

Are Cisgender Women and Transgender and Nonbinary People Drinking More During the COVID-19 Pandemic? It Depends.

Cindy B. Veldhuis,^{1,2} Noah T. Kreski,³ John Usseglio,⁴ and Katherine M. Keyes³

¹Department of Medical Social Sciences, Feinberg School of Medicine, Northwestern University, Chicago, Illinois

²Institute for Sexual and Gender Minority Health and Wellbeing, Northwestern University, Chicago, Illinois

³Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, New York

⁴Augustus C. Long Health Sciences Library, Columbia Irving Medical Center, Columbia University, New York, New York

Correspondence

Address correspondence concerning this article to Cindy Veldhuis, Institute for Sexual and Gender Minority Health, 625 North Michigan, Chicago IL 60611. Email: cbv@northwestern.edu

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PURPOSE: This narrative review of research conducted during the first 2 years of the COVID-19 pandemic examines whether alcohol use among cisgender women and transgender and nonbinary people increased during the pandemic. The overarching goal of the review is to inform intervention and prevention efforts to halt the narrowing of gender-related differences in alcohol use.

SEARCH METHODS: Eight databases (PubMed, APA PsycInfo, CINAHL, Embase, Scopus, Gender Studies Database, GenderWatch, and Web of Science) were searched for peer-reviewed literature, published between March 2020 and July 2022, that reported gender differences or findings specific to women, transgender or nonbinary people, and alcohol use during the pandemic. The search focused on studies conducted in the United States and excluded qualitative research.

SEARCH RESULTS: A total 4,132 records were identified, including 400 duplicates. Of the remaining 3,732 unique records for consideration in the review, 51 were ultimately included. Overall, most studies found increases in alcohol use as well as gender differences in alcohol use, with cisgender women experiencing the most serious consequences. The findings for transgender and nonbinary people were equivocal due to the dearth of research and because many studies aggregated across gender.

DISCUSSION AND CONCLUSIONS: Alcohol use by cisgender women seems to have increased during the pandemic; however, sizable limitations need to be considered, particularly the low number of studies on alcohol use during the pandemic that analyzed gender differences. This is of concern as gender differences in alcohol use had been narrowing before the pandemic; and this review suggests the gap has narrowed even further. Cisgender women and transgender and nonbinary people have experienced sizable stressors during the pandemic; thus, understanding the health and health behavior impacts of these stressors is critical to preventing the worsening of problematic alcohol use.

KEYWORDS: alcohol; cisgender women; transgender persons and nonbinary populations; sexual and gender minorities; college students; COVID-19; pandemic; culturally responsive treatment

Although historically cisgender women (i.e., women whose sex assigned at birth is consonant with their gender) in the United States have had lower levels of alcohol consumption than cisgender men, recent analyses of historical and cohort data suggest that overall gender differences are narrowing.¹ This narrowing is largely due to substantial increases in cisgender women's alcohol use, binge drinking (operationalized as four or more drinks in 1 day for cisgender women; five or more drinks in 1 day for cisgender men)^{1,2} and alcohol use disorder (AUD; meets criteria for past 12-month dependence or abuse as established in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders [DSM-V]*).³ Cisgender women also report more barriers to treatment^{4,5} and lower treatment utilization than cisgender men.⁶⁻⁹ Given that cisgender women may experience more severe alcohol-related problems (e.g., problems in relationships or at work¹⁰) and health impacts than do cisgender men, even at lower levels of alcohol use,¹¹ understanding whether the pandemic has led to an increase in alcohol use among cisgender women is critically important.

Rates and risks for problematic alcohol use vary by sexual identity,¹²⁻¹⁴ race/ethnicity,¹⁵ and other factors, including socioeconomic status and relationship status.¹⁶ These differences may be partially explained by differences in stress levels, including economic stressors and psychological distress¹⁷ and may have been further modified by the coronavirus disease 2019 (COVID-19) pandemic. Research on mental health during the pandemic suggests that cisgender women experienced elevated rates of stress, anxiety, and depression compared to pre-pandemic rates,¹⁸⁻²⁰ at least in the early stages of the pandemic. In contrast, some research has suggested no gender differences in pandemic-related emotional distress.^{21,22}

Stress is one of the strongest predictors of substance use, including alcohol use,²³ and higher levels of stressors increase risks for problematic alcohol use, including AUD.^{24,25} The COVID-19 pandemic often has been described as a "perfect storm" of multiple sources of stress and has been linked to worsened mental health and health behaviors overall.^{21,22,26-29} There is evidence of increased problematic alcohol use during previous pandemics;³⁰ however, the COVID-19 pandemic is unique among recent pandemics in the breadth and duration of its impacts and thus may have more substantial effects on health and well-being, including alcohol use. Cisgender women, compared to cisgender men, may be particularly affected by the pandemic due to higher levels of stressors.^{31,32} These stressors may be related to negotiating working from home²⁸ while balancing remote schooling for children,^{21,28} higher likelihood of working in frontline and/or caregiver jobs,^{28,33} increased risks for intimate partner violence,³⁴⁻³⁸ delays in accessing needed health care,³⁹ isolation,⁴⁰⁻⁴² and potentially higher risks for unintended pregnancies.³¹ In a prospective study of families, cisgender women, compared to cisgender men, reported higher levels of stressors across four out of five domains. Specifically, cisgender women experienced higher levels of stressors in work/finances

