



Substance use disorders in people with intellectual disability

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Purpose of review

To provide an overview of studies on substance use and substance use disorder (SUD) in individuals with mild intellectual disability or borderline intellectual functioning (MID–BIF).

Recent findings

Many individuals with MID–BIF use tobacco, alcohol, and drugs. On average, rates of substance use and SUD are similar to or even higher than those in peers with average intelligence. Individuals with MID–BIF are overrepresented in (forensic) addiction care. Several instruments are now available for the assessment of SUD and its risk factors in this target group. Prevention and intervention programs have been shown feasible and with promising outcomes, although the evidence base is still small. Professionals in addiction care and intellectual disability care facilities show deficiencies in skills in addressing SUD in clients with MID–BIF.

Summary

Research in this area is still in its infancy, though an increasing number of studies show promising outcomes regarding case identification, assessment, and treatment of SUD in intellectual disability. Policy and practice should be adapted to the characteristics of individuals with MID–BIF.

Keywords

assessment, intellectual disability, prevalence, substance use, treatment

INTRODUCTION

Worldwide, individuals with mild intellectual disability (MID; Intelligence Quotient (IQ) 50–70) or borderline intellectual functioning (BIF; IQ 70–85) are recognized as a group at risk for problems with substance use or substance use disorder (SUD) [1,2]. The Diagnostic and Statistical Manual of Mental Disorders (5th edition) (DSM-5) defines SUD as a problematic and recurrent pattern of substance use resulting in significant impairments in day-to-day functioning, including failure to meet responsibilities at work, school or home. SUD may range from mild to severe, based on 11 criteria related to impaired control over substance use, social impairments as a result of substance use, risky substance use, and symptoms of tolerance and withdrawal [3]. Problematic substance use and SUD are associated with neuropsychological (e.g., executive control) and emotional and behavioral problems (e.g., aggression), mental ill-health and somatic problems. SUD is also related to problems with work, housing and social network and delinquency [1]. Cognitive deficits are often associated with SUD [4].

There is an increase in the number of studies on SUD in individuals with MID–BIF. This narrative

review provides an overview of studies that were published between 2017 and 2019. Databases such as PubMed, PsychInfo, and Web of Science were searched for studies on SUD in intellectual disability. Excluded were book chapters and letters to the editor as well as studies on gambling [5[¶]] and internet use [6].

Prevalence of intellectual disability in substance use disorder samples

There are a growing number of studies suggesting that people with intellectual disability are overrepresented in mental healthcare, prisons, and

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KEY POINTS

- Individuals with MID–BIF are at increased risk for SUD.
- Methods and instruments need to be adapted to the characteristics of these individuals.
- The evidence base of (secondary) prevention and intervention programs is small.
- Addiction centers, intellectual disability care facilities and/or forensic care organizations need to collaborate.

(forensic) addiction centers. For example, prevalence and associated characteristics of intellectual disability were explored in a Dutch study among male adults in a forensic addiction treatment center [7]. Of the sample, 39% were identified with MID–BIF, which is much higher than the estimated 12–15% of the general population. Those with MID–BIF reported less desire for help than those without MID–BIF, which may be explained by the fact that they are more likely to externalize the cause of their problems and (also see [8]). A limitation of this study was that classification of MID–BIF was based on outcomes of IQ tests only, thereby omitting two of the three DSM-5 criteria for intellectual disability (i.e., deficits in adaptive functioning and start during the developmental period). A study was conducted on the prevalence of MID–BIF among inpatients with SUD taking into account all three criteria [9^{***}]. In total, 32% could be classified as MID–BIF of whom 8% were classified as MID and 24% as BID. Significantly, none of the participants had been diagnosed with MID–BIF during SUD treatment. There were no differences between people with and without MID–BIF on a range of variables (e.g., mean age of first use, severity of use, and types of SUD), except for relapse: individuals with MID–BIF more often relapsed into substance use during treatment than individuals without MID–BIF.

For the purpose of case identification, screening instruments have been developed. The validity of the Hayes Ability Screening Index (HASI) was investigated in three facilities for the treatment of SUD [10^{*}]. The HASI had acceptable validity for use in screening MID–BIF in SUD samples.

