HHS Public Access

Author manuscript

Alcohol Clin Exp Res. Author manuscript; available in PMC 2021 March 01.

Published in final edited form as:

Alcohol Clin Exp Res. 2020 March ; 44(3): 746–757. doi:10.1111/acer.14290.

Characterization of service use for alcohol problems across generations and sex in adults with alcohol use disorder

Jessica L. Bourdon, Ph.D.[1,*], **Rebecca Tillman, M.A.**[1], **Meredith W. Francis, Ph.D.**[1], **Danielle M. Dick, Ph.D.**[2], **Mallory Stephenson, B.S.**[2], **Chella Kamarajan, Ph.D.**[3], **Howard J. Edenberg, Ph.D.**[4], **John Kramer, Ph.D.**[5], **Samuel Kuperman, M.D.**[5], **Kathleen K. Bucholz, Ph.D.**[1], **Vivia V. McCutcheon, Ph.D.**[1]

[1]Washington University in St. Louis, St. Louis, MO, USA

[2]Virginia Commonwealth University, Richmond, VA, USA

[3]SUNY Downstate Health Sciences University, Brooklyn, NY, USA

[4]Indiana University School of Medicine, Indianapolis, IN, USA

[5]University of Iowa, Iowa City, IA, USA

Abstract

Background.—There are gaps in the literature on service use (help-seeking and treatment utilization) for alcohol problems among those with alcohol use disorder (AUD). First, policy changes and cultural shifts (e.g., insurance) related to AUD have occurred over the last few decades, making it important to study generational differences. Second, multiple studies have found that females receive fewer services than males, and exploring whether these sex differences persist across generations can inform public health and research endeavors. The current study examined service use for alcohol problems among individuals with AUD. The aims were as follows: (1) describe service use for alcohol problems; (2) assess generational differences (silent [b. 1928–1945], boomer [b. 1946–1964], generation X [b. 1965–1980], millennial [b. 1981–1996]) in help-seeking and treatment utilization; (3) examine sex differences across generations.

Methods.—Data were from affected family members of probands who participated in the Collaborative Study on the Genetics of Alcoholism (N = 4,405). First, frequencies for service use variables were calculated across generations. Pearson chi-square and ANOVA were used to test for

[*]Corresponding Author: Brown School of Social Work & Department of Psychiatry, Washington University in St. Louis. 4560 Clayton Avenue, Suite 1000, St. Louis, MO, 63110, USA. jlbourdon@wustl.edu. Phone: 314-286-2504.

COGA: The Collaborative Study on the Genetics of Alcoholism (COGA), Principal Investigators B. Porjesz, V. Hesselbrock, H. Edenberg, L. Bierut, includes eleven different centers: University of Connecticut (V. Hesselbrock); Indiana University (H.J. Edenberg, J. Nurnberger Jr., T. Foroud; Y. Liu); University of Iowa (S. Kuperman, J. Kramer); SUNY Downstate (B. Porjesz); Washington University in St. Louis (L. Bierut, J. Rice, K. Bucholz, A. Agrawal); University of California at San Diego (M. Schuckit); Rutgers University (J. Tischfield, A. Brooks); Department of Biomedical and Health Informatics, The Children's Hospital of Philadelphia; Department of Genetics, Perelman School of Medicine, University of Pennsylvania, Philadelphia PA (L. Almasy), Virginia Commonwealth University (D. Dick), Icahn School of Medicine at Mount Sinai (A. Goate), and Howard University (R. Taylor). Other COGA collaborators include: L. Bauer (University of Connecticut); J. McClintick, L. Wetherill, X. Xuei, D. Lai, S. O'Connor, M. Plawecki, S. Lourens (Indiana University); G. Chan (University of Iowa; University of Connecticut); J. Meyers, D. Chorlian, C. Kamarajan, A. Pandey, J. Zhang (SUNY Downstate); J.-C. Wang, M. Kapoor, S. Bertelsen (Icahn School of Medicine at Mount Sinai); A. Anokhin, V. McCutcheon, S. Saccone (Washington University); J. Salvatore, F. Aliev, B. Cho (Virginia Commonwealth University); and Mark Kos (University of Texas Rio Grande Valley). A. Parsian and H. Chen are the NIAAA Staff Collaborators.

Declarations: No authors report any conflicts of interest to disclose.

differences in rates and types of service use across generations, taking familial clustering into account. Next, Cox survival modeling was used to assess associations of generation and sex with time to first help-seeking and first treatment for AUD, and time from first onset of AUD to first help seeking and first treatment. Interactions between generation and sex were tested within each Cox regression.

Results.—Significant hazards were found in all four transitions. Overall, younger generations used services earlier than older generations, which translated into higher likelihoods of these behaviors. Regardless of generation, younger females were less likely to use services than males.

Conclusions.—There are generational and sex differences in service use for alcohol problems among individuals with AUD. Policy and clinical implications are discussed.

Keywords

alcohol use disorder; service use; generation; sex differences

Alcohol use disorder (AUD) has been associated with multiple negative outcomes for individuals and families, including high morbidity and mortality (Centers for Disease Control and Prevention [CDC], 2013; U.S. Department of Health and Human Services [HHS], 2016). In 2015, 5.9% of the U.S. population met diagnostic criteria for AUD within the past year, with a lifetime prevalence of 7.8–17.6% for men and 4.1–10.4% for women (Grant et al., 2015; HHS, 2016). Individuals with AUDs impose a significant financial burden on the US economy, with an estimated $249 billion in 2010 attributable to alcohol misuse and AUD for healthcare, legal fees, lost productivity, and more (Sacks et al., 2010). Additionally, AUD carries high familial risk from genetic and environmental factors (Schuckit, 2014). It is important to understand trends surrounding service use (e.g., seeking help from a psychologist or utilizing treatment at an outpatient facility for alcohol problems; see below for a more thorough explanation) among those with a family history of AUD who also have AUD themselves so that these negative consequences can be mitigated by improving service use for individuals with AUD. Such trends include generational and sex differences as well as related policy changes and cultural shifts related to AUD that have occurred over the last few decades use (e.g., changes in insurance coverage, federal efforts to improve care for alcohol problems, stigma reduction, expanding sex and gender norms [Chartier et al., 2011; HHS, 2016], see below for a more thorough discussion).

Service Use for Alcohol Problems

Service use can refer to an alcohol or drug program (e.g., clinics or detox programs, outpatient care), mental health services (e.g., inpatient psychiatric ward, community mental health center), individual professional therapy, emergency room care, mutual aid (e.g., Alcoholics Anonymous [AA] meetings), self-help, family or social services, or clergy assistance (Alvanzo et al., 2014; Chartier et al., 2011). Each of these services can be places where individuals with AUD seek help for their alcohol problems or begin treatment. It is possible to seek help without utilizing treatment (e.g., an individual discusses their alcohol consumption with a therapist but does not otherwise treat their alcohol problems), and it is possible to go straight into long-term treatment without first seeking help (e.g., a family

member convinces an individual to go to an inpatient facility for immediate treatment or an individual solely relies on self-help groups). Thus, help-seeking and treatment utilization are related but conceptually distinct behaviors that fall under the umbrella of “service use,” yet all three terms are often used interchangeably.

