugs 2007;68:256–65.

[7] Sundin E, Landberg J, Ramstedt M. Negativa konsekvenser av alkohol, narkotika och tobak. Stockholm, Sweden: CAN; 2018. rapport 174.

[8] Hasin DS, Stinson FS, Ogburn E, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: Results from the national epidemiologic survey on alcohol and related conditions. Arch Gen Psychiatry 2007;64:830–42.

[9] Pabst A, Kraus L, Piontek D, Baumeister SE. Age differences in diagnostic criteria of DSM-IV alcohol dependence among adults with similar drinking behaviour. Addiction 2012;107:331–8.

[10] Teesson M, Hall W, Slade T, et al. Prevalence and correlates of DSM-IV alcohol abuse and dependence in Australia: Findings of the 2007 national survey of mental Health and Wellbeing. Addiction 2010;105:2085–94.

[11] Caetano R, Babor TF. Diagnosis of alcohol dependence in epidemiological surveys: An epidemic of youthful alcohol dependence or a case of measurement error? Addiction 2006;101:111–4.

[12] Narrow WE, Rae DS, Robins LN, Regier DA. Revised prevalence estimates of mental disorders in the United States: Using a clinical significance criterion to reconcile 2 surveys' estimates. Arch Gen Psychiatry 2002;59:115–23.

[13] Wakefield JC, Schmitz MF. How many people have alcohol Use disorders? Using the harmful dysfunction analysis to reconcile prevalence estimates in two community surveys. Front Psychiatry 2014;5:10.

[14] Marmet S, Studer J, Bertholet N, et al. Interpretation of DSM-5 alcohol use disorder criteria in self-report surveys may change with age. A longitudinal analysis of young Swiss men. Addiction Res Theor 2019;27:489–97.

[15] Lane SP, Steinley D, Sher KJ. Meta-analysis of DSM alcohol use disorder criteria severities: Structural consistency is only 'skin deep'. Psychol Med 2016;46:1769–84.

[16] Dawson DA, Goldstein RB, Chou SP, et al. Age at first drink and the first incidence of adult-onset DSM-IV alcohol use disorders. Alcohol Clin Exp Res 2008;32:2149–60.

[17] Meque I, Dachew BA, Maravilla JC, et al. Externalizing and internalizing symptoms in childhood and adolescence and the risk of alcohol use disorders in young adulthood: A meta-analysis of longitudinal studies. Aust N Z J Psychiatry 2019;53:965–75.

[18] Raninen J. Ung i en tid med minskat drickande [Elektronisk resurs]. Stockholm, Sweden: Swedish Council for Information on Alcohol and Other Drugs (CAN); 2020.

[19] Goodman R. Psychometric properties of the strengths and difficulties questionnaire. J Am Acad Child Adolesc Psychiatry 2001;40:1337–45.

[20] Karlsson P, Larm P, Svensson J, Raninen J. The factor structure of the strength and difficulties questionnaire in a national sample of Swedish adolescents: Comparing 3 and 5-factor models. PLoS One 2022;17:e0265481.

[21] Steinberg L, Sharp C, Stanford MS, Tharp AT. New tricks for an old measure: The development of the Barratt Impulsiveness scale-Brief (BIS-Brief). Psychol Assess 2013;25:216–26.

[22] Stephenson MT, Hoyle RH, Palmgreen P, Slater MD. Brief measures of sensation seeking for screening and large-scale surveys. Drug Alcohol Depend 2003;72:279–86.