Prevalence of substance use disorder in intellectual disability samples

Using the Substance use and misuse in Intellectual Disability Questionnaire (SumID-Q) [11], frequency and severity of alcohol and drug use were explored in young adults living in Dutch residential settings [12^{*}]. Results showed that 62% currently

used alcohol, 34% used cannabis, and 20% used other drugs. Twenty-three percentage used more than one type of substance. No relationship was found between IQ (range 50–85) and alcohol or drug use. Using the SumID-Q among a sample of adults with moderate to MID (IQ 35–70) living independently in Flanders (Belgium) it was found that 46% currently used alcohol and 48% smoked tobacco [13^{*}]. Cannabis was used by only 2% of the sample while none of the participants reported using other illicit drugs. In another study, case files of adults with severe to MID (IQ 20–70) who were admitted to an acute psychiatric unit were assessed for SUD [14]. Tobacco was the main substance used, followed by cannabis, alcohol, and cocaine. Percentage of patients with a SUD diagnosis was 42% (including tobacco use disorder) and 36% (excluding tobacco). Most patients used more than one substance. Patients with SUD showed worse clinical outcomes and greater number of psychiatric admissions than those without SUD. In a French study, use of tobacco, alcohol, and cannabis was explored in adolescents (mean age 14 years) with MID visiting mainstream schools [15^{**}]. Prevalence rates were 23, 63, and 9%, respectively. These rates were similar to those in nondisabled peers, except for cannabis rates that were much higher in peers. Alcohol use was assessed in a ($n = 329$) sample of German students with MID–BIF who were matched to students without MID–BIF [16^{**}]. Of the MID–BIF students, 13% drank alcohol more than three times a month compared with 18% of the comparison group. Percentages of abstinent students were 37 and 20%, respectively. There were no significant differences between the two groups on age of first substance use (mean age of 13 years) and age of first intoxication (mean age of 13 years). It remained unclear why a large group of students abstained from using alcohol. Finally, in a study on psychiatric diagnoses among older (>55 years) people with intellectual disability only 2% had a diagnosis of SUD [17].

Theoretical frameworks and risk factors

SUD is a complex condition caused by biological, psychological and social factors and associated with mental disorders, somatic problems, and psychosocial disadvantages. Many factors may account for the increased risk for SUD, including deficits in coping and social skills, impaired inhibition, susceptibility of social pressure, and difficulties in understanding the adverse consequences of substance abuse [1].

Several theoretical frameworks for SUD have been explored in individuals with MID–BIF. An influential model is the ‘dual process model’ that states that SUD is maintained by automatic

implicit (e.g., attention bias and selection) and controlled explicit (e.g., motivation, inhibition) processes. SUD is associated with disruptions in the motivational, reward and inhibitory control processes and subsequent deficiencies in information processing. This would show in the presence of cognitive biases and executive dysfunctioning in problematic substance users. Attentional bias was measured using the visual dot probe task in participants with MID–BIF [18[¶]]. The task was presented on a Tobii eye tracking device with which participants' eye movements were recorded. Problematic drinkers were not more likely than light drinkers to direct their attention toward pictures of alcoholic beverages. Whether executive control (inhibition) and readiness to change play a role in the (assumed) relationship between alcohol use and attentional bias was investigated in a second study [19[¶]]. Participants were adults with and without MID–BIF who were categorized as light or problematic drinkers. On a computer, they were presented with the visual dot probe task for measuring attentional bias toward alcohol, tasks for working memory and inhibitory control for measuring executive control, and a questionnaire for measuring readiness to change. No attentional bias or executive dysfunctions were found in problematic drinkers. Both studies failed to support the dual-process models of SUD. It is concluded that measures of attentional bias are not useful for clinical purposes (i.e., screening, assessment, treatment) also because of their problematic psychometric qualities.

The 'motivational model of alcohol use' has recently been studied in young adults with MID–BIF in residential settings [12[¶]]. According to this model, individuals are motivated to drink alcohol because of internal reinforcement (e.g., relieve from stress) or external reinforcement (e.g., approval from peers). Motives for alcohol use were measured by the Drinking Motives Questionnaire revised short form addressing four motives: social (confirm social relations), conformity (prevent rejection from group), coping (regulate negative emotions), and enhancement (create positive mood) [20]. Results show that all four motives were to some degree related to alcohol or drug use.