Despite the risk and financial burden associated with AUD, few with the disorder seek services for alcohol problems. A recent study concluded that there are generally four types of service users among those with AUD: multiservice (8.7%), private professional users (32.8%), AA with specialty addiction service users (22.0%), and users of AA alone (36.5%) (Mowbray et al., 2015). Among those with AUD, lifetime help-seeking ranges from 10.69–18.85%, with Hispanic females seeking the least help and Black males seeking the most help (Chartier & Caetano, 2011). Rates of lifetime treatment utilization among those with AUD are higher than help-seeking, with 14.65–30% of those with AUD utilizing treatment in their lifetime (Alvanzo et al., 2014; Cohen et al., 2007). Older individuals are more likely to have endorsed utilizing services than those under the age of 45, which may reflect age-related reporting biases, longer duration of AUD and time to recognize problems and seek treatment, or it may also reflect reduced attention to AUDs in younger cohorts (Alvanzo et al, 2014). Past-year estimates of treatment utilization vary by study and range from less than 10% (Chartier et al., 2016) to over 20% (Evans-Polce, 2016). Of note is the fact that past-year estimates were assessed in the 1990s (Chartier et al., 2016), early 2000s (Chartier et al., 2016), and early 2010s (Evans-Polce, 2016) which may reflect natural generational or other sample differences (see below).

Finally, differences have been noted among those with varying levels of service use (specifically treatment utilization - none, outpatient, inpatient) (Raimo et al., 1999). No service use was associated with fewer maximum drinks per day, fewer alcohol problems, being female, white, married, employed, and more educated (Raimo et al., 1999). Inpatient treatment (which also included a history outpatient treatment in most participants) was associated with more maximum drinks per day, more alcohol problems, being male, and being divorced (Raimo et al., 1999). Those who only sought outpatient services reported life circumstances and alcohol severity that was in between those who never sought help and those with a history of inpatient care (i.e., moderate levels of divorce, alcohol problems, number of health problems reported) . These discrepancies highlight that the most intense and expensive services (inpatient) are mostly accessed by males with AUD who have the most severe presentation and who report less stable life circumstances (e.g., divorce, less education).

The Need to Study Generational Differences

Generational differences are a valid tool to define groups of individuals that can provide insights into attitudes and behaviors (Pew Research Center, 2015) that is rarely employed in research. Typically, researchers group individuals by arbitrary 10-year cutoffs (for example) or broad age groupings (e.g., those over/under the age of 45). Generational differences are meaningful because they take age, cohort (unique to a generation), and period (an event, such as war, that everyone experiences) effects into account (Pew Research Center, 2015). In America, there are six living generations: greatest (b. < 1928), silent (b. 1928–1945), baby

boomers (b. 1946–1964), generation X (b. 1965–1980), millennial (b. 1981–1996), generation Z (b. 1997–2012), and the yet unnamed generation of currently young children (b. > 2012) (Pew Research Center, 2015, 2019). The greatest generation does not comprise much of the population, nor is the line between generation Z and the currently youngest generation firmly established (Pew Research Center, 2015, 2019). Thus, the current study focused on the silent through millennial generations. Millennials are the children of baby boomers and generation X are the children of the silent generation and the oldest baby boomers. Baby boomers are the largest generation, followed by millennials, generation X, and the silent generation (Pew Research Center, 2015). Generation X is the smallest generation likely because the birth control pill went on the market in 1964, spurring a reduction in birth rates that separated their cohort from baby boomers. Broadly speaking, each subsequent generation has been more racially/ethnically diverse, more educated, less religious, less likely to marry, and less politically conservative (Pew Research Center, 2015, 2018a).

Aside from offering a comprehensive look at differences due to its confluence of age, cohort, and period effects, studying generational differences are important in part due to policy changes and cultural shifts related to AUD that have occurred over the last few decades. These differences may reflect influences on help-seeking and treatment utilization that are more clinically relevant than arbitrary cohort cutoffs or broad age groupings. For example, AUD has been highly regarded as a social and moral failing until recently (HHS, 2016), a view that millennials are less likely to have been exposed to as much as older generations. Addiction as a whole is also increasingly seen as a problem in America, a social shift that likely affects each generation (Pew Research Center, 2018b). Shifts toward outpatient service options for AUD and other substance use disorders occurred in the 1970s and 1980s would have only affected silent, baby boomer, and oldest generation X individuals (HHS, 2016). In the 1990s, private insurance increased by coverage for alcohol and related services decreased (HHS, 2016), possibly affecting generation X individuals the most. Specifically, between 1991/1992 and 2001/2002 there was a decrease in use of alcohol-related services among white individuals with AUD (Chartier et al., 2011). This decrease was most notable for alcohol or drug programs, mental health services, private health professionals, and mutual aid and was likely due to decreases in private insurance coverage (which white individuals are more likely to have than black or Hispanic individuals) for alcohol treatment services (Chartier et al., 2011). Later, federal policy changes in the 2000s included the Affordable Care Act made seeking private health professionals and outpatient facilities more affordable and have expanded the role of many existing facilities (i.e., community health centers) (HHS, 2016; McClellan, 2015) to improve access to care for AUD. These latest changes likely affected service use patterns for alcohol problems among generation X and millennials the most.

Many studies have found age or cohort effects in service use patterns among individuals with AUD (Alvanzo et al., 2014; Evans-Polce & Schuler, 2016; Holdcraft & Iacono, 2002) but no study to date has examined generational differences as defined by the Pew Research Center (Pew Research Center, 2015). Among individuals with moderate/severe AUD, treatment utilization has been found to vary over the lifetime, peaking at ages 18, 33, and 44 and increasing as more time passes since AUD onset (Evance-Polce & Schuler, 2016). It is

often underutilized by those of racial / ethnic minorities, especially Latinos and those of Hispanic descent (Pinedo, Zemore, & Rogers, 2018). One study found that individuals age 45+ had a higher rate of treatment utilization and were older when they received their first alcohol-related service than those under age 45 (Alvanzo et al., 2014). Additionally, an interaction between sex and cohort has been noted, with females more likely than males to develop problems with alcohol later in life overall and with later-born females (i.e., those in the younger cohort) more likely to develop problems than those born earlier (Holdcraft & Ianco, 2002). Due to social (e.g., work expectations for males and females) and policy (e.g., insurance) shifts that occur over time, examining service use patterns from a generational, rather than age or cohort, perspective may offer additional insights.

The Importance of Studying Sex Differences

Finally, multiple studies have found that females receive fewer services than males, and exploring whether these sex differences persist across generations in a high-risk sample can inform public health and research endeavors related to treatment access among those with AUD. Being female decreases likelihood of seeking help among those with AUD (Gilbert et al., 2019; Ilgen et al., 2011), an effect that has been shown since the early 1990s (Chartier & Caetano, 2011). Treatment utilization rates also differ between males and females with females receiving significantly fewer services (Alvanzo et al., 2014; Chartier & Caetano, 2011; Gilbert et al., 2019; Raimo et al., 1999; Zemore et al., 2014). Accordingly, being male has been found to predict receiving any treatment as well as seeking help with alcohol or drug problems (Chartier & Caetano, 2011; Gilbert et al., 2019; Ilgen et al., 2011) and inpatient care (Raimo et al., 1999). Women have reported barriers to receiving services for substance use to be stigma, lack of support from family, difficulty finding services, and cost (Pinedo et al., 2019). These barriers are amplified due to their enhanced family role as mothers and the fact that such disorders are often seen as “male” problems (i.e., in Latino cultures) (Pinedo et al., 2019). One study has also noted a mediational model among white males and females whereby social pressure, legal consequences, and work-related consequences reduced females’ likelihood of receiving services for alcohol problems (Zemore et al., 2014). Thus, it would be negligent to ignore the possibility of sex differences when examining generational differences, especially considering how sex and gender norms have changed over the last several decades.

