MEDDOCS Open Access Publisher

ISSN: 2637-4528

Journal of Addiction and Recovery

Open Access | Research Article

Seeking Help for Substance Use: Long-Term Consequences

Clifford L Broman[1]*; Nicole E Bray[1]; Michael J Broman[2]

[1]Department of Sociology, Michigan State University, 509 East Circle Drive, 316 Berkey Hall, East Lansing, Michigan 48824, USA.

[2]Ohio State University.

***Corresponding Author(s): Clifford L Broman**

Department of Sociology, Michigan State University, 509 East Circle Drive, 316 Berkey Hall, East Lansing, Michigan 48824, USA.

Tel: -517-355-1761 & -517-432-2856;

Email: broman@msu.edu

Received: Aug 11, 2024

Accepted: Oct 01, 2024

Published Online: Oct 08, 2024

Journal: Journal of Addiction and Recovery

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Adolescent substance use; Help seeking for substance use; Recovery and substance use; Long term patterns of substance use.

Abstract

Background: This research investigates seeking help in adolescence and young adulthood for substance use over the lifetime. While there are several studies of substance use treatment, the long-term outcomes of treatment are not as often studied. We study this process over a long-term period from adolescence to later young adulthood. Barriers to treatment may preclude individuals from accessing formal substance use treatment necessitating further study of how individuals may resolve substance use disorders without these services. Advancing such knowledge could make services more accessible and desirable to individuals with substance use disorders who are not currently seeking help.

Methods: Data from the National Longitudinal Study of Adolescent to Adult Health are utilized. This is a longitudinal nationally representative study of U.S. individuals who have participated in five waves of interviews, starting in adolescence in 1994-1995 (Wave 1) and ending with the most recent wave (2016-2019) where respondents were aged 33-44 (Wave 5).

Results: We found that seeking help for emotional and substance use problems has impact on substance use over the long term. The use of formal and informal services does have some impact on substance use over the long term. This influence is limited, however.

Conclusion: In the present study, we examined seeking help in adolescence and young adulthood and its potential impact on substance use over the lifetime. We found some significance.

Introduction

This paper addresses the issue of long-term problematic substance use, and the role of help-seeking in this process. When people begin substance use as adolescents, some will persist over time while others will use less as they age [1-4]. The new roles and responsibilities associated with emerging from adolescence have impact on this process, as college attendance, work, marriage and parenting may lower their use of substances. However, some go on to maintain their substance use over time [5-7,2,4] for a discussion. Our focus in this paper is whether seeking help for emotional problems and substance use influence the decline in substance use over time, from one's adolescence to their late 30s, a period of over 20 years.

Cite this article: Broman CL, Bray NE, Broman MJ. Seeking Help for Substance Use: Long-Term Consequences. J Addict Recovery. 2024; 7(2): 1046.

There are serious health risks that are known to be influenced by heavy and prolonged substance use. Heavy and prolonged use of substances has been shown to lead to higher rates of mortality and morbidity among adults [8,9]. Tobacco use and excessive drinking are associated with an increased risk for cardiovascular and cerebrovascular diseases, a variety of cancers, diabetes, as well as emotional and mood disorders [9-12]. Polysubstance use is also associated with health problems, including cognitive deficits [13-15]. Therefore, the investigation into factors that might decrease the use of substances over time is important for the study of health and wellbeing among individuals.

Prior research has shown that there are several factors of importance in heavy and prolonged substance use. Some of these factors are demographic, such as age, race-ethnicity [16-18], sexual-gender minority (SGM) status [19], and biological sex [20-22,4] As people age, they use fewer substances. White people are more likely to be users in adolescence, but less likely to be users in adulthood than most racial and ethnic minorities. Men and SGM people are more likely to be substance users than are women, or sexual-gender majority people, respectively. Parents also influence use [23-26], as does the prior use of substances [27-30,18]. People whose parents were heavy users of substances and who had substances easily available to them in their home are more likely to be substance users in adolescence and adulthood [31,32,18]. People who used substances in the past are more likely to be current users of substances [27,18,28].

Other factors shown to be of importance in heavy and prolonged use of substances are stress and mental health and religiosity. High levels of stressors are generally associated with more use of substances in the present and over time [33,34], as are mental health challenges and problems [35-41]. Religion is important in substance use [42-44]. Adolescents who report high religiosity also report lower use rates of alcohol, marijuana, and other substances [45,44].

There are several studies of substance use treatment [46-50], that show treatment may be effective at reducing use in the present and over time. However, the long-term outcomes of treatment are not as often studied. Treatment is typically less than six months in duration and little data is available that pertains to treatment longer than a year [51]. A recent systematic review [51] included 12 studies of people in treatments planned to range from 1.5 to 4 years (though not all individuals completed treatment) and found that these treatments were associated with a greater likelihood of reduced or eliminated substance use than were short-term treatments received during the same period of time. Here, we extend on that work by examining results up to 17 years after the initiation of treatment, using a self-reported measure of treatment-seeking that includes treatments of varying durations, and that also includes community-based services such as Alcoholics Anonymous or Narcotics Anonymous. This fits with the reality that individuals seek help for substance misuse in various ways, including the formal treatment system, mutual aid recovery services [52,53], medications [54,55] and/or medical or mental health professionals [55]. Moreover, barriers such as cost, wait times, or transportation may preclude individuals from accessing formal substance use treatment [56-58], necessitating further study of how individuals may resolve substance use disorders without these services [59]. Have called for longitudinal study of this issue. Moreover, advancing such knowledge could make services more accessible and desirable to individuals with substance use disorders who are not currently seeking help.