In people without MID–BIF studies have shown that their personality profile is related to the risk for SUD [21]. Four personality dimensions have been associated with increased risk of SUD: anxiety sensitivity, negative thinking, impulsivity, and sensation seeking. These dimensions may be assessed by the Substance Use Risk Profile Scale [22]. The role of personality dimensions in alcohol and drug use was explored in young adults with MID–BIF who were living in three Dutch care facilities [23[¶]]. Results

showed that individuals with low levels of anxiety sensitivity, and high levels of negative thinking, impulsivity and sensation seeking showed more severe alcohol use. High levels of negative thinking and sensation seeking were related to more severe drug use. The level of IQ (range 50–85) did not influence these relationships and outcomes were in agreement with studies among individuals with average intelligence.

Assessment of substance use disorder in intellectual disability: Substance use and misuse in Intellectual Disability Questionnaire

Studies on prevalence and risk factors for SUD have used instruments that were adapted to individuals with MID–BIF. An example is SumID-Q, which was developed to assess type and frequency of lifetime and current alcohol and drug use, risk factors for and consequences of problematic substance use in individuals with MID–BIF [11]. The SumID-Q uses pictorial stimuli and simple phrasing. It is presented to clients in a semistructured interview with an open and nonjudgmental character to discuss substance use that they are familiar with. It has a modular format in that clients need to answer questions regarding substances they are familiar with. The self-report and proxy-report versions of the SumID-Q were compared with biomarker analysis in clients with MID–BIF [24[¶]]. Biomarkers for substance use were assessed in urine, hair, and sweat patches. It was found that willingness to participate was significantly lower for biomarker assessment than for self-report. Agreement between self-report and proxy-report and biomarker analysis was substantial, except for alcohol use. It was concluded that the use of biomarker analysis in clinical practice is of limited additional value. High agreement between the self-report and proxy-report version of the SumID-Q was also found in a Belgian study [13[¶]]. Both versions of the SumID-Q can be used to assess substance use and this combination may be used in collaborative and early intervention for SUD in individuals with MID–BIF.

Treatment: prevention, intervention, and reasonable adaptations

An increasing number of studies have assessed feasibility and effectiveness of prevention and intervention programs for SUD in MID–BIF. Programs that have been shown effective in individuals without intellectual disability need to be adapted to the needs and learning style of individuals with MID–BIF [25–27].

Prevention

Two studies assessed effectiveness of a prevention program in students (including students with MID–BIF) who visited schools for secondary special education. The ‘Healthy School and Drugs (HSD)’ program for smoking and alcohol use was evaluated in students from different types of schools located throughout the Netherlands [28¹¹]. HSD is based on the attitude–social influence–self-efficacy model in which starting substance use is explained by the intention to engage in that behavior which in turn is associated with the attitude, perceived social influence and self-efficacy with regard to the use of substances. The program was adapted to the students and consisted of skills training, goal setting, and action planning. Parents and teachers also received training to facilitate generalization. There were no significant differences between the two groups on smoking and alcohol use at posttreatment. Significantly, there were adverse effects for alcohol use in students with emotional and behavioral disorders suggesting that the outcome of HSD depends on school type. In another study, the effectiveness of ‘Prepared on Time’ (PIT) on smoking and alcohol use was evaluated in students with mild-to-moderate intellectual disability visiting schools for secondary special education [29¹²]. PIT was adapted and presented to the students as an e-learning program including games, videos, quizzes, and tests. Results showed that while students were well capable of using the e-learning program, it had no effect on study outcomes (e.g., substance knowledge, attitude, intention). The disappointing outcomes of both studies may be explained by student (e.g., learning difficulties) and program (e.g., too short, lack of parent involvement) characteristics.

Intervention

Take it personal is an example of an intervention that is aimed at reducing substance use in adolescents with MID–BIF and which is based on their personality dimensions. Participants are taught how to deal with their personality traits and associated motives for SUD [30].