Specific Aims

No study to date has investigated generational differences (either alone or in conjunction with sex) in service use among those with AUD who also carry familial risk. The aims of the current study are as follows: (1) describe overall service use across generations in a sample with AUD, (2) assess generational differences in service use, and (3) examine if sex differences across generations are stable. Findings of this proposed study may have implications for clinicians and public health advocates regarding the utilization of medical services by different population based on generation and sex.

Methods

Sample

Data are from the Collaborative Study on the Genetics of Alcoholism (COGA), a multi-site, high-risk family study of alcohol dependence for which probands (individuals with AUD who serve as the "starting point" in the family for studying various disorders and symptomologies in COGA) were recruited from treatment facilities and their family members were also invited to participate between 1990 and 2018 (Nurnberger et al., 2004; Reich, 1996). Relatives of probands, rather than probands, were included so that individuals with AUD who never sought treatment could be included in the analyses. Participants of another race / ethnicity (Asian, Pacific Islander, Native American, other) made up 4.26% of the sample size and due to low power, were removed from the sample (de Vaus, 2002). Participants in the current sample were 4,405 relatives of probands (female = 45.09%; white = 80.02%, black = 19.98%; see Table 1 for full demographic information). All participants met lifetime diagnostic criteria for DSM-5 AUD (American Psychological Association, 2013) and were born during the years 1928–1996, encompassing the silent generation (b. 1928–1945), baby boomers (b. 1946–1964), generation X (b. 1965–1980) and the millennial generation (b. 1981–1996) (Pew Research Center, 2015).

Assessment & Variables of Interest

All participants were interviewed with the Semi-Structured Assessment for the Genetics of Alcoholism (SSAGA), a comprehensive diagnostic interview with documented reliability and validity (Bucholz et al., 1994; Hesselbrock et al., 1999). The SSAGA comprehensively assesses symptoms and diagnoses of AUD and related disorders (i.e., substance use disorders, mood disorders, antisocial personality, eating disorders, anxiety disorders). COGA is comprised of three waves that use three versions of the SSAGA - the SSAGA-I, SSAGA-II, and SSAGA-IV. Participants were ascertained from across COGA waves and thus were administered at least one version of the SSAGA. Data in this study was from participant's most recent SSAGA / COGA assessment. The number of COGA waves that participants came in for varies across the sample. Thus, all variables used were lifetime endorsement across COGA waves and SSAGA versions. Outcome variables were help-seeking behaviors and treatment utilization while generation and sex were the main predictor variables. Other demographic variables were treated as covariates (see below).

Help-Seeking Behaviors.—Help-seeking for alcohol problems was based on the question "Have you ever brought up any problem you might have had with drinking with any professional?" Participants who said yes were then asked if they had talked with a psychiatrist, another medical professional, psychologist, another mental health professional, member of the clergy, another professional. They were also asked the age when they first sought help and with whom they first sought help.

Treatment Utilization.—Treatment utilization for alcohol problems was based on the question "Have you ever been treated for a drinking problem?" Participants who said yes were then asked if they were treated at AA or another self-help group, at an outpatient alcohol program, at an outpatient program for something other than alcohol, at an inpatient

alcohol program, when you were an inpatient for medical complications due to alcohol, at any other place or program as well as their age at first treatment and where they were first treated. Participants who reported they had never been treated were asked whether they had ever attended "a self-help group (like AA) for your drinking?" Those who responded yes were asked their age at first attendance and were included in the treatment group for AA or another self-help group attendance.

Generation.—The study was limited to studying four generations: silent generation (b. 1928–1945), baby boomers (b. 1946–1964), generation X (b. 1965–1980) and the millennial generation (b. 1981–1996). Generation Z (b. 1997 - present) was not included because most relatives of probands who are in this generation are not yet adults and thus not past the riskiest developmental period for drinking. The greatest generation (b. 1927 and earlier, n = 79) was not included due to low numbers.

Sex.—Sex was a binary variable with options of male or female and was treated as a main predictor variable. Sex reflects biology and is not conflated with gender.

Covariates.—Age, race / ethnicity (white, black, another), whether a participant met lifetime criteria for dependence on any of cocaine, opiates, sedatives, stimulants (yes, no), and maximum lifetime number of DSM-5 AUD symptoms were included as covariates in the primary analyses. Notably, participants who received the SSAGA-I or SSAGA-II were asked about their Hispanic ethnicity in a clustered manner, e.g., "white non-Hispanic," "white Hispanic," "black non-Hispanic," and "black Hispanic." Participants who received the SSAGA-IV were asked about Hispanic ethnicity in a separate question from race. Preliminary analyses indicated that being Hispanic was not significantly associated with outcomes, hence the race / ethnicity categories used throughout are white and black, inclusive of Hispanic ethnicity.

Analyses

Descriptives.—Descriptive statistics for demographics, help-seeking behaviors, and treatment utilization were calculated separately by generation. Between-generation differences were tested by regressing generation on the variable of interest in multinomial logistic regressions, with baby boomers as referent. Planned post-hoc Wald tests were used to assess generational differences in help-seeking and treatment utilization. Age was included in all tests since younger generations by definition had accumulated less time to seek help or receive treatment for alcohol problems, to get married or divorced, or to further their education. Tetrachoric correlations between the main outcome variables (help-seeking and treatment utilization) were calculated.

Primary Analyses.—Time-to-first help-seeking and time-to-first treatment were tested in Cox regression models that included all subjects, with dummy variables representing the silent, generation X, and millennial generations with the baby boomer generation again as referent. Four models were run: 1) years from birth to first help-seeking behavior, 2) years from first AUD onset to first help-seeking behavior, 3) years from birth to first treatment utilization, 4) years from first AUD onset to first treatment utilization. Three planned

interactions of sex with generation were tested in each model to assess whether females in a given generation had different rates of help-seeking behaviors or treatment utilization than males, relative to their baby boomer counterparts; interactions that were significant at $p \leq .017$ after Bonferroni correction were included in the final model. When interactions were significant, separate terms for males and females within the generation were created to facilitate interpretation. These reparamaterized models had the same number of parameters as the models with the interaction terms. Once final models with significant interactions were determined, tests of proportional hazards, i.e. the assumption that the risk associated with different levels of a variable remain proportional over time, were computed using Schoenfeld residuals (Grambsch & Therneau, 1994). When the assumption was violated for generation or sex (e.g., generation X and baby boomer generation hazards differed, or male and female hazards differed) the violation was resolved by creating interactions with time so that hazards were proportional within each risk period. Violations of the proportional hazards that were made by covariates were not corrected, though. Instead, the average association with the outcome across time was used. This is because covariate violations did not affect the interpretation of the associations of sex or generation with help-seeking and treatment (Allison, 1995; 2010). Standard errors were adjusted for the non-independence of observations within families using the Huber-White robust variance estimator. All analyses were performed using Stata Statistical Software Release 15 (StataCorp, 2017).

Results

Of the 4,405 participants, 10.81% were of the silent generation, 42.22% were baby boomers, 25.22% were generation X, and 21.75% were millennial. See Table 1 for the full list of results and differences among demographic factors. There were many demographic differences across generation within the sample. Those in the silent generation were the oldest at the time of assessment (M_{age} = 59.06) followed by baby boomers (M_{age} = 40.65), generation X (M_{age} = 27.56), and millennials (M_{age} = 25.61). There were fewer female subjects in the silent generation than in the other generations. Millennials were the most educated of the generations, having the most members with education beyond high school. Marriage was less common among millennials and generation X than the older generations. The silent and baby boomer generations had a higher mean number of lifetime AUD criteria than did the millennial and X generations. Rates of ever being diagnosed with a drug dependence were equal across generations. The tetrachoric correlation between help-seeking and treatment utilization was .85 in the full sample. Also in the full sample, the mean age of AUD onset was 21.60 years (standard deviation [SD] = 8.11) with a mean time of 6.16 years (SD = 8.43) to first help-seeking and of 6.12 years (SD = 8.29) to first treatment utilization. For comparison, the mean age for first help-seeking in the full sample was 27.84 years (SD = 9.60) and 27.55 years (SD = 9.44) for first treatment (see Table 2).