Because of the association of mental health issues with substance use, seeking the help of professionals for mental health may be an effective strategy to lessen substance use over time. Many adults and children are in need of clinical treatment [60]. Several effective treatment methods are used, including medications, therapy, rehabilitation, and other forms of treatment. Many people seek the help of professionals to assist them in handling psychological distress and in coping. When people seek the help of mental health professionals, it is generally helpful [61], and those receiving treatment have better mental health outcomes in the long term than those who do not receive treatment for their mental health issues [61]. However, it is well known that many people who could potentially benefit from the help of a mental health professional do not seek help. Despite the availability of effective treatments for those with mental illnesses, many do not receive treatment [62].

This is also the case for substance use treatment. Using national sample data for the United States, [46] found that only 7 percent of those people with a substance use disorder sought treatment. They found that age was a significant predictor of use among the people with a substance use disorder. Used [50] data from the National Survey on Drug Use and Health and found that among adults with a past-year substance use disorder, only about 11 percent received substance use disorder treatment. Used [63] data from the National Survey on Drug Use and Health and found low numbers of women receiving treatment for an opioid use disorder. This was especially true for women who were Black and Hispanic. Entry into treatment for opioid use disorder is problematic in general [54,55] as many do not get the treatment that they need. However, as is the case for mental health, studies do find that receiving treatment for substance use is helpful in reducing distress and symptoms for individuals [53,59,48].

Material and Methods

Data

The data used are from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a nationally representative study of U.S. individuals who have participated in five waves of interviews, starting in adolescence in 1994-1995 (Wave 1) and ending with the most recent wave where respondents were aged 33-44 (Wave 5) [64-66]. A multistage, stratified, school-based, cluster sampling design was used to collect data in schools in 1994-95 that later determined who would be chosen to participate in the in-home interviews. From among those eligible for the school interview, a portion of the students were selected for in-home interviews (for more information go to website: https://addhealth.cpc.unc.edu/). This manuscript uses secondary data analysis only and has been declared "exempt" by the IRB of the author's institution.

Wave 1 data consists of responses from 20,745 adolescents and was collected during 1994-1995, when respondents were in grades 7-12. The current study uses the full dataset, from waves 1, 3, 4 and 5. Wave 2 data are excluded as they did not interview high school seniors, and the data are not missing at random. All the respondents from Wave 1 were sought for interviews again in waves 3 to 5. Wave 3 data were collected in 2001-2002, from 15,197 respondents; wave 4 data were collected in 2007-2008 from 15,701 respondents; and wave 5 data were collected in

2016-2019, from 12,300 respondents (for more information go to website: https://addhealth.cpc.unc.edu/).

Measures

Demographic measures of age, biological sex and race-ethnicity are used and are self-reported by respondents. Age from waves 3, 4 and 5 is used in the analysis, consistent with the wave of the models examined. However, we should note that using measures of age at earlier or later waves did not substantially alter the results reported here, as it changes by a constant value. Biological sex is a dummy coded variable with male = 1. Race-ethnicity is self-reported from wave one. We use five categories: white, Black, Hispanic, Asian and a small group of other race individuals. Four dummy variables were created with white being the omitted category. We used a measure of same sex attraction. This was a measure from wave 3 which asked respondents if they had 'ever had a romantic attraction to a female (or male)'? In wave 4, the question asked was 'are you romantically attracted to females (males)?' We coded the measures cross-classified with biological sex to create a measure that indicates if a person had a romantic attraction to someone of the same biological sex. We refer to this measure as 'same-sex attraction' . One measure is for wave 3 and the second from wave 4. Education is measured using five categories: 1) 8th grade or less and some high school; 2) high school graduate; 3) some vocational/technical training (after high school) and/or some college; 4) completed college (bachelor's degree); and 5) graduate school, completed a master's degree, some graduate training beyond a master's degree, completed a doctoral degree, some post baccalaureate professional education (e.g. law school, med school, nurse), and completed post baccalaureate professional education. Education from wave 3 is used to avoid confounds with time.

We also use several control variables in this study. These are measures known to be associated with substance use. These are measures of life stress, substance use availability, parental heavy drinking, mental health, religiosity, and prior substance use. We use a measure of life stress from the respondent's past. The life stress measure is composed of several elements of the Adverse Childhood Experiences measure [67]. These are based on questions that asked about physical and sexual abuse, parental neglect, alcoholism and divorce, poverty status, exposure to community violence and whether the respondent has ever been in a foster home or been adopted [67]. In addition to these measures, we added measures of suicidal thoughts, attempted suicide by family members and/or friends, ever arrested by wave 3, and ever convicted of a crime by wave 3. We used measures from wave 3 or sooner to avoid confounds for time.

The control variables of availability, parental heavy drinking, and depression are described next. The measures used are all from wave one, when respondents were adolescents. We use these measures as we want to be able to ascertain the impact of the past on long term use of substances. Availability of alcohol in the home (coded from wave one) is measured using a question that asked, 'is alcohol easily available to you in your home?' Availability of illegal drugs in the home is similarly measured. Both measures are dummy coded in the original data where 1 = yes (easily available) and 0 = no. Parental heavy drinking (coded from wave one) is measured from interviews with parents, almost always the mother, and asked about the frequency of heavy alcohol use. The heavy drinking question asked, 'how often in the last month have you had five or more drinks on one occasion?' This measure is coded from 0 to 2, where 0 = never, and 2 = two or more times of heavy episodic drinking in the last month. Depression is measured based on the widely used CES-D depression scale [68]. The wave one scale is composed of several items which asked participants to report whether or not they felt depressive symptoms (i.e., sadness, failure, poor appetite) in the past week. We collapsed scores at the higher end due to infrequent responses, and our measure ranges from 0 to seven. Higher scores indicate greater depressive symptomatology. Alpha for this measure is good at .86.