(31% increase), home disruptions (64%), social isolation (13%), and health care barriers (94%).⁴² The burden of pandemic-related stressors, combined with chronic and cumulative stressors disproportionately impacting cisgender women (e.g., sexism and/or violence across the life span⁴³), may result in allostatic overload, which heightens health risks.⁴⁴ When faced with higher levels of stressors during the pandemic, cisgender women may be at higher risk than cisgender men for alcohol consumption because cisgender women are more likely than cisgender men to use alcohol to cope with negative emotions.^{24,45} Using alcohol to cope may have potentially disproportionate impacts on those experiencing the highest levels of stressors (e.g., frontline workers, parents).⁴²

Transgender and nonbinary (TNB, i.e., people whose gender differs from their sex assigned at birth) individuals experience significant health disparities, and their health is negatively affected by high levels of stigma, discrimination, and violence, as well as low levels of support.⁴⁶⁻⁵¹ The COVID-19 pandemic may have been particularly stressful for TNB people compared to cisgender people due to elevated socioeconomic impacts such as job loss,⁵² food⁵² and housing insecurity,^{53,54} as well as reductions in social and community support.⁵⁵⁻⁵⁷ TNB people also have experienced disruptions to medical care (including gender-affirming services), which heightens stress.^{53,56} Coping is a key motivation for alcohol use among TNB populations,^{51,58,59} which might suggest increased use of alcohol to cope during a stressful event such as a global pandemic. Yet, research findings on rates of alcohol use among TNB populations are more mixed compared to cisgender people.⁶⁰⁻⁶⁴ Problematic alcohol use is associated with increased risks for secondary harms that disproportionately affect TNB individuals, such as suicidal ideation, intimate partner violence, sexual violence, and the exacerbation of mental and physical health problems,^{62,65,66} highlighting the importance of a deeper understanding of alcohol use among TNB individuals. Additionally, TNB people experience barriers to treatment,⁶⁷ including a lack of culturally responsive care options⁶⁸⁻⁷³ and discrimination by providers.⁶⁸ Of note, the umbrella term "TNB" encompasses a diverse range of identities and experiences, but existing research often does not disentangle this diversity, instead aggregating across groups who fall outside of cis-normative gendered expectations and who then are compared with cisgender peers.

Understanding alcohol use among cisgender women and TNB people during the pandemic is particularly important due to risks for severe health outcomes. Not only are COVID-19 patients with AUD more likely to be hospitalized and to have higher all-cause mortality,⁷⁴ but alcohol-related mortality spiked with the onset of the COVID-19 pandemic.^{75,76} Problematic alcohol use also is a major risk factor for COVID-19 infections and mortality.⁷⁷ Although the connections between COVID-19 and alcohol use have widespread effects, specific alcohol-related health impacts of the pandemic have been particularly harmful for cisgender women, as indicated by a 125% increase in alcohol-

associated hepatitis⁷⁸ and a stark increase in the proportion of patients screening positive for substance use (including alcohol use) in emergency departments.⁷⁹ To our knowledge, similar research has not been done among TNB populations.

This review aims to understand the unique experiences of cisgender women and TNB people, as well as among understudied groups of cisgender women such as women of color, sexual minority women (SMW, e.g., lesbian, bisexual, queer women), and older women to describe subgroup impacts of the COVID-19 pandemic on alcohol use. A recent scoping review of substance use during the pandemic noted the importance of examining substance use (including alcohol) during the pandemic among cisgender women and TNB populations.⁸⁰ Thus, this review aims to evaluate the extant literature testing whether cisgender women drank at similar or higher levels than cisgender men during the pandemic. The review further explores alcohol use among TNB populations during the pandemic, with a focus on gender differences in rates of alcohol use (e.g., binge drinking, alcohol dependence, quantity/frequency of drinking) in research conducted during the pandemic (since March 2020) in the United States.

Methods

Search Methods Employed

This narrative review of alcohol use during the pandemic was conducted to document whether alcohol use had increased among women—a population already experiencing inclines in alcohol use before the pandemic—and among TNB people in order to inform needed prevention and interventions, as well as to inform policy. The review process included seven steps:⁸¹⁻⁸³ (1) refining the topic and identifying the research question; (2) developing a protocol; (3) identifying relevant

studies; (4) screening and selecting studies; (5) extracting the data; (6) critically appraising and synthesizing the data; and (7) reporting the results.

One author, a Health Sciences Library Informationist conducted the literature searches on July 15, 2022, in eight databases: PubMed (pubmed.gov); APA PsycInfo (EBSCO); CINAHL [Cumulative Index to Nursing and Allied Health Literature] (EBSCO); Embase (embase.com); Scopus (scopus.com); Gender Studies Database (EBSCO); GenderWatch (ProQuest); and Web of Science (webofscience.com). Because the review addresses two separate questions, two search strategies were used. The first strategy comprised a combination of search strings related to alcohol use, COVID-19, and women. The second strategy combined search strings for alcohol use, COVID-19, SMW, and TNB populations. No filters were applied to the search results.