Description of Service Use Across Generations.

See Table 2 for the full results of service use (help-seeking and treatment utilization) behaviors across generations. All generations were equally likely to seek help in their lifetime for alcohol problems, after accounting for age. Millennials were less likely to ever seek help from a psychiatrist / another medical doctor or a psychologist / another mental

health professional than the other generations. Individuals from all generations were equally likely to ever seek help from clergy or another professional. Among subjects who sought help, age at first help-seeking was younger in each subsequent generation and statistically greater among the two older (silent and baby boomer) than the two younger generations (generation X and millennial). There were no generational differences in who individuals first sought help from.

Lifetime treatment utilization rates did not differ across generations after adjusting for age. Lifetime use of AA / another self-help group fluctuated over time. However, baby boomers and generation X endorsed significantly more self-help attendance than the silent and millennial generations. Individuals in the silent generation reported ever utilizing fewer outpatient programs (again, after accounting for age) than the other generations. Millennials were less likely than all other generations to report ever utilizing inpatient treatment and were more likely to report utilizing another treatment. As with help-seeking, age at first treatment decreased with each subsequent generation, with generation X and millennials utilizing treatment at younger ages than silent and baby boomer generations. Among individuals who utilized treatment, millennials were more likely than the other generations to first utilize AA / another self-help group, outpatient program, or another treatment and less likely to utilize inpatient services. Other generations were more likely to first utilize inpatient programs, followed by AA / another help-seeking group, outpatient programs, and another treatment. The millennial generation presented a different picture, with highest endorsement of self-help as first treatment, followed by outpatient, inpatient, and another. Millennials differed as well in that they were less likely than the other generations to combine professional treatment and self-help attendance, were more likely to access only professional treatment, and were less likely to attend self-help as their only treatment.

Rates of treatment as a proportion of those who sought help increased with each generation, with more baby boomers, generation X, and millennials utilizing treatment than seeking help. Among individuals who sought help, ages at help-seeking and treatment were within 1 year of each other across generations. There were some individuals who singularly sought help or utilized treatment but not both; 9.1% of the sample were treated but did not seek help while 7.1% sought help but were not treated.

Assessment of Generational and Sex Differences.

See Tables 3 and 4 for the final cox regression models combined analyses of generation and sex across help-seeking and treatment utilization. For age at first help-seeking, those in generation X were more likely than boomers to seek help (hazard ratio [HR] = 1.25]; $p < .05$), females age 50+ were more likely to seek help (HR = 1.82; $p < .05$), and females ages 20–29 were less likely to seek help (HR = .81; $p < .05$) than their male counterparts. For the transition from first onset of AUD to help-seeking, males in the silent generation were less likely to seek help compared to boomer males (HR = .71; $p < .05$), females in the silent generation were more likely to seek help than their boomer female counterparts (HR = 1.57; $p < .05$), and millennials six or more years post-onset were less likely to seek help compared to boomers (HR = .27; $p < .001$).

For age at first treatment utilization, generation X individuals (HR = 1.64; $p < .001$) and millennials were more likely than boomers to utilize treatment (HR = 1.64; $p < .001$) and females age 30 and under were less likely than males to utilize treatment than males of the same age, regardless of generation (HR = .69; $p < .001$). For the transition from first AUD onset to treatment utilization, generation X males were more likely than boomer males to utilize treatment (HR = 1.90; $p < .001$) and millennial males six years or less post-onset were more likely to utilize treatment than boomer males (HR = 2.41; $p < .001$); among females there were no generational differences in treatment utilization for this transition.

Discussion

The purpose of this study was to describe service use patterns across generation as well as examine if sex differences are stable across generations in a high-risk sample of individuals with AUD. We studied two types of service use, help-seeking and treatment utilization, across two life transitions. Though it is possible to seek help without utilizing treatment and vice-versa, most individuals in this study did both. It should be noted that there was a high correlation between help-seeking and treatment utilization in this study, but we chose to report and discuss them separately due to their conceptual and clinical distinctions. There were many notable differences in overall service use across generation, some of which interacted with sex and revealed new insights into the known fact that females seek use fewer services than males (Alvanzo et al., 2014; Chartier & Caetano, 2011; Gilbert et al., 2019; Ilgen et al., 2011; Raimi et al., 1999). Regardless of generation, younger females were less likely than males to seek help or utilize treatment. Many of our findings likely reflect social and policy changes that created different barriers to treatment and stigma for each generation and will be discussed in turn.

Broad Service Use Differences

Keeping in mind that the current sample comprised individuals with high familial risk for AUD, general characteristics of service use differed from past studies of individuals with AUD where familial history was not ascertained. Across generations, lifetime reports of help-seeking and treatment utilization (see Table 2) exceeded the previously reported 10.69–18.85% (Chartier & Caetano, 2011) and 14.65–30% (Alvanzo et al., 2014; Cohen et al., 2007), respectively, among those with AUD who were not selected for high familial risk. Accordingly, use of specific services also differed from past reports but only for some generations. Lifetime help-seeking from psychiatrists, psychologists, or other health / mental health professionals (combined across categories) was slightly higher among in the silent generation and baby boomers in this sample than in past studies where reports of seeking help from these professionals did not exceed 46% (see Table 2). Lifetime use of clergy in the current sample, regardless of generation, was a fraction of what was previously found (Cohen et al., 2007; Ilgen et al., 2011; Mowbray et al., 2015).

Although treatment utilization as a whole was higher than in past studies, utilization of some specific treatments was lower than in previous reports, regardless of generation. Use of AA / self-help groups was about half of the previously reported 46.9–77.6% (Cohen et al., 2007; Ilgen et al., 2011; Mowbray et al., 2015), as was use of other treatments (Mowbray et al.,

2015) (see Table 2). Utilization of outpatient and inpatient treatment varies widely across studies; the current results (see Table 2) were within the range of what has been previously reported for these facilities (11.2–33.2% and 5.8–44.5% respectively in past studies) (Cohen et al., 2007; Ilgen et al., 2011; Mowbray et al., 2015; Raimy et al., 1999). Again, a key difference between the current sample and past studies is the high familial risk. It is possible that participants were not only exposed to familial AUD but also possibly to service use efforts. This may have resulted in a higher overall service use and different patterns of specific help-seeking behaviors and treatment utilization. It has been found that remission from AUD has familial influences (McCutcheon et al., 2017) and so it is possible that familial influences can also affect service use (e.g., True et al, 1996).