Religious attendance is measured from wave one from a question that asked respondents 'how often in the past year did you attend religious services?' Responses range from once a week or more (coded 1) to never (coded 4). Alcohol and marijuana use from wave one are measured based on questions which asked about both the quantity and frequency of use. The measures are coded into a single measure of the quantity and frequency of use. The alcohol use measure is on a five-point scale ranging from 0 (never) to 4 (roughly corresponds to drinking at least once a week and drinking at least four drinks each time). The alcohol use measure is coded based on measures used in prior studies [18]. Marijuana use is similarly coded but is truncated at the value of 3 (corresponding to about once monthly and moderate use), owing to the infrequency of responses.

The use of services for mental health and recovery are measured from waves 3 and 4. The use of mental health services measure is from a question that asked, "In the past 12 months have you received psychological or emotional counseling?" The question about substance use treatment asked, "In the past 12 months have you attended a drug-abuse or alcohol-abuse treatment program?" (including self-help groups). Responses to these questions were coded 0 = no, and 1 = yes (in the original data). The wave 4 measure of the use of mental health services used an identical question as in wave 3 and was coded similarly, where 0 = no, and 1 = yes.

The dependent variables of substance use are measured from the wave 5 data. We use four measures, one pertaining to heavy episodic alcohol use, and one each for prescription drug misuse, marijuana use and the use of other illegal drugs, other than marijuana. Our dependent variables are as follows: Heavy episodic alcohol use is measured using a question which asked, 'during the past 12 months, on how many days did you drink [5 or 4, for men and women, respectively] drinks in a row?' The measure is coded as 0 = none in the in past 12 months, through 6 = 'every day or almost every day'. The marijuana use measure asks 'during the past 30 days, on how many days did you use marijuana? The measure is coded as 0 = never in the in past 30 days, through 6 = 'every day or almost every day'. We recoded the measure due to the small numbers of cases at the higher end into 4 = '2 or more days a week'. Prescription drug misuse is measured from a question asking, 'in the past 30 days which of the following types of prescription drugs have you taken that were not prescribed for you, taken prescription drugs in larger amounts than prescribed, more often than prescribed, for longer periods than prescribed, or taken prescription drugs that you took only for the feeling or experience they caused?" The specific drugs asked about are 1) sedatives or downers such as sleeping pills, barbiturates, Seconal; 2) tranquilizers, such as Librium, Valium, or Xanax; 3) stimulants or uppers, such as amphetamines, prescription diet pills, Ritalin, Preludin, or speed; and 4) painkillers, or opioids, such as Vicodin, OxyContin, Per-

cocet, Demerol, Percodan, or Tylenol with codeine. Responses were dichotomous, with 0 = 'no' and 1 = 'yes'. Lastly the measure of other illegal drugs is based on questions which ask 'in the past 30 days, have you used any of the following drugs?' The follow-up questions asked about crystal meth, cocaine, heroin, and others, such as LSD, PCP, ecstasy, or mushrooms or inhalants. We recoded the measures into one indicator that ranges from 0 to 1, where 0 = never, and 1 = any use of illegal drugs other than marijuana.

Statistical methods

We conducted an analysis to determine whether attrition is a significant factor in the results. Race-ethnicity and education are factors in attrition. Racial and ethnic minorities were somewhat more likely to not be interviewed across study waves, as well as those with lower levels of completed education. Inhalant users at wave one were somewhat more likely to not be interviewed across study waves.

We use STATA 16 to conduct the analyses and used cluster and weight variables to account for non-independence of observations, unequal probability of selection, and the complex survey sampling design. Thus, data accurately represent the U.S. population of adolescents at wave one.

Results

Table 1: Descriptive Statistics

Variable	Mean	Range
Age W3	22.4	18-28
Age W4	29.1	25-34
Age W5	38.0	33-44
Biological Sex (1 = male)	.49	0-1
White W1	.51	0-1
Black W1	.21	0-1
Hispanic W1	.17	0-1
Asian W1	.07	0-1
Other race W1	.03	0-1
Same sex attraction W3	.07	0-1
Same sex attraction W4	.10	0-1
Education W3	2.60	1-5
Life Stress W1-3	1.32	0-5
Alcohol availability w1	.29	0-1
Illegal drug availability w1	.03	0-1
Parent heavy drinker w1	.19	0-2
Depression w1	1.52	0-7
Religious attendance w1	2.97	1-4
Alcohol use w1	1.26	0-4
Marijuana use w1	.42	0-3
Heavy episodic drink W5	1.23	0-6
Marijuana use per day W5	.50	0-4
Prescription misuse W5	.11	0-1
Illegal drug use W5	.03	0-1
Mental health service use W3	.071	0-1
Attended Recovery services W3	.025	0-1
Mental health services use W4	.098	0-1