All records found via the database searches were exported to an EndNote library (version X9). Duplicates were identified and removed in EndNote, and the remaining library was imported into the Covidence review software to facilitate identifying relevant articles for the narrative review. Articles were eligible for inclusion in this review if they met the following criteria hierarchically: (1) were published in peer-reviewed journals between March 2020 and July 2022; (2) were written in English; (3) used human participants in the United States (to reduce variability in responses to the pandemic); (4) included measurement of alcohol use (broadly defined); (5) collected data during the COVID-19 pandemic; and (6) included analyses of gender differences in rates of alcohol use or focused solely on cisgender women or TNB people and alcohol use during the pandemic. Articles were excluded if they were review papers or qualitative studies, if they did not conduct any gender differences analyses (unless the study focused on women or TNB samples only), and if alcohol was not an outcome.

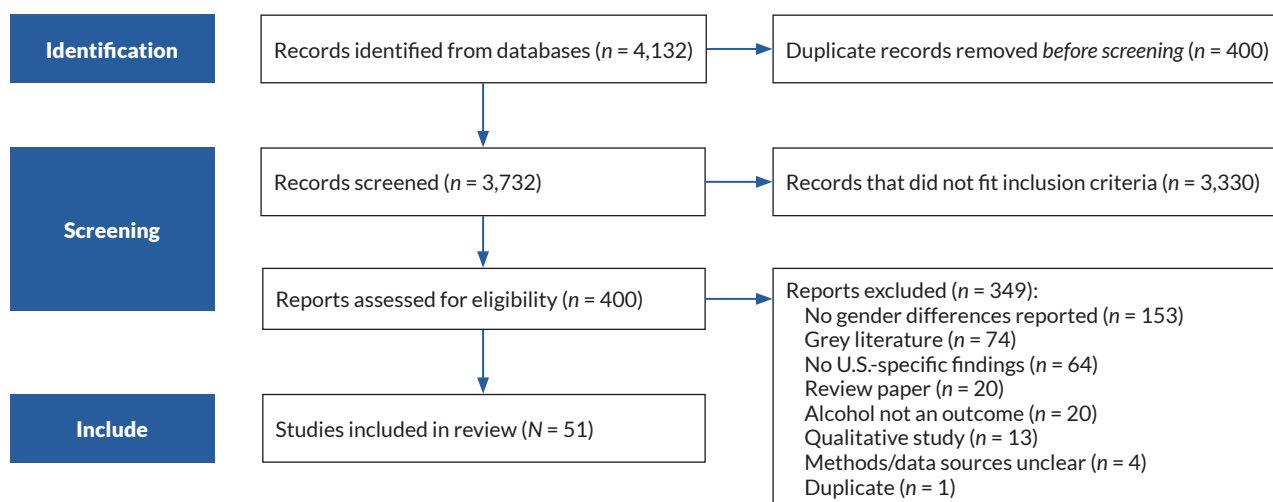


Figure 1. PRISMA flow diagram of search strategy used during the narrative review of women’s alcohol use during the pandemic. Note: PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Data Extraction

After conducting a title and abstract review of all articles, the authors reviewed the full text of the remaining papers to determine final inclusion. Differences were discussed amongst three authors until agreement was reached. The full texts of the 400 articles were assessed for relevance to the review's aims. When an article was excluded during the full review, authors documented the reason for its exclusion. (See Figure 1 for the search strategies for both questions combined.) Three authors critically reviewed and synthesized data from the 51 included articles.

Results

Results of the Literature Search

The literature search identified a total of 4,132 records. There were 400 duplicates, leaving 3,732 unique records for consideration in the review; of these, 51 articles ultimately were included.

Results of the Reviewed Studies

Appendices 1 and 2 (located after the references) list the 51 reviewed articles and include all data from the abstraction protocol. Consistent with the goals of a narrative review, potential methodological limitations of the research are highlighted to help the reader better evaluate the validity and generalizability of the findings. The results are broken into four sections: (1) prevalence; (2) specific populations and demographic differences (age, race/ethnicity) or life experiences (pregnancy, intimate relationships, frontline work); (3) linkages between alcohol and mental health, stress, or coping; and (4) TNB individuals and SMW.

Table 1 includes descriptive data of the studies reviewed. Of those, 24% included nationally representative samples, 36% included pre-pandemic data (as opposed to retrospective reporting or only having within-pandemic data), 51% had data collection that ended early in the pandemic (March–May 2020), and 16% had data collection that ended in 2021. Slightly more than one-quarter (26%) used the Alcohol Use Disorders Identification Test (AUDIT) or AUDIT-Consumption (AUDIT-C), with several studies using just one or two items from the AUDIT. In addition, 6% used another validated measure, and 29% examined quantity and frequency only. Of those studies that looked at gender differences (as opposed to having a sample of cisgender women only), 73% found gender differences in alcohol use.

Of the 51 studies that met inclusion criteria, 20 studies tested for trends over time in alcohol use, including the pandemic period. Table 2 summarizes the results of those 20 studies, including the number of studies that found increases, decreases, or no change in alcohol use. Overall, 12 of the

20 studies documented increases in alcohol use during the pandemic period. More studies documented increases among cisgender women than among cisgender men (8 and 6 out of 13, respectively), and the only study with sufficient data to test for trends among TNB individuals found increases in alcohol consumption.

The following sections present the results in more detail, organized by prevalence data; specific subpopulations; stress, coping, and mental health; and alcohol use among SMW and TNB people. Not all studies had mutually exclusive samples; thus, studies may be mentioned in more than one section.

Prevalence

Eighteen studies were primarily aimed at describing prevalence of alcohol use among adults during the pandemic and included analyses of gender differences. These studies were divided into two groups: cross-sectional studies (including repeated cross-sectional studies) of adults and longitudinal/prospective studies of adults.