Generational Differences

This is the first study to examine specific generational differences in this context and so there is no comparable literature, but parallels can be drawn to policy and social changes over time. Thus, some points in the following discussion are speculative only. Briefly, the mean age for service use steadily decreased about 20 years between the silent and millennial generations, suggesting that younger generations may be more aware of alcohol problems and more willing to seek help and/or utilize treatment at an earlier age (see Table 2). However, likelihood of lifetime help-seeking and treatment utilization were equal across generations. Notably, there were generational differences in services used. Fewer millennials sought help from a psychiatrist, psychologist, or another health / medical professional and utilized inpatient programs than other generations. Yet, they utilized AA / another self-help, outpatient programs and other treatment options more than their counterparts. These descriptive differences translated into significant hazards across several transitions for generation X and millennials when compared to baby boomers, whereby these younger generations were often more likely to use services overall (see Table 3 for help-seeking and Table 4 for treatment utilization). Overall, the transitions for treatment utilization were more informative than for help-seeking when looking at generational differences. There were interesting trends among millennials whereby millennials who were more than six years post-AUD onset were significantly less likely than their boomer counterparts to seek help, but they were overall more likely to utilize treatment than baby boomers. When viewed with the fact that millennials < 5 years post-AUD onset were just as likely as baby boomers to seek help and that millennials 7+ years post-AUD onset were as likely as baby boomers to utilize treatment, it can be inferred that there may be a window where millennials are more likely to use services but that window closes around year 6–7 post-onset. Taken together, these descriptive and proportional hazard ratios show that even though generation X and millennials are often more likely to use services, the specific help-seeking and treatment utilization behaviors are sometimes different from other generations.

Connection to Policy

These generational differences likely reflect social and policy changes that created stigma and different landscapes of service use for each generation (again, these parallels discussed are speculative). Policy changes for AUD have strong roots in the social stigma around alcohol misuse and its classification as a social or moral problem until recently (HHS, 2016). In the 1970s and 1980s, the U.S. healthcare system responded to increasing rates of AUD by

creating treatment programs that were separate from the rest of the healthcare system, leading to a push for more behavioral therapies, outpatient programs, and other help-seeking and treatment options (HHS, 2016). The exception was inpatient detox programs, which remained largely hospital-based. These programs would have been increasingly available for the silent generation, baby boomers, and older generation X individuals. This may partially explain the shift across generations from primarily seeking psychiatrists / another medical professional to seeking psychologists / another mental health professionals when seeking help - more psychologists were being tasked with treating AUD because treatment options were being removed from the hospital settings where psychiatrists and medical doctors worked. It may also partially explain the increased lifetime use of AA / another self-help group among baby boomers and generation X and increased lifetime use of outpatient treatment programs after the silent generation.

Throughout the 1990s, there was an increase in private insurance and decrease in coverage of alcohol-related services, which likely led to an overall decrease in utilization of alcohol-related services by those with AUD (Chartier et al., 2011; Chartier et al., 2016). Interestingly, these changes did not result in income or insurance coverage significantly predicting treatment utilization, as would be expected (Chartier et al., 2016). This is the system in which many individuals in generation X would have sought services. Current results showed that those in generation X were more likely to use services than baby boomers, indicating that they were able to effectively navigate the new insurance landscape. However, the specific services that they utilized did not differ widely from their older counterparts except for seeking help from clergy.

The Mental Health Parity and Addiction Equity Act of 2008 and Affordable Care Act of 2010 changed the policy landscape once again by requiring that insurance agencies subsidize AUD treatment as well as offer prevention, screening, and other services (HHS, 2016). Younger individuals in generation X and most millennials seeking services for alcohol problems have likely benefitted from these changes. Prior to 2010, approximately 30% of younger generation X and older millennials (those aged 19–25 in the 2000s) lacked insurance coverage, a number that decreased to 25% only two years after enactment of the ACA (McClellan, 2015). Millennials specifically were able to benefit from being able to stay on their parents' insurance until the age of 26. Also following enactment of the ACA, there was an increase in millennials seeking mental health services, although substance-use-specific service use did not change (McClellan, 2015). These changes may explain the current findings that the mean age of service use was lower in millennials and that they also were more likely than baby boomers to seek help if they were less than 5 years post-AUD onset and utilize treatment if they were less than 7 years post-AUD onset. Depending on when they were interviewed as part of COGA, millennials may have been uninsured (explaining lower rates of specific help-seeking and treatment utilization options and higher use of AA / self-help for first-time treatment) or recently insured and quick to use such coverage (explaining higher outpatient first-time treatment use and overall higher hazard ratios). Relatedly, millennials have experienced a cultural shift in the widespread use of technology, specifically smartphones, to track nutrition and exercise (Higgins, 2016), monitor patient progress (Firth et al., 2017), and even intervene in mental health care (including substance use) (Donker et al., 2013). It is possible that millennials' access to

health information and monitoring poises them to make informed choices regarding alcohol problems (e.g., note drinking habits, AUD symptoms, and seek services sooner in the development of the disorder) and easily connect with services such as AA / self-help groups.

Sex Differences

Many of the generational differences in service use found in the current study interacted with sex, and there were also significant sex differences by themselves. It has been repeatedly found that females are less likely than males to utilize services for AUD (Alvanzo et al., 2014; Chartier & Caetano, 2011; Gilbert et al., 2019; Raimi et al., 1999). The current findings align with this and add additional insights. They indicate that there is an age component to seeking help that needs to be further explored. When compared to males, females in their 20s were less likely to seek help, those in their teens, 30s, and 40s were just as likely, and those over age 50 were significantly more likely. Similarly, females under the age of 30 were less likely than males to utilize treatment. This age component to these interactions likely has to do with societal expectations for females who identify as women and/or have children (e.g., being too busy having and raising children in their 20s could mean that service use gets pushed until their children are grown; being afraid to seek help due to stigma and fear of losing their children). Such a discussion revolves around gender, not sex, though, and is thereby outside of the scope of this paper because gender was not ascertained in the COGA study.

There were also notable interactions of sex with generation. Silent generation females were more likely than their boomer counterparts to seek help, while silent generation males were less likely. Generation X males were more likely than baby boomer males to seek treatment when examining the transition from first AUD onset to first treatment. Without speculating too much, these interactions likely result from a confluence of social and policy changes that are impossible to disentangle within the COGA dataset. No other study has examined sex-generation interaction for service use among those with AUD.

Clinical Implications

This study offers a starting point to consider the clinical implications around service use that may eventually enable us to target treatment engagement styles to specific profiles of sex and generational status among high-risk individuals with AUD. We identified three trends that warrant further study and are explored here. First, more millennials first received treatment through AA / self-help group than any other type of treatment, but they were less likely to use this as part of their continued treatment across their lifetime (whether alone or in combination with professional services) than older generations (see Table 2). This suggests that the peer connections and mutuality that these groups provide are appealing to millennials, or even an ease of seeking this service initially, yet there are barriers to continued attendance. It may initially seem that there is a cultural divide with regard to self-help group attendance, but barriers to participation in AA / self-help groups may have more to do with motivation issues, readiness for change, and lower perceived need for help (Laudet, 2003), indicating that clinicians can use treatment modalities such as Twelve-Step Facilitation (Litt, Kadden, Kabela-Cormier, & Petry, 2007) to support millennial clients in overcoming these barriers. In addition, treatment facilities might tailor treatment options to

millennials to offer a range of options that mirror the benefits of mutual aid groups, including peer support specialists and group treatment.

Second, this study highlights a trend of an increasingly younger age of initial help-seeking for AUD, with generation X and millennials first seeking help in late adolescence. If this trend continues, it is imperative that we identify ways to increase awareness of help options and reduce barriers for treatment engagement for young adults, such as motivational work, appointment reminders, phone or electronics-based interventions, ecological or problem-solving approaches to interventions, and culturally responsive practices (Kim, Munson, & McKay, 2012). Finally, there is a need to reduce barriers to service use among people who are biologically female under age 30. While this study examined sex differences rather than gender differences, it is important to note that there are documented barriers to service use for women, including fewer economic and social resources, needs for childcare during treatment, and higher levels of co-occurring mental health disorders and trauma issues (Center for Substance Abuse Treatment, 2009). Reducing these barriers may increase both help-seeking behavior and treatment utilization for women.