Descriptive data are presented in Table 1. Mean age is 22, 29 and 38 years, respectively in waves 3, 4, and 5. The distribution of gender is approximately fifty-fifty, (by original study design). The majority of the sample is white, non-Hispanic, at 51 percent, while 21 percent of the sample is black, non-Hispanic, 17 percent Hispanic, and 7 percent Asian, non-Hispanic. Three percent of the sample is from 'other' racial groups. Means for the other measures are also presented in the Table. About 7 percent of people report a same-sex attraction in wave 3, while this increases to 10 percent in wave 4. The mean for education is consistent with the 'some college' or 'vocational training' after high school. Some respondents experienced some life stress; the mean being a little more than one. Twenty-nine percent of people when adolescents had alcohol easily available to them, while three percent had illegal drugs easily available to them. Depressive symptoms are present for some respondents; the mean indicates a little more than one day per week. The mean for religious attendance is consistent with the designation of 'several times a year'. There is evidence that some used alcohol and marijuana in adolescence, as the mean values for wave one alcohol and marijuana use are above zero.

Means are also presented for substance use in wave 5 and for services use in wave 3. Over the past year, some people are heavy episodic users of alcohol. In the past 30 days, some respondents have been using marijuana. But in both cases the mean values are low, indicating the many people are not heavy episodic drinkers or heavy users of marijuana. Eleven percent of respondents misuse prescription drugs, while 3 percent of respondents used illegal drugs in the past 30 days. The data for use of services is presented next. Few people use services. Seven percent sought the help of professionals for mental health issues in wave 3, and about 10 percent in wave 4. Few people attended recovery services; about 2.5 percent.

Table 2: Logistic Regression of Help-seeking (Wave3 and 4) on Measures.

Variable	Mental health use W3	Attended Recovery W3	Mental health use W4
Age W3	.96	.90	.99
Biological Sex (1 = male)	.57***	.2.77***	.64***
Black W1	.43***	.51***	.49***
Hispanic W1	.58***	.73	.67***
Asian W1	.47***	.17*	.52***
Other race W1	1.23	.70	.76
Same sex attraction W3	2.20***	1.72*	1.49***
Same sex attraction W4	1.27	.83	1.48***
Education W3	1.11*	.74***	1.10*
Life Stress W1-3	1.22***	1.45***	1.17***
Alcohol availability w1	1.24*	1.08	1.12
Illegal drug availability w1	.94	1.14	1.01
Parent heavy drinker w1	.73***	1.01	.69***
Depression w1	1.04	.96	1.04
Religious attendance w1	1.01	.95	1.01
Alcohol use w1	1.03	1.15*	1.05
Marijuana use w1	1.04	1.22*	1.06
Constant	.11	.12	.09
-2 Log Likelihood	2272.7	839.8	2796.7
N =	9,401	9,404	9,406

Age W4 is used for the equation with mental health use at wave 4.

*p < .05 **p < .01 *** p < .001.

Table 2 presents the results of the multivariate analysis of services use on age, biological sex, race-ethnicity, and the other measures. Because the dependent variables are dichotomous, logistic regression is conducted. There are several significant results in the Table. Age is not of significance, while biological sex is of importance. Men are significantly less likely than women to have sought the help of mental health professionals in both waves 3 and 4. However men are almost three times more likely than women to have attended recovery services. Race and ethnicity is also of significance. Racial and ethnic minority group members are less likely than white individuals to have utilized services of any type. This is true for Black, Latino and Asian people. People who report a same sex attraction are significantly more likely to have sought the help of mental health professionals in both waves 3 and 4 and to have attended recovery services in wave three. Higher levels of education increase the likelihood of seeking the help of mental health professionals in both waves 3 and 4. However, higher levels of education decrease the likelihood of attending recovery services in wave three. The life stress measure is of statistical significance. Life stress increases the likelihood of seeking the help of mental health professionals in both waves 3 and 4, and of attending recovery services in wave three.

Looking at Table 2, we can see that the next set of variables are not as consistent in their significance as were the prior group of measures. Alcohol availability is only of significance in the use of mental health professionals in wave 3, while illegal drug availability is not significant at all. Heavy drinking parents increase the likelihood of seeking the help of mental health professionals in both waves 3 and 4, but this measure is not of significance for recovery attendance. Depression and religious attendance are not of significance. However, alcohol and marijuana use in adolescence is positively associated with attending recovery services in wave 3.

OLS regression is used for the dependent measures of Heavy episodic drinking and Marijuana use per day. Logistic regression used for the dichotomous dependent measures of prescription drug misuse and Illegal drug use.

Table 3: Regression of Substance Use (Wave 5) on Measures.

Variable	Heavy episodic drink W5	Marijuana use W5	Prescription misuse W5	Illegal drug use W5
Age W5	-.05***	-.05***	.99	.86***
Biological Sex (1 = male)	.60***	.26***	1.03	2.47***
Black W1	-.26***	.13***	.95	.96
Hispanic W1	-.14*	-.06	.84	1.40
Asian W1	-.23*	-.05	1.27	2.60***
Other race W1	-.12	-.13	1.37	1.52
Same sex attraction W3	.04	.19***	1.29	2.00***
Same sex attraction W4	.17*	.21***	1.27	1.46
Education W3	-.04	-.07***	.82***	.77***
Life Stress W1-3	.03	.08***	1.13***	1.14*
Alcohol availability w1	.18***	-.01	.94	1.27
Illegal drug availability w1	-.24	.13	.93	2.32***
Parent heavy drinker w1	.15***	-.01	.91	1.09
Depression w1	-.01	-.01	1.06*	.96
Religious attendance w1	-.02	-.03*	1.03	.91
Alcohol use w1	.15***	.05***	1.12***	1.07
Marijuana use w1	.13***	.20***	1.10	1.32***
Mental health use W3	.02	-.01	1.69***	1.78***
Attended Recovery W3	.40**	.02	1.23	.71
Mental health use W4	.06	.17***	1.16	1.13
Constant	2.88	2.12	.14	6.97
-2 Log Likelihood	-----	-----	2240.5	891.5
R2	.09	.08	-----	----
N =	5,824	6,784	6,781	6,780