Cross-sectional general population adult studies

Nine cross-sectional studies,^{79,84-91} all conducted during the early pandemic, met inclusion criteria. All used convenience samples, with two samples recruited from social media. In three studies that asked participants to compare retrospectively their pre-pandemic AUD symptoms to current symptoms,⁸⁵⁻⁸⁷ all found increased reports of AUD symptoms among cisgender women during the early pandemic compared with retrospective reports of pre-pandemic symptoms. In one study, cisgender men also reported increases;⁸⁵ in another, they did not;⁸⁶ and in the third study cisgender women reported increased drinking more often than did cisgender men.⁸⁷ A fourth study found no gender differences in self-defined “drinking behaviors” during the early pandemic.⁸⁸ Across these studies, the cross-sectional design—including retrospective reporting of pre-pandemic drinking behaviors and AUD symptoms as well as use of convenience samples based on volunteers from social media—limit the conclusions that can be drawn from these studies.

Three general population adult studies used repeated cross-sectional assessments (with different samples at each time point) before and during the pandemic to compare rates across time.^{79,84,89} Using nationally representative samples, Kerr et al.⁸⁹ documented that daily drinking and alcohol volume were higher among cisgender women interviewed during the pandemic through 2021 compared to those interviewed pre-pandemic. AUD prevalence across the continuum from mild to severe was also higher during the pandemic. Sensitivity analyses indicated that results were robust to the timing of interviews and thus unlikely to be affected by pandemic-related social distancing policies. Electronic health record data of more than 100,000 patients visiting emergency departments showed higher alcohol admissions and evaluations for cisgender women during the pandemic compared with rates before the

Table 1. Descriptives of Studies Included in Review

	<i>n</i>	%
Data collection start		
Early pandemic (March–May 2020)	26	51.0%
Late 2020	7	13.7%
Pre-pandemic	18	35.3%
Data collection end		
Early pandemic	26	51.0%
Late 2020	17	33.3%
Early 2021	7	13.7%
Late 2021	1	2.0%
Study design		
Prospective	20	39.2%
More than one cross-sectional time point	7	13.7%
Cross-sectional	24	47.1%
Samples included		
Cisgender women only	4	7.8%
Cisgender women and men	33	64.7%
Cisgender women, men, and TNB people	4	7.8%
Cisgender women and TNB people	10	19.6%
Comparison groups		
Cisgender men	36	70.6%
TNB individuals	1	2.0%
Cisgender men and TNB individuals	9	17.6%
No comparison group	5	9.8%
Sample recruitment		
Nationally representative	12	23.5%
Convenience	8	15.7%
Convenience: Online/social media	20	39.2%
Clinic sample	5	9.8%
Undergraduates (various recruitment methods)	5	9.8%
Other	1	2.0%
Drinking measurement		
AUDIT or AUDIT-C	13	25.5%
Daily drinking questionnaire	3	5.9%
Quantity and frequency	15	29.4%
Quantity	3	5.9%
Frequency	7	13.7%
Perceptions	5	9.8%
Other validated scale	3	5.9%
Other	2	3.9%
How change was measured		
Pre- and post/during pandemic data	10	19.6%
Retrospective recall of pre-pandemic AUDIT	1	2.0%
Retrospective report of current drinking in past vs drinking now	4	7.8%
Self-perceived changes in alcohol use	14	27.5%
Self-report of current drinking at more than one time point	12	23.5%
Did not measure changes in drinking	10	19.6%

Note: AUDIT, Alcohol Use Disorders Identification Test; AUDIT-C, AUDIT-Consumption; TNB, transgender or nonbinary

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Appendix 1. Description of Studies Included in This Review (N = 51): Sample Sizes, Recruitment Methods, Study Design, and Timing of Start and Stop of Data Collection*

#	First Author	Year	N	Sample Sizes of Subgroups	Sample	Recruitment	Study Design	Data Collection†	
								Start	End
Prevalence: Single and Repeated Cross-Sectional Studies of General Population Adults									
1	Chandran ⁷⁹	2021	107,930	57% cisgender women	EHR data; no age restrictions	Electronic health records	More than one cross-sectional time point	Pre-pandemic	Early pandemic
2	Acharya ⁸⁴	2022	18,808	54% cisgender women	Adults	Consumer data	More than one cross-sectional time point	Pre-pandemic	Late 2020
3	Beiter ⁸⁵	2022	102	48% cisgender women	Adult health care workers	Convenience	Cross-sectional	Early pandemic	Early pandemic
4	Boschuetz ⁸⁶	2020	417	84% cisgender women	Adults	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic
5	Capasso ⁸⁷	2021	5,850	53% cisgender women	Adult social media users in U.S.	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic
6	Grossman ⁸⁸	2020	832	84% cisgender women	Adults	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic
7	Kerr ⁸⁹	2022	1,819	52% cisgender women	Adults	Nationally representative	More than one cross-sectional time point	Pre-pandemic	Early 2021
8	Knell ⁹⁰	2020	1,809	67% cisgender women	Adults living in U.S.	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic
9	Walia ⁹¹	2021	3,865	50% cisgender women	Health Information National Trends Survey	Nationally representative	Cross-sectional	Early pandemic	Late 2020
Prevalence: Longitudinal/Prospective Studies of General Population Adults									
1	Chartier ⁹²	2021	5,874	51% cisgender women	Adults	Nationally representative	Prospective	Early pandemic	Early pandemic
2	French ⁹³	2022	2,040	58% of sample at both time points were cisgender women	Adults living in U.S.	Convenience: Online/social media	Prospective	Early pandemic	Early pandemic
3	Lannoy ⁹⁴	2022	86	47% cisgender women	People who are HIV+, people with AUD, people with both, and controls with neither	Clinical sample recruited from longitudinal study	Prospective	Early pandemic	Early 2021
4	Leventhal ⁹⁵	2022	8,130	52% cisgender women	Adults	Nationally representative	Prospective	Early pandemic	Early 2021
5	Meanley ⁹⁶	2022	2,121	58% cisgender women	Participants from two prospective observational cohort studies	Pulled from MACS and WIHS cohorts	Prospective	Pre-pandemic	Late 2020