Limitations

First, COGA is a sample of individuals at high risk for AUD based on family history. Generalizability beyond high-risk samples is not recommended. Second, the current study separated “help-seeking” and “treatment utilization” which are both aspects of service use. Past studies use all three terms somewhat interchangeably and caution needs to be taken when comparing across studies. Third, COGA only ascertains sex, not gender, which limits the interpretability of some findings. Future studies need to thoroughly assess gender to see the extent of service use among *all* genders, including trans, gender non-binary, non-conforming, and gender fluid individuals. Fourth, there is limited representation in the COGA sample of Asian, Native American / Alaska Native, Pacific Islander, and those who identify by another race(s). Multiple studies have found racial / ethnic differences in service use (e.g., Chartier et al., 2011) as well as gender and race / ethnicity integrations (e.g., Pinedo et al., 2019; Zemore et al., 2014) that we were not powered to examine in the current study. Fifth and relatedly, Hispanic ethnicity was not asked separately in SSAGA-I and SSAGA-II, therefore we are unable to examine likely socio-demographic and cultural differences between Hispanics and non-Hispanics. Sixth, COGA presents a limited number of questions for help-seeking and treatment utilization. Recent work has shown that many types of mutual aid groups contribute to treatment utilization and long-term remission (Zemore et al., 2018) and not explicitly listing all options could have influenced participants’ selection.

Conclusions

This is the first study to examine the effect of generation and its interaction with sex on service use for alcohol problems among individuals with AUD who are also confer family risk for AUD. Findings indicate that younger generations are using services earlier and using more inpatient and AA / self-help services. They are also typically more likely to use services across life transitions, although this is not true for millennials when they are several years post-AUD onset. Younger females were less likely than males to use services,

regardless of generation, while older females were more likely. Interactions of generation and sex were only noted in the silent generation and generation X. These differences likely stem from social and policy changes over the last several decades. They also provide additional insight into sex differences that have been noted in previous studies. Future studies should examine these findings more closely, as well as replicate them in a nationally representative sample, so that actionable results can be disseminated to those who treat individuals with AUD. Finally, we believe that the findings of this study may have implications for clinicians and public health advocates regarding the service use by different patient groups based on their generation and sex.

Acknowledgements:

We continue to be inspired by our memories of Henri Begleiter and Theodore Reich, founding PI and Co-PI of COGA, and also owe a debt of gratitude to other past organizers of COGA, including Ting-Kai Li, P. Michael Conneally, Raymond Crowe, and Wendy Reich, for their critical contributions.

Support: This national collaborative study is supported by NIH Grant U10AA008401 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and the National Institute on Drug Abuse (NIDA). JLB and MWF are supported by NIDA T32DA015035 (mPI/Director R. Cunningham-Williams and KKB).

References

Allison PD (1995). Survival analysis using SAS: A practical guide. Cary, NC: SAS Institute.

Allison PD (2010). Survival analysis In Hancock GR & Mueller RO (Eds.), The reviewer's guide to quantitative methods in the social sciences (pp. 413–425). New York, NY: Routledge.

American Psychological Association. (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed). Arlington, VA: American Psychiatric Association.

Alvanzo AAH, Storr CL, Mojtabai R, Green KM, Pacek LR, Flair LN, Cullen BA, & Crum RM (2014). Gender and race/ethnicity differences for initiation of alcohol-related service use among persons with alcohol dependence. Drug and Alcohol Dependence, 140, 48–55. [PubMed: 24780308]

Bucholz KK, Cadoret R, Cloninger CR, Dinwiddie SH, Hesselbrock VM, Nurnberger JI, Reich T, Schmidt I, Schuckit MA (1994). A new, semi-structured psychiatric interview for use in genetic linkage studies: A report of the reliability of the SSAGA. Journal of Studies on Alcohol and Drugs, 55,149–158.

Centers for Disease Control and Prevention. Alcohol Related Disease Impact (ARDI) application, 2013 Available at www.cdc.gov/ARDI.

Center for Substance Abuse Treatment. (2009). Substance abuse treatment: Addressing the specific needs of women (No. 51). Rockville, MD: Substance Abuse and Mental Health Services Administration.

Chartier KG, & Caetano R (2011). Trends in alcohol service utilization from 1991–1992 to 2001–2002: Ethnic group differences in the US population. Alcoholism: Clinical and Experimental Research, 35, 1485–1497.

Cohen E, Feinn R, Arias A, & Kranzler HR (2007). Alcohol treatment utilization: Findings from the NESARC. Drug and Alcohol Dependence, 86, 214–221. [PubMed: 16919401]

de Vaus D (2002). Analyzing Social Science Data. London, UK: SAGE Publications.

Donker T, Petrie K, Proudfoot J, Clarke J, Birth M-R, & Christensen H (2013). Smartphone for smarter delivery of mental health programs: A systematic review. Journal of Medical Internet Research, 15(11), e247. [PubMed: 24240579]

Evans-Polce R, & Schuler MS (2016). Rates of past-year alcohol treatment across two-time metrics and differences by AUD severity and mental health comorbidities. Drug and Alcohol Dependence, 166, 194–201. [PubMed: 27475284]

Firth J, Torous J, Nicholas J, Carney R, Rosenbaum S & Sarris J (2017). Can smartphone mental health interventions reduce symptoms of anxiety? A meta-analysis of randomized controlled trails. Journal of Affective Disorders, 218, 15–22. [PubMed: 28456072]

Gilbert PA Pro G, Zemore SE, Mulia N, & Brown G (2019). Gender differences in use of alcohol treatment services and reasons for nonuse in a national sample. Alcoholism: Clinical and Experimental Research, 43, 722–731.

Grambsch PM, & Therneau TM (1994). Proportional hazards tests and diagnostics based on weighted residuals. Biometrika, 81, 515–526.

Grant BF, Goldstein RB, Saha TD, Chou P, Jung J, Zhang H, Pickering RP, Ruan WJ, Smith SM, Huang B, Hasin DS (2015). Epidemiology of DSM-5 Alcohol Use Disorder: Results from the National Epidemiological Survey on Alcohol and Related Conditions III. JAMA Psychiatry, 72, 757–766. [PubMed: 26039070]

Hesselbrock M, Easton C, Bucholz KK, Schuckit M, & Hesselbrock V (1999). A validity study of the SSAGA - A comparison with the SCAN. Addiction, 94, 1361–1370. [PubMed: 10615721]

Higgins JP (2016). Smartphone applications for patients' health and fitness. The American Journal of Medicine, 129, 11–19. [PubMed: 26091764]

Holdcraft LC, & Iacono WG (2002). Cohort effects on gender differences in alcohol dependence. Addiction, 97, 1025–2036. [PubMed: 12144605]

Ilgen MA, Price AM, Burnett-Ziegler I, Perron B, Islam K, Bohnert ASB, & Zivin K (2011). Longitudinal predictors of addictions treatment utilization in treatment-naïve adults with alcohol use disorders. Drug and Alcohol Dependence, 113, 215–221. [PubMed: 20828944]

Kim H, Munson MR, & McKay MM (2012). Engagement in Mental Health Treatment Among Adolescents and Young Adults: A Systematic Review. Child and Adolescent Social Work Journal, 29(3), 241–266. doi:10.1007/s10560-012-0256-2

Laudet AB (2003). Attitudes and beliefs about 12-step groups among addiction treatment clients and clinicians: toward identifying obstacles to participation. Substance Use & Misuse, 38(14), 2017–2047. [PubMed: 14677780]

Litt MD, Kadden RM, Kabela-Cormier E, & Petry N (2007). Changing network support for drinking: Initial findings from the network support project. Journal of Consulting and Clinical Psychology, 75(4), 542–555. doi:10.1037/0022-006X.75.4.542 [PubMed: 17663609]

McCutcheon VV, Schuckit MA, Kramer JR, Chen G, Edenberg HJ, Smith TL, Bender AK, Hesselbrock V, Hesselbrock M, Bucholz MK (2017). Familial association of abstinent remission from alcohol use disorder in first-degree relatives of alcohol-dependent treatment-seeking probands. Addiction, 112, 1909–1917. [PubMed: 28556494]

McClellan C (2015). Trends in insurance coverage and treatment utilization by young adults The CBHSQ Report. Rockville, MD: Substance Abuse and Mental Health Services Administration.