Substance use may be especially high in clients residing in forensic treatment settings [7,31]. A study was published on the feasibility of a 27-week treatment program called Alcohol and Substance Abuse Programme-Intellectual Disability based on principles of dialectical behavior therapy and the Good Lives model [32]. Data in six participants were collected at pre and posttreatment and results show an improvement in participants’ confidence to stay clean in risk-related situations and their readiness to change. Clinical (forensic) treatment is often complex and takes often much time before marked

improvements are seen. In addition, a change in actual use of substances often cannot be assessed.

Some of these limitations were addressed in a Randomized Controlled Trial (RCT) study on extended brief interventions (EBI) in which 30 individuals with mild-to-moderate intellectual disability were allocated to an intervention and control (usual care for alcohol misuse) condition [33¹³]. Participants received care from three community intellectual disability networks of services in England. EBI was adapted to the learning style of participants in terms of more but shorter sessions than regular EBI and materials to use during sessions [34]. EBI consisted of techniques of motivational interviewing techniques and cognitive behavior therapy and was presented during five weekly 30-min sessions and 1-h follow-up sessions after 3 weeks. Results showed that drop out was low and that there was a stronger decrease in substance use severity scores for EBI (67%) than for controls (47%) at 3-month follow-up. A process evaluation showed that both clients and carers were positive about EBI and that EBI can be delivered by generic workers in a community setting.

Reasonable adaptations

SUD in MID–BIF is a complex and chronic condition which warrants treatment involving medical, social, and psychological professional competence [1,27]. Facilities for intellectual disability care often do not have necessary skills and attitude for addressing SUD while addiction centers often are not adapted to the needs of clients with MID–BIF leading to difficulties in case identification, drop out, and less favorable treatment outcomes [35,36]. This calls for a more close collaboration between addiction and intellectual disability care and integrated service provision, and training of staff [37].

CONCLUSION

Prevalence rates of SUD vary in people with intellectual disability. SUD are almost exclusively observed in individuals with moderate to MID or BIF. On average, individuals with intellectual disability have similar risk factors compared with their peers without intellectual disability but are more vulnerable for the adverse effects of SUD. It is important to identify both intellectual disability and SUD in individuals in community and clinical settings, and methods of assessment and treatment should be tailored to people with intellectual disability. Future studies should be directed at validating instruments for screening and assessment and evaluation of prevention and intervention programs.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES AND RECOMMENDED READING

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

1. van Duijvenbode N, VanDerNagel J. A systematic review of substance use (disorder) in individuals with mild to borderline intellectual disability. *Eur Addict Res* 2019; 25:263–282.
2. Lakhan R, Sagiraju H, Ekundayó O, Sharma M. Substance use disorder in people with intellectual disabilities: current challenges in low- and middle-income countries. *J Neurosci Rural Pract* 2019; 10:301–305.
3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013.
4. van Duijvenbode N, Didden R, VanDerNagel J, *et al.* Cognitive deficits in problematic drinkers with and without mild to borderline intellectual disability. *J Intellect Disabil* 2018; 22:5–17.
5. Scheidemantel T, Braun-Gabelman A, Stefanac K, *et al.* Playing with a stacked deck: literature review and case series of problem gambling in adults with intellectual and developmental disabilities. *J Gambl Stud* 2019; 35:987–995.

The article presents case studies and addresses the important issue of capacity to consent of individuals with mild intellectual disability or borderline intellectual functioning (MID–BIF).

6. Jenaro C, Flores N, Cruz M, *et al.* Internet and cell phone usage patterns among young adults with intellectual disabilities. *J Appl Res Intellect Disabil* 2018; 31:259–272.
7. Luteijn I, Didden R, VanDerNagel J. Individuals with mild intellectual disability or borderline intellectual functioning in a forensic addiction treatment center: prevalence and clinical characteristics. *Adv Neurodev Disord* 2017; 1:240–251.
8. Taggart L, McLaughlin D, Quinn B, Milligan V. An exploration of substance misuse in people with learning disabilities. *J Intellect Disabil Res* 2006; 50:588–597.
9. Braatveit K, Torsheim T, Hove O. The prevalence and characteristics of intellectual and borderline intellectual disabilities in a sample of inpatients with substance abuse disorders: preliminary clinical results. *J Ment Health Res Intellect Disabil* 2018; 11:203–220.