Appendix 1. Description of Studies Included in This Review (N = 51): Sample Sizes, Recruitment Methods, Study Design, and Timing of Start and Stop of Data Collection* (Continued)

#	First Author	Year	N	Sample Sizes of Subgroups	Sample	Recruitment	Study Design	Data Collection†	
								Start	End
6	Nordeck ⁹⁷	2021	4,298	49% cisgender women	Adults	Nationally representative	Prospective	Early pandemic	Late 2020
7	Osaghae ⁹⁸	2021	267	72% cisgender women	Outpatient primary care clinic patients who had received a COVID-19 test	Clinic sample	Prospective	Early pandemic	Early pandemic
8	Pollard ⁹⁹	2020	1,540	57% cisgender women	Adults	Nationally representative	Prospective	Pre-pandemic	Early pandemic
9	Tucker ¹⁰⁰	2022	1,118	52% cisgender women	Participants from RAND ALP study had to report past-year alcohol use.	Nationally representative	Prospective	Pre-pandemic	Early 2021
Specific Populations and Demographic Differences: Adolescents, Young Adults, and Older Adults									
1	Coakley ¹⁰¹	2021	777	62% women; 4% non-cisgender; 31% non-heterosexual	College students	Convenience sample of undergraduates	Cross-sectional	Late 2020	Late 2020
2	Hill ¹⁰²	2022	501	71% cisgender women; 0.6% nonbinary or transgender	College students living in U.S.	Undergraduate research pool	Cross-sectional	Late 2020	Early 2021
3	Kim ¹⁰³	2022	Pre-pandemic: 3,643; Pandemic: 4,970	Pre-pandemic survey: 70% cisgender women, 4% TNB Pandemic survey: 68% cisgender women, 2% TNB	College students	All first- and second-year undergraduates	More than one cross-sectional time point	Pre-pandemic	Early pandemic
4	Schwartz ¹⁰⁴	2022	526	74% cisgender women	College students	Convenience: Online/social media	More than one cross-sectional time point	Early pandemic	Late 2020
5	Brener ¹⁰⁵	2022	7,705	Not reported	Grades 9–12	Nationally representative	Cross-sectional	Early pandemic	Late 2021
6	Graupensperger ¹⁰⁶	2021	572	61% cisgender women	Young adults reporting at least one alcoholic beverage in past year	Convenience	Prospective	Pre-pandemic	Early pandemic
7	Jaffe ¹⁰⁷	2021	1,365	Not reported	College students	Undergraduate research pool	Prospective	Pre-pandemic	Early pandemic
8	Miech ¹⁰⁸	2021	582	51% adolescent girls	12th graders from Monitoring the Future survey	Nationally representative	Prospective	Pre-pandemic	Late 2020
9	Romm ¹⁰⁹	2022	1,084	51% cisgender women; 3% "other"	Young adults	Convenience: Online/social media	Prospective	Pre-pandemic	Late 2020
10	Romm ¹¹⁰	2021	1,082	51% cisgender women; 3% "other"	Young adults	Convenience: Online/social media	Prospective	Pre-pandemic	Late 2020

Appendix 1. Description of Studies Included in This Review (N = 51): Sample Sizes, Recruitment Methods, Study Design, and Timing of Start and Stop of Data Collection* (Continued)