Mowbray O, Glass JE, & Grinnell-Davis CL (2015). Latent class analysis of alcohol treatment utilization patterns and 3-year alcohol related outcomes. Journal of Substance Abuse Treatment, 54, 21–28. [PubMed: 25744651]

Nurnberger JI Jr., Wiegand R, Bucholz K, O'Connor S, Meyer ET, Reich T, Rice J, Schuckit M, King L, Petti T, Bierut L, Hinrichs AL, Kuperman S, Hesselbrock V, Porjesz B. (2004). A family study of alcohol dependence: coaggregation of multiple disorders in relatives of alcohol-dependent probands. Archives of General Psychiatry, 61, 1246–1256. [PubMed: 15583116]

Pew Research Center. (2015). The Whys and Hows of Generations Research. Available at: https://www.people-press.org/2015/09/03/the-whys-and-hows-of-generations-research/.

Pew Research Center. (2018a). Early benchmarks show post-millennials on track to be most diverse, best-educated generation yet. Available at https://www.pewsocialtrends.org/2018/11/15/early-benchmarks-show-post-millennials-on-track-to-be-most-diverse-best-educated-generation-yet/.

Pew Research Center. (2018b). As fatal overdoses rise, many Americans see drug addiction as a major problem in their community. Available at https://www.pewresearch.org/fact-tank/2018/05/30/as-fatal-overdoses-rise-many-americans-see-drug-addiction-as-a-major-problem-in-their-community/.

Pew Research Center. (2019). Generation Z looks a lot like millennials on key social and political issues. Available at: https://www.pewsocialtrends.org/2019/01/17/generation-z-looks-a-lot-like-millennials-on-key-social-and-political-issues/.

Pinedo M, Zemore S, Beltarn-Giron J, Gilbert P, & Castro Y (2019). Women's barriers to specialty substance abuse treatment: A qualitative exploration of racial / ethnic differences. Journal of Immigrant and Minority Health. doi: 10.1007/s10903-019-00933-2

Pinedo M, Zemore S, & Rogers S (2018). Understanding barriers to specialty substance abuse treatment among Latinos. Journal of Substance Abuse Treatment, 94, 1–8. [PubMed: 30243409]

Raimo EB, Daeppen J-B, Smith TL, Danko GP, & Schuckit MA (1999). Clinical characteristics of alcoholism with alcohol-dependent subjects with and without a history of alcohol treatment. Alcoholism: Clinical and Experimental Research, 10, 1605–1613.

Reich T (1996). A genomic survey of alcohol dependence and related phenotypes: results from the Collaborative Study on the Genetics of Alcoholism (COGA). Alcoholism: Clinical and Experimental Research, 20(8 Suppl), 133A–137A.

Schuckit MA (2014). A brief history of research on the genetics of alcohol and other drug use disorders. Journal of Studies on Alcohol and Drugs, Suppl 17, 59–67.

StataCorp. (2015). Stata Statistical Software: Release 14. In. College Station, TX: StataCorp LP.

True WR, Heath AC, Bucholz K, Slutske W, Romeis JC, Scherrer JF, Lin N, Eisen SA, Goldberg J, Lyons MJ, Tsuang MT (1996). Models of treatment seeking for alcoholism: The role of genes and environment. Alcoholism: Clinical and Experimental Research, 20, 1577–1581.

U.S. Department of Health and Human Services (HHS). (2016). Facing addiction in America: The Surgeon General's report on alcohol, drugs, and health. Washington, DC: HHS.

Zemore SE, Liu C, Mericle A, Hemberg J, & Kaskutas LA (2018). A longitudinal study of the comparative efficacy of Women for Sobriety, LifeRing, SMART Recovery, and 12-step groups for those with AUD. Journal of Substance Abuse Treatment, 88, 18–26. [PubMed: 29606223]

Zemore SE, Murphy RD, Mulia N, Gilbert PA, Martinez P, Bond J, & Polcin DL (2014). A moderating role for gender in racial / ethnic disparities in alcohol services utilization: Results from the 2000 to 2010 national alcohol surveys. Alcoholism: Clinical and Experimental Research, 28, 2286–2296.

Table 1.

Sample demographics by generation.

	Generation 1: 1928–1945 Silent	Generation 2: 1946–1964 Baby Boomers	Generation 3: 1965–1980 Generation X	Generation 4: 1981–1989 Millennials	Total / Average	Design-based F (*p*-value)	Comparisons
Sample Size (% of total sample)	476 (10.81%)	1,860 (42.22%)	1,111 (25.22%)	958 (21.75%)	4,405	--	--
Mean Age (SD)	59.06 (5.78)	40.65 (5.65)	27.56 (5.20)	25.61 (4.66)	36.06 (11.69)	428.07 (.000)	1 > 2 > 3 > 4
Sex							
Male	61.97%	54.62%	53.56%	53.55%	54.91%	--	--
Female	38.03%	45.38%	46.44%	46.45%	45.09%	4.34 (.005)	1 < 2,3,4
Race / Ethnicity							
White	83.82%	79.57%	79.93%	79.12%	80.02%	--	--
Black	16.18%	20.43%	20.07%	20.88%	19.98%	1.77 (.171)	1=2=3=4
Education							
Less than High School	36.97%	22.92%	30.60%	23.07%	26.41%	34.37 (.000)	1 > 2,3 > 4
High School	28.36%	30.50%	27.90%	22.76%	27.93%	15.98 (.000)	1,2,3 > 4
More than High School	34.66%	46.58%	41.49%	54.18%	45.66%	--	--
Marital Status							
Married	63.87%	53.06%	30.60%	31.03%	43.78%	--	--
Separated, Divorced, or Widowed	33.40%	27.47%	11.52%	5.96%	19.41%	5.28 (.005)	1,2,3 > 4
Never Married or Living with Partner	2.73%	19.46%	57.88%	63.01%	36.81%	8.06 (.000)	3,4 > 2 > 1
Ever Diagnosed with Drug Dependence							
Yes	6.09%	37.74%	26.28%	22.44%	28.10%	1.98 (.139)	1=2=3=4
Maximum Lifetime DSM-5 AUD Symptoms (SD)	6.26 (2.74)	6.33 (2.93)	5.31 (2.60)	4.98 (2.37)	5.77 (2.78)	9.59 (.000)	1,2 > 3,4

Notes: Comparison groups were as follows: sex (male), race (white), Education (more than high school), marital status (married), ever diagnosed (no). All Comparisons except sex and race / ethnicity adjusted for age at last interview.

Table 2.

Help-seeking behaviors and treatment utilization descriptive statistics by generation.