Study on case identification in substance use disorder (SUD) treatment centers. Diagnosis of MID–BIF was based on all three DSM-5 criteria for intellectual disability. Patients with MID–BIF were compared with those without MID–BIF.

10. Braatveit K, Torsheim T, Hove O. Screening for intellectual disabilities: a validation of the Hayes Ability Screening Index for in-patients with substance use disorder. *Nord J Psychiatry* 2018; 72:387–392.

Explored usability of the Hayes Ability Screening Index as a screener for identifying MID–BIF in patients with SUD.

11. VanDerNagel J, Kiewik M, van Dijk M, *et al.* SUMID-Q manual. An instrument to assess substance use in individuals with a mild intellectual disability. Deventer, The Netherlands: Tactus; 2011.
12. Schijven E, Didden R, Otten R, Poelen E. Substance use among individuals with mild intellectual disability or borderline intellectual functioning in residential care: examining the relationship between drinking motives and substance use. *J Appl Res Intellect Disabil* 2019; 32:871–878.

Explored motives for drinking alcohol in adolescents with MID–BIF. It provides results from factor analysis of the Drinking Motives Questionnaire Revised Short Form.

13. Swerts C, Vandeveldel S, VanDerNagel J, *et al.* Substance use among individuals with intellectual disabilities living independently in Flanders. *Res Devel Disabil* 2017; 63:107–117.

A multicenter study exploring substance use and its associated variables in clients with moderate-to-mild intellectual disability living in the community.

14. Salavert J, Clarabuch A, Fernández-Gómez M, *et al.* Substance use disorders in patients with intellectual disability admitted to psychiatric hospitalization. *J Intellect Disabil Res* 2018; 62:923–930.

15. Alfaro D, Ehlinger V, Spilka S, *et al.* Alcohol, tobacco and cannabis use: do students with mild intellectual disability mimic students in the general population? *Res Devel Disabil* 2017; 63:118–131.

Large and representative samples were used of students visiting special units (i.e., ULIS) at mainstream junior high schools.

16. Reis O, Wetzel B, Hässler F. Mild or borderline intellectual disability as a risk for alcohol consumption in adolescents: a matched-pair study. *Res Devel Disabil* 2017; 63:132–141.

Compared a relatively large sample of students with MID–BIF to those without MID–BIF on alcohol use. A matched-pairs design was used controlling for concomitant factors that might explain differences between the two groups.

17. Axmon A, Björne P, Nylander L, Ahlström G. Psychiatric diagnoses in older people with intellectual disability in comparison with the general population: a register study. *Epidemiol Psychiatr Sci* 2018; 27:479–491.

18. van Duijvenbode N, Didden R, Korzilius H, Engels R. Attentional bias in problematic drinkers with and without mild to borderline intellectual disability. *J Intellect Disabil Res* 2017; 61:255–265.

Tested the hypothesis that problematic drinkers of alcohol had attentional bias. Data were collected using eye tracking. People with average intelligence were compared with people with MID–BIF.

19. van Duijvenbode N, Didden R, Korzilius H, Engels R. The role of executive control and readiness to change in problematic drinkers with mild to borderline intellectual disability. *J Appl Res Intellect Disabil* 2017; 30:885–897.

Investigated whether executive control and readiness to change moderated the relationship between alcohol use and cognitive bias in adults with MID–BIF. Computerized tasks were used to measure the variables.

20. Kuntsche E, Kuntsche S. Development and validation of the drinking motives questionnaire revised short form (DMQ-R SF). *J Clin Child Adolesc Psychol* 2009; 38:899–908.

21. Mackinnon S, Kehayes I, Clark R, *et al.* Testing the four-factor model of personality vulnerability to alcohol misuse: a three-wave, one-year longitudinal study. *Psychol Addict Behav* 2014; 28:1000–1012.

22. Woicik P, Stewart S, Phil R, Conrod P. The substance use risk profile scale: a scale measuring traits linked to reinforcement-specific substance use profile. *Addict Behav* 2009; 34:1042–1055.

23. Poelen E, Schijven E, Otten R, Didden R. Personality dimensions and substance use in individuals with mild to borderline intellectual disabilities. *Res Devel Disabil* 2017; 63:142–150.