#	First Author	Year	N	Sample Sizes of Subgroups	Sample	Recruitment	Study Design	Data Collection†	
								Start	End
11	Ryerson ¹¹¹	2021	302	2019 survey: 64% cisgender women 2020 survey: 68% cisgender women	College students	Undergraduates in health classes	Prospective	Pre-pandemic	Early pandemic
12	Stevenson ¹¹²	2021	633	43% cisgender women	Young adults	Nationally representative	Prospective/ daily diary	Pre-pandemic	Early pandemic
13	Eastman ¹¹³	2021	6,938	54% cisgender women	U.S. adults age 55 and older	Nationally representative	Cross-sectional	Early pandemic	Early pandemic
Specific Populations and Demographic Differences: Race/Ethnicity									
1	Hanson ¹¹⁴	2021	62	100% cisgender women	American Indian women	Sample from RCT	Prospective	Pre-pandemic	Early pandemic
2	Hicks ¹¹⁵	2022	323	77% cisgender women; 4% TNB participants	Racial/ethnic minority undergraduate students	Convenience: Online/social media	Prospective	Pre-pandemic	Early pandemic
Specific Populations and Demographic Differences: Frontline Workers									
1	Beiter ⁸⁵	2022	102	48% cisgender women	Adult health care workers	Convenience	Cross-sectional	Early pandemic	Early pandemic
2	Hennein ¹¹⁹	2021	1,092	72% cisgender women	Health care workers at teaching hospitals	Convenience	Cross-sectional	Early pandemic	Early pandemic
Specific Populations and Demographic Differences: Couple Relationships, Pregnancy, and Parenting									
1	Ahlers-Schmit ¹¹⁶	2020	114	100% cisgender women	Convenience sample of pregnant women or mothers of infants	Convenience	Cross-sectional	Early pandemic	Early pandemic
2	McMillan ¹¹⁷	2021	49	100% cisgender women	Women age 18 and older who were at least 12 weeks pregnant	Convenience: Online/social media	Cross-sectional	Late 2020	Late 2020
3	Rodriguez ¹¹⁸	2021	118 couples	50% cisgender women	U.S. adults who consumed at least 12 alcoholic beverages in past year and live with partner	Convenience: Online/social media	Cross-sectional	Late 2020	Late 2020
Coping, Stress, and Mental Health									
1	Lannoy ⁷⁴	2022	86	47% cisgender women	People who are HIV+, people with AUD, people with both, and controls with neither	Clinical sample recruited from longitudinal study	Prospective	Early pandemic	Early 2021
2	Tucker ¹⁰⁰	2022	1,118	52% cisgender women	Participants from RAND ALP study who had to report past-year alcohol use	Nationally representative	Prospective	Pre-pandemic	Early 2021
3	Hennein ¹¹⁹	2021	1,092	72% cisgender women	Health care workers at teaching hospitals	Convenience	Cross-sectional	Early pandemic	Early pandemic

Appendix 1. Description of Studies Included in This Review (N = 51): Sample Sizes, Recruitment Methods, Study Design, and Timing of Start and Stop of Data Collection* (Continued)

#	First Author	Year	N	Sample Sizes of Subgroups	Sample	Recruitment	Study Design	Data Collection†	
								Start	End
4	Cummings ¹²⁰	2021	2019: 247; 2020: 868	February 2019: 45% cisgender women; 0% transgender; 2% gender fluid March 2020: 52% cisgender women; 0.3% transgender; 0.6% gender fluid	Adults living in U.S.	Convenience: Online/social media	More than one cross-sectional time point	Pre-pandemic	Early pandemic
5	Devoto ¹²¹	2022	499	100% cisgender women	Adult women living in U.S. who agree to share Facebook data	Panel	Cross-sectional	Late 2020	Late 2020
6	Graupensperger ¹²²	2021	1,181	60% cisgender women	College students	Convenience	Cross-sectional	Early pandemic	Early pandemic
7	Helminen ¹²³	2021	68	100% cisgender women	Community sample of trauma-exposed adult women	Convenience	Cross-sectional	Early pandemic	Late 2020
8	Martinez ¹²⁴	2022	Pre-pandemic: 1,291; Early pandemic: 812	61% cisgender women at baseline	Two cross-sectional NAS samples	Nationally representative	More than one cross-sectional time point	Pre-pandemic	Early pandemic
9	Nesoff ¹²⁵	2021	2,175	85% cisgender women; 4% TNB people	Adults living in U.S.	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic
10	Vogel ¹²⁶	2021	180	65% cisgender women	Recruited through Qualtrics	Convenience: Online/social media	Cross-sectional	Early pandemic	Late 2020
Transgender and Nonbinary Populations									
1	Coakley ¹⁰¹	2021	777	62% women; 4% non-cisgender; 31% non-heterosexual	College students	Convenience sample of undergraduates	Cross-sectional	Late 2020	Late 2020
2	Hicks ¹¹⁵	2022	323	77% cisgender women; 4% TNB participants	Racial/ethnic minority undergraduate students.	Convenience: Online/social media	Prospective	Pre-pandemic	Early pandemic
3	Dyar ¹²⁷	2022	429	73% cisgender women; 15% nonbinary; 5% genderqueer; 4% nonconforming; 3% "another identity"	Same criteria as Dyar 2021 study	Convenience: Online/social media	Prospective	Late 2020	Early 2021
4	Salerno ¹²⁸	2021	509	78% AFAB: 69% cisgender, 9% transgender, 1% nonbinary, 0.9% queer gender	Sexual and gender minority full-time college students	Convenience: Online/social media	Cross-sectional	Early pandemic	Late 2020

Appendix 1. Description of Studies Included in This Review (N = 51): Sample Sizes, Recruitment Methods, Study Design, and Timing of Start and Stop of Data Collection* (Continued)