	Generation 1: 1928–1945 Silent	Generation 2: 1946–1964 Baby Boomers	Generation 3: 1965–1980 Generation X	Generation 4: 1981–1989 Millennials	Total / Average	Design-based F (*p*-value)	Comparisons
Help-Seeking Behaviors for Alcohol Problems							
Ever Sought Help for Alcohol Problem							
Yes	39.29%	42.37%	25.20%	18.58%	32.53%	2.34 (.097)	1=2=3=4
Ever Sought Help From…							
Psychiatrist or Another Medical Doctor	31.93%	29.09%	14.94%	8.56%	21.36%	5.05 (.007)	1,2,3 > 4
Psychologist or Another Mental Health Professional	28.78%	36.61%	22.86%	15.76%	27.76%	3.24 (.039)	1,2,3 > 4
Clergy or Another Professional	3.78%	4.30%	2.07%	3.24%	3.45%	2.68 (.069)	1=2=4=3
Mean Age When First Sought Help for Alcohol Problems (SD)	41.60 (10.81)	28.87 (7.12)	21.13 (4.80)	19.48 (4.01)	27.84 (9.60)	9.49 (.000)	1,2 > 3,4
If Sought Help, First Sought Help from Whom							
Psychiatrist or Another Medical Doctor	51.61%	30.84%	20.07%	20.22%	30.12%	1.16 (.313)	1=2=3=4
Psychologist or Another Mental Health Professional	36.02%	58.50%	68.46%	69.66%	58.91%	1.71 (.182)	1=2=3=4
Clergy or Another Professional	12.37%	10.66%	11.47%	10.11%	10.97%	1.50 (.225)	1=2=3=4
Treatment Utilization for Alcohol Problems							
Ever Been Treated for Alcohol Problems							
Yes	36.55%	42.26%	29.34%	24.53%	34.53%	1.98 (.138)	1=2=3=4
Ever Received Treatment From…							
AA or Another Self-Help Group	31.72%	39.30%	25.47%	12.53%	29.17%	17.99 (.000)	2,3 > 1,4
Outpatient Program (Alcohol or Other Problem)	12.82%	22.04%	14.49%	11.48%	16.84%	3.60 (.028)	2,3,4 > 1
Inpatient Alcohol Program	21.64%	24.73%	16.74%	6.58%	18.43%	16.78 (.000)	1,2,3 > 4
Another Treatment	3.57%	2.80%	2.70%	11.17%	4.68%	29.08 (.000)	4 > 1,2,3
Mean Age When First Utilized Treatment for Alcohol Problems (SD)	42.39 (9.92)	29.42 (6.91)	20.90 (4.51)	19.52 (4.01)	27.55 (9.44)	12.76 (.000)	1,2 > 3,4
If Treated, Where First Received Treatment							
AA or Another Self-Help Group	43.68%	38.80%	37.42%	48.94%	40.63%	15.27 (.000)	4 > 1,2,3
Outpatient Program (Alcohol or Other Problem)	6.32%	15.52%	14.72%	25.96%	15.91%	15.52 (.000)	4 > 1,2,3

	Generation 1: 1928–1945 Silent	Generation 2: 1946–1964 Baby Boomers	Generation 3: 1965–1980 Generation X	Generation 4: 1981–1989 Millennials	Total / Average	Design-based F (*p*-value)	Comparisons
Inpatient Alcohol Program	45.98%	42.37%	43.25%	17.02%	39.05%	20.49 (.000)	4 < 1,2,3
Another Treatment	4.02%	3.31%	4.60%	8.09%	4.40%	8.11 (.000)	4 > 1,2,3
Lifetime Treatment Combination							
None	63.45%	57.74%	70.66%	75.47%	65.47%	1.98 (.179)	1=2=3=4
Professional + AA / Self-Help	21.43%	28.60%	18.09%	10.23%	21.18%	6.33 (.002)	1,2,3 > 4
Professional Only	4.83%	2.96%	3.87%	12.00%	5.36%	22.10 (.000)	4 > 1,2,3
AA or Another Self-Help Group	10.29%	10.70%	7.38%	2.30%	7.99%	11.85 (.000)	1,2,3 > 4
Treatment Utilization as a Proportion of Those Who Sought Help	93.68%	100.12%	117.19%	129.95%	--	--	--

Notes: Comparison group was baby boomers compared to all other generations. All comparisons adjusted for age at last interview.

Table 3.

Final cox regressions for transitions to first help-seeking behavior for alcohol problems.

	Hazard Ratio	Standard Error	95% Confidence Intervals
Transition 1: Birth to Age of First Help-Seeking Behavior			
Generation			
Silent	.90	.12	.70 – 1.16
Generation X	1.25*	.12	1.03. – 1.51
Millennial	1.07	.12	.86 – 1.33
Sex			
Female < Age 20	1.12	.13	.89 – 1.41
Female Age 20–29	.81*	.07	.68 – .97
Female Age 30–49	1.16	.12	.96 – 1.41
Female age 50+	1.82*	.52	1.04 – 3.19
Race / Ethnicity			
Black	.98	.07	.85 – 1.14
Age	.95***	.01	.94 – .96
Maximum Lifetime AUD Symptoms	1.40***	.02	1.37 – 1.43
Ever Diagnosed with Drug Dependence	1.33***	.08	1.17 – 1.51
Transition 2: Age at First AUD Onset to Age of First Help-Seeking Behavior			
Generation			
Silent - Female	1.57*	.31	1.06 – 2.32
Silent - Male	.71*	.11	.53 – .97
Generation X	1.09	.11	.89 – 1.33
Millennial < 5 years post-onset	1.26	.18	.96 – 1.66
Millennial 6+ years post-onset	.27***	.08	.15 – .50
Sex			
Female	.97	.07	.85 – 1.10
Race / Ethnicity			
Black	1.02	.08	.87 – 1.20
Age	.98**	.01	.97 – .99
Maximum Lifetime AUD Symptoms	1.40***	.02	1.37 – 1.43
Ever Diagnosed with Drug Dependence	1.20**	.08	1.05 – 1.37

Notes: Reference groups were as follows: generation (boomer); sex (male), race (white), ever diagnosed with drug dependence (no)

* $p < .05$;

** $p < .01$;

*** $p < .001$;

+ $p = .049$

Table 4.

Final cox regressions for transitions to first treatment utilization for alcohol problems.

	Hazard Ratio	Standard Error	95% Confidence Intervals
Transition 1: Birth to Age of First Treatment Utilization			
Generation			
Silent	.84	.11	.65 – 1.08
Generation X	1.64***	.16	1.36 – 1.97
Millennial	1.64***	.18	1.32 – 2.04
Sex			
Female < Age 30	.62***	.04	.54 – .71
Female Age 31+	.95	.09	.79 – 1.14
Race			
Black	1.17*	.08	1.02 – 1.33
Age	.95***	.005	.94 – .96
Maximum Lifetime AUD Symptoms	1.40***	.02	1.37 – 1.43
Ever Diagnosed with Drug Dependence	1.49***	.09	1.32 – 1.68
Transition 2: Age at First AUD Onset to Age of First Treatment Utilization			
Generation			
Silent	.82	.11	.62 – 1.08
Generation X - Female	.97	.13	.75 – 1.27
Generation X - Male	1.91***	.23	1.50 – 2.43
Millennial - Female	1.12	.17	.83 – 1.50
Millennial < 7 years post-onset	2.49***	.39	1.84 – 3.37
Millennial 7+ years post-onset	.75	.27	.37 – 1.53
Sex			
Female	.97	.07	.84 – 1.12
Race			
Black	1.21**	.09	1.05 – 1.39
Age	.98**	.01	.97 – .99
Maximum Lifetime AUD Symptoms	1.40***	.02	1.36 – 1.44
Ever Diagnosed with Drug Dependence	1.36***	.09	1.20 – 1.54

Notes: Reference groups were as follows: generation (boomer); sex (male), race (white), ever diagnosed with drug dependence (no)

* $p < .05$;

* $p < .01$;

*** $p < .001$;

+ $p = .049$