Explored relationships between different personality profiles and substances in adolescents and young adults with MID–BIF. Presents data of factor analysis of the Substance Use Risk Profile Scale.

24. VanDerNagel J, Kiewik M, van Dijk M, *et al.* Substance use in individuals with mild to borderline intellectual disability: a comparison between self-report, collateral-report and biomarker analysis. *Res Devel Disabil* 2017; 63:151–159.

Study including a relatively large sample of individuals with MID–BIF in which biomarkers were compared with self-report and proxy report of substance use.

25. Cassiani-Miranda C, Quintero-Gómez T, Burbano A, Arraut-Camargo E. Pedophilia, substance-use disorder, and intellectual disability: a case study. *Addict Disord Their Treat* 2019; 18:58–62.

26. Drake A, Hank D, Edwards R, *et al.* The bounds of liberty: lessons learnt from treating a man with alcohol use disorder, autism and learning disability. *Tizard Learn Disabil Rev* 2018; 23:27–34.

27. Juberg A, Røstad M, Søndena E. Substance use problems among people with mild/borderline intellectual disability: challenges to mainstream multidisciplinary specialist substance treatment in Norway. *Nord Stud Alcohol Dr* 2017; 34:173–185.

28. Turhan A, Onrust S, ten Klooster P, Pieterse M. A school-based programme for tobacco and alcohol prevention in special education: effectiveness of the modified 'Healthy School and Drugs' intervention and moderation by school type. *Addiction* 2017; 112:533–543.

RCT study in which the Healthy School and Drugs program was compared with the usual curriculum addressing tobacco and alcohol use. Relationships were explored between types of secondary special education schools and study outcomes.

29. Kiewik M, VanDerNagel J, Engels R, de Jong C. The efficacy of an e-learning prevention program for substance use among adolescents with intellectual disabilities: a pilot study. *Res Devel Disabil* 2017; 63:160–166.

An e-learning program was used for the (secondary) prevention of use of tobacco and alcohol in students who visited schools for special education.

30. Schijven E, Engels R, Kleinjan M, Poelen E. Evaluating a selective intervention program for substance use and comorbid behavior problems in adolescents with mild to borderline intellectual disabilities: study protocol of a randomized controlled trial. *BMC Psychiatry* 2015; 15:167.

31. Lindsay W, Carson D, Holland A, *et al.* Alcohol and its relationship to offence variables in a cohort of offenders with intellectual disability. *J Intellect Dev Disabil* 2013; 38:325–331.

32. Sakdalan J, Kittner D, Judd D. ASAP-ID: substance abuse programme for a forensic ID population. *J Intellect Disabil Offend Behav* 2017; 8:157–165.

- 33.** Kouimtsidis C, Bosco A, Scior K, *et al.* A feasibility randomised controlled trial of extended brief intervention for alcohol misuse in adults with mild to moderate intellectual disabilities living in the community: the EBI-LD study. *Trials* 2017; 18:216.
- Data were collected in a RCT design in which extended brief interventions was compared with care as usual for adults with moderate-to-mild intellectual disability who abused alcohol. Includes a cost–benefit analysis.
- 34.** Kouimtsidis C, Scior K, Baio G, *et al.* Development and evaluation of a manual for extended brief intervention for alcohol misuse in adults with mild to moderate intellectual disabilities living in the community: the EBI-LD study manual. *J Appl Res Intellect Disabil* 2017; 30:42–48.
- 35.** VanDerNagel J, van Duijvenbode N, Ruedrich S, *et al.* The perception of substance use disorder among clinicians, caregivers and family members of individuals with intellectual and developmental disabilities. *J Ment Health Res Intellect Disabil* 2018; 11:54–68.
- 36.** Carroll Chapman S, Wu LT. Substance use among individuals with intellectual disabilities. *Res Devel Disabil* 2012; 33:1147–1156.
- 37.** Kerr S, Lawrence M, Middleton A, *et al.* Tobacco and alcohol use in people with mild/moderate intellectual disabilities: giving voice to their health promotion needs. *J Appl Res Intellect Disabil* 2017; 30:612–626.