#	First Author	Year	N	Sample Sizes of Subgroups	Sample	Recruitment	Study Design	Data Collection [†]	
								Start	End
5	Sumetsky ¹²⁹	2022	247	59% cisgender women, 15% TNB	Adults in Allegheny County, PA	Convenience: Online/social media	Cross-sectional	Early pandemic	Late 2020
6	Zhang ¹³⁰	2022	366	47% cisgender women, 4% trans women, 8% trans men, 15% nonbinary, 2% genderqueer, 3% another gender	LGBTQ+ college students	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic
7	Akré ¹³¹	2021	3,245	84.9% cisgender straight; 3.7% cisgender gay or lesbian; 7.0% cisgender bisexual; 3.8% cisgender men who have sex with men and women who have sex with women but do not identify as LGBT; 0.6% transgender	Adults in Atlanta, GA; Chicago, IL; New Orleans, LA; New York, NY; and Los Angeles, CA	Panel	Cross-sectional	Early Pandemic	Late 2020
Sexual Minority Women									
1	Dyar ¹²⁷	2022	429	73% cisgender women; 15% nonbinary; 5% genderqueer; 4% nonconforming; 3% "another identity"	Same criteria as Dyar 2021 study	Convenience: Online/social media	Prospective	Late 2020	Early 2021
2	Salerno ¹²⁸	2021	509	78% AFAB and 69% of sample was cisgender; 9% transgender; 1% nonbinary; 0.9% queer gender	Sexual and gender minority full-time college students	Convenience: Online/social media	Cross-sectional	Early pandemic	Late 2020
3	Dyar ¹³²	2021	212	74% cisgender women; 18% genderqueer or nonbinary; 9% another gender	Age 18–25; live in U.S.; lesbian, bisexual, pansexual, or queer; AFAB; reported four or more drinks at least twice and/or using cannabis in past month	Convenience: Online/social media	Prospective/EMA/daily diary study	Late 2020	Early 2021
4	Peterson ¹³³	2021	170	64% cisgender women	U.S. Adults	Convenience: Online/social media	Cross-sectional	Early pandemic	Early pandemic

*Articles are listed in the order in which they appear in the manuscript. Some studies are listed in more than one section of the table.

[†]Time periods for start and stop of research studies: Pre-pandemic (Before March 2020); Early pandemic (March–May 2020); Late 2020 (June–December 2020); Early 2021 (January–May 2021); Late 2021 (June–December 2021).

Note: AFAB, assigned female at birth; AUD, alcohol use disorder; COVID-19, coronavirus disease 2019; EHR, electronic health record; EMA, ecological momentary assessment; HIV+, human immunodeficiency virus–positive; LGBT, lesbian, gay, bisexual, transgender; LGBTQ+, lesbian, gay, bisexual, transgender, and queer or questioning; MACS, Multicenter AIDS Cohort Study; NAS, National Alcohol Survey; RAND ALP, RAND American Life Panel; RCT, randomized controlled trial; TNB, transgender and nonbinary; WIHS, Women's Interagency HIV Study.

Appendix 2. Description of Studies Included in This Review (N = 51): Measurement of Alcohol Use and Changes in Alcohol Use and Brief Findings*

#	First Author	How was alcohol use measured?	How were changes in alcohol use measured?	Gender Differences	
				Gender differences?	Findings
Prevalence: Single and Repeated Cross-Sectional Studies of General Population Adults					
1	Chandran ⁷⁹	SBIRT and intoxication admissions; AUDIT	Pre- and post/during pandemic data	Yes	Weekly SBIRT screens similar across gender in the pre-pandemic wave, then increased more for cisgender women than cisgender men.
2	Acharya ⁸⁴	Bi-weekly alcohol expenditures	Pre- and post/during pandemic data	No	Both cisgender men and women had decreased in spending on alcohol during pandemic, gender differences in spending during pandemic were not significant.
3	Beiter ⁸⁵	AUDIT	Retrospective recall of pre-pandemic AUDIT	Yes	Cisgender men higher AUDIT than cisgender women; all reported increases in AUDIT compared with pre-pandemic; no gender by time interaction assessed.
4	Boschuetz ⁸⁶	AUDIT-C, quantity and frequency, binge drinking	Retrospective report of current drinking in past vs. drinking now	Yes	Cisgender women reported more AUDIT-C symptoms after start of pandemic, cisgender men did not; no changes in alcohol frequency.
5	Capasso ⁸⁷	Self-perceptions of change in alcohol use	Self-perceived changes in alcohol use	Yes	Among those who reported increased drinking, 61% were cisgender women compared to 39% who were cisgender men (statistically significant). Younger participants more likely to report increased drinking, but no interactions examined between age and gender.
6	Grossman ⁸⁸	Days consumed, drinks consumed, binge drinking	N/A	No	No gender differences in number of days consumed alcohol, total drinks, or binge drinking.
7	Kerr ⁸⁹	Graduated frequency series. DSM-V AUD criteria	Pre- and post/during pandemic data	Yes	Daily drinking increased for both cisgender men and women, as did AUD mild and moderate/severe; moderate/severe AUD increased more for cisgender women than for men; volume, especially wine and spirit volume, increased more for cisgender women than men.
8	Knell ⁹⁰	Ever use and current quantity and frequency from BRFSS	Self-perceived changes in alcohol use	No	No gender differences in self-perceptions of changes in alcohol use since start of pandemic.
9	Walia ⁹¹	Quantity	N/A	Yes	Significant gender differences, but no pairwise differences reported. Cisgender men had double the rates of reporting 13 or more drinks in a week than did cisgender women; other drinking levels did not differ.
Prevalence: Longitudinal/Prospective Studies of General Population Adults					
1	Chartier ⁹²	Alcohol use frequency	Self-report of current drinking at more than one time point	Yes	June 2020: cisgender women drank less than cisgender men; in change models, increased drinking during the month was no different between cisgender men and women, but cisgender women less likely to decrease drinking.
2	French ⁹³	"In the past three months, has alcohol consumption increased, stayed the same, or decreased?"	Self-perceived changes in alcohol use	Yes	Cisgender women significantly less likely than cisgender men to say that alcohol consumption had increased.
3	Lannoy ⁹⁴	AUDIT	Pre- and post/during pandemic data	No	No sex differences, stable AUDIT scores between assessments
4	Leventhal ⁹⁵	Frequency and intensity of drinking	Self-report of current drinking at more than one time point	Yes	Cisgender women comprised higher percentage of minimal and moderate/late decreasing trajectory group; lower percentage in moderate/early increasing, and near daily/early increasing
5	Meanley ⁹⁶	Reported frequency with which they consumed at least five (cisgender women) or six (cisgender men) alcoholic beverages in one sitting.	Pre- and post/during pandemic data	Yes	Cisgender men significantly more likely to be in the 'any binge drinking' trajectory group. Significant gender by time interaction; both cisgender men and women exhibited significant binge drinking decreases at time three compared to time one; decrease larger in cisgender men.