*p < .05 ** p < .01 ***p < .001

Table 3 presents the results of the multivariate analysis of the wave 5 substance use measures on age, biological sex, race-ethnicity, and the other measures. OLS regression is conducted for the ordinal measures of heavy episodic drinking and marijuana use, and logistic regression is conducted for the dichotomous measures of prescription drug misuse and illegal drug use. There are several results of significance. Age is of significance for heavy episodic drinking, marijuana use and illegal drug use. For all three dependent measures, older people are less likely to use the substances. Biological sex is also of importance. Men are more likely than women to engage in heavy episodic drinking, marijuana use and illegal drug use. Race and ethnicity is of limited significance. Black, Hispanic and Asian people are significantly less likely than white people to engage in heavy episodic drinking. However black people are significantly more likely than white people to engage marijuana use. Asian people are significantly more likely than white people to engage in ille-

gal drug use. People with a same sex attraction are significantly more likely to engage in heavy episodic drinking for the wave 4 measure of same sex attraction, and marijuana use for both wave measures. People with a same sex attraction are significantly more likely to engage in illegal drug use, considering the wave 3 measure.

Education and life stress are associated with substance use in wave 5. Education is associated with decreased substance use, while life stress is associated with increased substance use. Availability matters for heavy episodic drinking and illegal drug use. Easy availability of alcohol in adolescence is associated with increased heavy episodic drinking in adulthood in wave 5, while the easy availability of illegal drugs in adolescence is associated with increased illegal drug use in adulthood in wave 5. Depression, heavy drinking parents and religious attendance in wave 1 are minimally associated with substance use in adulthood, at wave 5. Heavy drinking parents increase the likelihood of engaging in heavy episodic drinking. Depression increases the likelihood of prescription drug misuse at wave 5. Religious attendance in adolescence is associated with less use of marijuana in adulthood, at wave 5. As in other studies, prior use of substances in adolescence is positively associated with greater use of substances in adulthood, at wave 5.

In the latter portion of the Table, we see results for services use. There is some significance. The use of mental health services in wave 3 is associated with more substance use in adulthood, at wave 5. For both prescription misuse and illegal drug use, there is a positive association between using professional help for a mental health problem in wave 3 and the use of these substances in wave 5. There is also a positive association between using professional help for a mental health problem in wave 4 and marijuana use in wave 5. Attendance at recovery services in wave 3 is associated with a greater likelihood of engaging in heavy episodic drinking.

Discussion and Conclusion

In this paper, we have found that seeking help for emotional and substance use problems has impact on substance use over the long term. The use of formal and informal services does have some impact on substance use over the long term. This influence is limited, but also surprising in some ways. Attending a recovery self-help program is associated with more heavy episodic drinking and marijuana use over the long term, while the use of mental health services is associated with greater prescription drug misuse and illegal drug use. Therefore, our general conclusion is that services use, both formal and informal, are associated with greater problematic substance use over the long term.

These are somewhat surprising findings given the prior literature. However, we earlier noted that there have been few studies of long-term outcomes and, to our knowledge, none that have examined data for as long of a period as does our study. It may be that people with substance use problems who seek treatment do well in shorter periods, as is shown in prior research, but not over a longer period of their lifetime. However, it is important to keep in mind that our data show that most people do not seek help for problems. Only 2-3 percent of people went to recovery services and fewer than ten percent to a mental health service provider. It may be that in a more targeted study of long term that the results shown here would differ. In addition, in Table 2 we saw that there were significant and important differences in who seeks help. Racial and ethnic minorities were significantly less likely to seek out mental health services or to attend recovery groups. Men were significantly less likely to seek out mental health services. It may be that services need to be targeted for specific groups to be more culturally relevant for racial and ethnic minorities and for men. For both groups, stigma may be an important factor in not seeking help. However, we saw that men are almost three times more likely to have attended recovery groups. One limitation of our study is that we do not know if this attendance was mandated by the legal system, as is sometimes the case. Our findings need to be replicated in future studies because of limitations of the present study.

One important limitation of this study is the measurement of help seeking. As just noted it may be that attendance at recovery services may have been court mandated, and we have no data about that. It is also the case that our measure of mental health services use is not specific to substance use, rather it simply asks if the respondent has received psychological or emotional counseling. There is no information about whom the respondent might have seen for the counseling and no information about the duration. This is something that needs to be investigated in future research. A more specific measure of help-seeking for substance use issues might yield different results. For example, reviews of participation in AA or NA indicate that more frequent attendance may be associated with greater reductions in substance use. Future research should consider using a continuous measure of attendance at these services to examine how it is related to substance use outcomes over time.

Despite these limitations, our results encourage consideration of the dynamics of seeking and receiving help for substance use over the long term. This type of research is of critical importance for the design and implementation of programs to address the use of substances over the lifetime. Knowing who seeks help, why they seek help, and the outcomes of this help is the subject of much research, but long-term studies are not as readily available. This research goes some way in this direction, but much more research is needed.

Acknowledgements

This research uses data from Add Health, a program project designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris, and funded by a grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 17 other agencies. Special acknowledgment is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Persons interested in obtaining Data Files from Add Health should contact Add Health, The University of North Carolina at Chapel Hill, Carolina Population Center, 206 W. Franklin Street, Chapel Hill, NC 27516-2524 (addhealth_contracts@unc.edu). No direct support was received from grant P01-HD31921 for this analysis.

References

1. Bachman JG, O Malley PM, Schulenberg JE, Johnston LD, Bryant AL, et al. The Decline of Substance Use in Young Adulthood. Mahwah, NJ: Lawrence Erlbaum Associates. 2002.

2. Dawson DA, Grant BF, Stinson FS, Chou PS. Maturing out of alcohol dependence: The impact of transitional life events. Journal of Studies on Alcohol. 2006; 67: 195-203.

3. Jochman KA, Fromme K. Maturing out of substance use: The other side of etiology. In: Scheier LM, ed. Handbook of Drug Use Etiology: Theory, Methods, and Empirical Findings. Washington,

DC: American Psychological Association. 2009.

4. Vergés A, Haeny AM, Jackson KM, Bucholz KK, Grant JD, et al. Refining the notion of Maturing Out: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. American Journal of Public Health. 2013; 103: 67-73. doi:10.2105/AJPH.2013.301358.

5. Brennan PL, Schutte KK, Moos BS, Moos RH. Twenty-year alcohol-consumption and drinking-problem trajectories of older men and women. Journal of Studies on Alcohol and Drugs. 2011; 72: 308-321.

6. Merline AC, O Malley PM, Schulenberg JE, Bachman JG, Johnston LD. Substance use among adults 35 years of age: prevalence, adulthood predictors, and impact of adolescent substance use. American Journal of Public Health. 2004; 94: 96-102.

7. Staff J, Schulenberg JE, Maslowsky J, et al. Substance use changes and social role transitions: Proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. Developmental Psychopathology. 2010; 22: 917-932.

8. Eaton DK, Kann L, Kinchen S, Shanklin S, Flint KH, et al. Centers for Disease Control and Prevention (CDC). 2012.

9. Gjersing L, Bretteville-Jensen AL. Patterns of substance use and mortality risk in a cohort of hard-to-reach polysubstance users. 2017; 113: 729-739.

10. Rehm J, Baliunas D, Borges GL, Graham K, Irving H, et al. The relation between different dimensions of alcohol consumption and burden of disease: An overview. 2010; 105: 817-843.

11. Rehm J, Shield KD. Alcohol and mortality: Global alcohol-attributable deaths from cancer, liver cirrhosis, and injury in 2010. Alcohol Research: Current Reviews. 2014; 35: 174-183.

12. Wilsnack SC, Wilsnack RW, Kantor LW. Focus on: Women and the costs of alcohol use. Alcohol Research: Current Reviews. 2013; 35(2): 219-228.

13. Connor JP, Gullo MJ, White A, Kelly AB. Polysubstance use: Diagnostic challenges, patterns of use and health. Current Opinion in Psychiatry. 2014; 27(4): 269-275.

14. Fernández-Serrano MJ, Pérez-García M, Schmidt Río-Valle J, Verdejo-García A. Neuropsychological consequences of alcohol and drug abuse on different components of executive functions. Journal of Psychopharmacology. 2010; 24(9): 1317-1332.

15. Valls-Serrano C, Verdejo-García A, Caracuel A. Planning deficits in polysubstance dependent users: Differential associations with severity of drug use and intelligence. Drug and Alcohol Dependence. 2016; 162: 72-78.

16. Beals J, Spicer P, Mitchell CM, Novins DK, Manson SM. Racial disparities in alcohol use: Comparison of 2 American Indian reservation populations with national data. American Journal of Public Health. 2003; 93: 1683-1685.

17. Broman CL, Li X, Reckase MD. Family structure and mediators of adolescent drug use. Journal of Family Issues. 2008; 29: 1625-1649.

18. Broman CL, MK Wright, SH Choi, Y Wang. Heavy drug use in young adulthood. Journal of Substance Use. 2020; 25: 626-631. DOI:10.1080/14659891.2020.1760369.

19. Ehlke SJ, Kendzor DE, Smith MA, Sifat MS, Boozary LK, et al. Polysubstance use of alcohol, tobacco, and cannabis in sexual minority and heterosexual females. Am J. Addict. 2022; 32: 66-75.

20. Wilson SM, Gilmore AK, Rhew IC, Hodge KA, Kaysen DL. Minority stress is longitudinally associated with alcohol-related problems among sexual minority women. 2016; 61: 80-83.

21. Substance Abuse and Mental Health Services administration (SAMHSA), Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2011 and 2012. Rockville MD. 2013.

22. Wells S, Flynn A, Tremblay PF, Dumas T, Miller P, et al. Linking masculinity to negative drinking consequences: the mediating roles of heavy episodic drinking and alcohol expectancies. Journal of Studies on Alcohol and Drugs. 2014; 75: 510-519.

23. Braitman AL, Kelley ML, Ladage J, Schroeder V, Gumienny LA, et al. Alcohol and drug use among college student adult children of alcoholics. Journal of Alcohol & Drug Education. 2009; 53: 69-88.

24. Griffin KA, Botvin GJ, Scheier LM, Diaz T, Miller NL. Parenting practices as predictors of substance use, delinquency and aggression among urban minority youth: Moderating effects of family structure and gender. Psychology of Addictive Behaviors. 2000; 14: 174-184.

25. Miller L, Plant M. Parental guidance about drinking: Relationship with teenage psychoactive substance use. Journal of Adolescence. 2010; 33: 55-68.

26. Kopak AM, Chen ACC, Haas SA, Gillmore MR. The importance of family factors to protect against substance use related problems among Mexican heritage and White youth. Drug and Alcohol Dependence. 2012; 124: 34-41.

27. Barry AE, King J, Sears C, Harville C, Bondoc I, et al. Prioritizing alcohol prevention: Establishing alcohol as the gateway drug and linking age of first drink with illicit drug use. Journal of School Health. 2016; 86: 31-38.

28. Fiellin LE, Tetrault JM, Becker WC, Fiellin DA, Hoff R A. Previous use of alcohol, cigarettes, and marijuana and subsequent abuse of prescription opioids in young adults. Journal of Adolescent Health. 2013; 52: 158-163.

29. Moss HB, Chen CM, Yi HY. Early adolescent patterns of alcohol, cigarettes, and marijuana polysubstance use and young adult substance use outcomes in a nationally representative sample. Drug & Alcohol Dependence. 2014; 136: 51-62.

30. Tzilos GK, Reddy MK, Caviness CM, Anderson BJ, Stein MD. Getting higher: Co-occurring drug use among marijuana-using emerging adults. Journal of Addictive Diseases. 2014; 33: 202-209.

31. Agley J, Gassman R, Youssef Agha A, Jun M, Torabi M, et al. Examining sequences of adolescent drug use initiation involving over-the-counter (OTC) drug abuse. Journal of Child & Adolescent Drug Abuse. 2015; 24: 212-219.

32. Broman CL. The availability of substances on long term substance use. Journal of Child and Adolescent Substance Abuse. 2016; 25: 487-495.

33. Garrison-Desany HM, Meyers JL, Linnstaedt SD, House SL, Beaudoin FL, et al. post-traumatic stress and future substance use outcomes: leveraging antecedent factors to stratify risk. 2024; 15: 1249382. doi: 10.3389/fpsyt.2024.1249382.

34. Torres-Berrio A, Cuesta S, Lopez-Guzman S, Nava-Mesa MO. Interaction Between Stress and Addiction: Contributions from Latin-American Neuroscience. Front. 2018; 9: 2639. doi: 10.3389/fpsyg.2018.02639.

35. Ford JA, Reckdenwald A, Marquardt B. Prescription Drug Misuse and Gender. Substance Use & Misuse. 2014; 49: 842-851.

36. Genna N, Cornelius M, Donovan J. Risk factors for young adult substance use among women who were teenage mothers. Addictive Behaviors. 2009; 34: 463-470.

37. Harrington M, Robinson J, Bolton SL, Sareen J, Bolton JM. A longitudinal study of risk factors for incident drug use in adults: findings from a representative sample of the US population. The Canadian Journal of Psychiatry. 2011; 56: 686-695.

38. Linden AN, Lau-Barraco C, Milletich RJ. The role of protective behavioral strategies and anxiety in problematic drinking among college students. Journal of Studies on Alcohol and Drugs. 2013; 74: 413-422.

39. McKee LG, Bonn-Miller MO, Moos RH. Depressive symptoms, friend and partner relationship quality, and posttreatment abstinence. Journal of Studies on Alcohol and Drugs. 2011; 72: 141-150.

40. Nkansah-Amankra S, Minelli M. Gateway hypothesis and early drug use: Additional findings from tracking a population-based sample of adolescents to adulthood. Preventive Medicine Reports. 2016; 4: 134-141.

41. Secades-Villa R, Garcia-Rodríguez O, Jin CJ, Wang S, Blanco C. Probability and predictors of the cannabis gateway effect: A national study. International Journal of Drug Policy. 2015; 26: 135-142.

42. Chitwood DD, Weiss ML, Leukefeld CG. A Systematic Review of Recent Literature on Religiosity and Substance Abuse. Journal of Drug Issues. 2008; 38: 653-89.

43. Farmer A, Sinha J, Gill E. The effects of family religiosity, parental limit-setting, and monitoring on adolescent substance use. Journal of Ethnicity in Substance Abuse. 2008; 7: 428-450.

44. Wallace JM, Yamaguchi R, Bachman JG, O'Malley PM, Schulenberg JE, et al. Religiosity and adolescent substance use: The role of individual and contextual influences. Social Problems. 2007; 54: 308-328.

45. Ford JA, Hill TD. Religiosity and adolescent substance use: Evidence from the national survey on drug use and health. Substance use & misuse. 2012; 47(7): 787-798. https://doi.org/10.3109/10826084.2012.667489.

46. Apsley HB, Santos-Lozada AR, Gray J, Hard G, Jones AA. Substance Use Treatment Utilization Among Individuals With Substance Use Disorders in the United States During the COVID-19 Pandemic: Findings on the Role of Polysubstance Use, Criminal Justice Involvement, and Mental Illness From the National Survey on Drug Use and Health. Substance Use: Research and Treatment. 2024; 18. doi: 10.1177/29768357241259947.

47. Marsch LA, Carroll KM, Kiluk BD. Technology-based interventions for the treatment and recovery management of substance use disorders: A JSAT special issue. Journal of substance abuse treatment. 2014; 46(1): 1-4. https://doi.org/10.1016/j.jsat.2013.08.010.

48. Moos RH, Moos BS. Sixteen-year changes and stable remission among treated and untreated individuals with alcohol use disorders. Drug and alcohol dependence. 2005; 80(3): 337-347. https://doi.org/10.1016/j.drugalcdep.2005.05.001.

49. Kelly J F, Levy S, Matlack M. A systematic qualitative study investigating why individuals attend, and what they like, dislike, and find most helpful about, smart recovery, alcoholics anonymous, both, or neither. Journal of substance abuse treatment. 2024; 161: 1-16. DOI: https://doi.org/10.1016/j.josat.2024.209337.

50. Martin CE, Parlier-Ahmad AB, Beck L, Scialli A, Terplan M. Need for and Receipt of Substance Use Disorder Treatment Among Adults, by Gender, in the United States. Public Health Reports®. 2022; 137(5): 955-963. doi:10.1177/00333549211041554.

51. Beaulieu M, Tremblay J, Baudry C, Pearson J, Bertrand K. A systematic review and meta-analysis of the efficacy of the long-term treatment and support of substance use disorders. Social Science & Medicine. 2021; 285: 114289. https://doi.org/10.1016/j.socscimed.2021.114289.

52. Kelly JF, Hoeppner BB, Stout RL, Pagano M. Determining the relative importance of the mechanisms of behavior change within Alcoholics Anonymous: A multiple mediator analysis. Addiction (Abingdon, England). 2012; 107(2): 289-299. https://doi.org/10.1111/j.1360-0443.2011.03593.x.

53. Bergman BG, Greene MC, Zemore SE, Kelly JF. Prevalence and correlates of 12-step and second-wave mutual-help attendance in a nationally representative US sample. Alcoholism, Clinical and Experimental Research. 2024; 48: 545-555. https://doi.org/10.1111/acer.15268.

54. Blanco C, Volkow ND. Management of opioid use disorder in the USA: present status and future directions. Lancet (London, England). 2019; 393(10182): 1760-1772. https://doi.org/10.1016/S0140-6736(18)33078-2.

55. Busch AB, Greenfield SF, Reif S, Normand ST, Huskamp HA. Outpatient care for opioid use disorder among the commercially insured: Use of medication and psychosocial treatment. Journal of substance abuse treatment. 2020; 115: 108040. https://doi.org/10.1016/j.jsat.2020.108040.

56. Farhoudian A, Razaghi E, Hooshyari Z, Noroozi A, Pilevari A, et al. Barriers and facilitators to substance use disorder treatment: An overview of systematic reviews. Substance Abuse: Research and Treatment. 2022; 16: 117822182211184. https://doi.org/10.1177/11782218221118462.

57. Lister JJ, Weaver A, Ellis JD, Himle JA, Ledgerwood DM. A systematic review of rural-specific barriers to medication treatment for opioid use disorder in the United States. The American Journal of Drug and Alcohol Abuse. 2020; 46(3): 273-288. https://doi.org/10.1080/00952990.2019.1694536.

58. Pasman E, Kollin R, Broman M, Lee G, Agius E, et al. Cumulative barriers to retention in methadone treatment among adults from rural and small urban communities. Addiction Science & Clinical Practice. 2022; 17(1): 35. https://doi.org/10.1186/s13722-022-00316-3.

59. Kelly JF, Bergman B, Hoeppner BB, Vilsaint C, White WL. Prevalence and pathways of recovery from drug and alcohol problems in the United States population: Implications for practice, research, and policy. Drug and Alcohol Dependence. 2017; 181: 162-169. https://doi.org/10.1016/j.drugalcdep.2017.09.028.

60. Substance Abuse and Mental Health Services Administration. Trauma and Violence. 2023. https://www.samhsa.gov/trauma-violence.

61. Coventry PA, Meader N, Melton H, Temple M, Dale H, et al. Psychological and pharmacological interventions for posttraumatic stress disorder and comorbid mental health problems following complex traumatic events: Systematic review and component network meta-analysis. 2020; 17(8): 1003262. https://doi.org/10.1371/journal.pmed.1003262.

62. Park-Lee E, Lipari RN, Hedden SL, Kroutil LA, Porter JD. Receipt of services for substance use and mental health issues among adults: Results from the 2016 National Survey on Drug Use and Health. NSDUH Data Review. 2017. https://www.samhsa.gov/data/.

63. Scheidell JD, Pitre M, Andraka-Christou B. Racial and ethnic inequities in substance use treatment among women with opioid use disorder. The American Journal of Drug and Alcohol Abuse. 2024; 50(1): 106-116. https://doi.org/10.1080/00952990.2023.2291748.

64. Bearman PS, JJones, Udry JR. Connections Count: Adolescent Health and the Design of the National Longitudinal Study of Adolescent Health. Washington DC. 1997.

65. Blum RW, Beuhring T, Shew ML, Bearinger LH, Sieving RE, et al. The effects of race/ethnicity, income, and family structure on adolescent risk behaviors. Journal of Public Health. 2000; 90: 1879-1884.

66. Harris KM, Halpern CT, Biemer P, Liao D, Dean SC. Add Health Wave V Documentation: Sampling and Mixed-Mode Survey Design. 2019. http://www.cpc.unc.edu/projects/addhealth/documentation/guides/.

67. Felitti VJ, Anda RF, Nordenberg D, Williamson DF, Spitz AM, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. American Journal of Preventive Medicine. 1998; 14(4): 245-258.

68. Radloff LS. The CES-D Scale: A new self-report depression scale for research in the General Population. Applied Psychological Measurement. 1977; 1(3): 385-401.