Appendix 2. Description of Studies Included in This Review (N = 51): Measurement of Alcohol Use and Changes in Alcohol Use and Brief Findings* (Continued)

#	First Author	How was alcohol use measured?	How were changes in alcohol use measured?	Gender Differences	
				Gender differences?	Findings
6	Nordeck ⁹⁷	Number of drinking days per week	Self-report of current drinking at more than one time point	Yes	Cisgender women had lower number of drinking days overall; both cisgender women and men increased drinking days; cisgender men increased more.
7	Osaghae ⁹⁸	AUDIT-C	Self-report of current drinking at more than one time point	Yes	36.1% of cisgender women and 32.9% of cisgender men reported hazardous drinking at baseline. Did not test gender by time interaction.
8	Pollard ⁹⁹	Days drank, number of drinks, heavy drinking days	Self-report of current drinking at more than one time point	Yes	Days consumed increased more for cisgender women; number of drinks increased more for cisgender men; heavy drinking days increased more for cisgender women; SIP scale not different
9	Tucker ¹⁰⁰	Quantity and frequency; Alcohol problems assessed with the Short Inventory of Problems ¹⁹⁵	Pre- and post/during pandemic data	Yes	Analyses were stratified by gender. Cisgender men's alcohol use started out higher than cisgender women but declined whereas cisgender women's stayed static. By time 3, drinking levels were about the same. Both cisgender men and cisgender women had increased alcohol problems over time. Coping and social reasons for drinking and loneliness had distinct associations with alcohol use, alcohol problems, and change over time and these varied by gender.
Specific Populations and Demographic Differences: Adolescents, Young Adults, Older Adults					
1	Coakley ¹⁰¹	Quantity and frequency	Self-report of current drinking at more than one time point	Yes	Pre-pandemic (retrospectively reported), cisgender men drank more than cisgender women who drank more than TNB participants; during pandemic, consumption increased across groups, but remained cisgender men > cisgender women > TNB; cisgender men and TNB participants had greatest percent change during pandemic.
2	Hill ¹⁰²	AUDIT	N/A	Yes	Cisgender men had higher AUD symptoms than cisgender women. No pre-pandemic data and no time by gender interaction tested.
3	Kim ¹⁰³	AUDIT	N/A	Yes	Increases in AUD more concentrated among cisgender women
4	Schwartz ¹⁰⁴	"During the last two months, how often have you engaged in alcohol use?"	Retrospective report of current drinking in past vs drinking now	No	Gender differences tested but not significant. Alcohol use worsened between spring and fall 2020.
5	Brener ¹⁰⁵	Quantity and frequency, current binge drinking	Self-perceived changes in alcohol use	Yes	Cisgender women higher than cisgender men for current and binge drinking; no differences in perceived changes since pandemic. Sexual minority students reported higher current alcohol use, binge drinking, and drinking during the pandemic than did heterosexual students.
6	Graupensperger ¹⁰⁶	Quantity/frequency; Drinks per occasion	Self-report of current drinking at more than one time point	Yes	At baseline, cisgender women lower drinking than cisgender men; drinking declined at follow-up; declines were greater for cisgender men than cisgender women (significant interaction).
7	Jaffe ¹⁰⁷	Quantity and frequency	Self-report of current drinking at more than one time point	Yes	Cisgender men greater drinking days, greater drinks per day (both across years and within 2020); college students did not increase drinking in spring 2020 as was typical in previous years; no gender by time interaction reported.
8	Miech ¹⁰⁸	"Think back over the last 2 weeks. How many times have you had five or more drinks in a row?"	Pre- and post/during pandemic data	No	Study found that past 2-week binge declined from spring to summer 2020 overall; no overall gender differences; did not test time by gender interaction.
9	Romm ¹⁰⁹	Past 30-day quantity and frequency	Self-report of current drinking at more than one time point	Yes	Baseline drinking was lower for cisgender men than cisgender women; increases in alcohol use during pandemic greater for cisgender men than cisgender women

Appendix 2. Description of Studies Included in This Review (N = 51): Measurement of Alcohol Use and Changes in Alcohol Use and Brief Findings* (Continued)

#	First Author	How was alcohol use measured?	How were changes in alcohol use measured?	Gender Differences	
				Gender differences?	Findings
10	Romm ¹¹⁰	"Compared to before COVID-19, are you doing more or less of the following: drinking alcohol?"	Self-perceived changes in alcohol use	No	41.3% of participants reported increased alcohol use; no gender difference in self-reported increased alcohol use
11	Ryerson ¹¹¹	Typical total weekly volume of alcohol consumption	Self-report of current drinking at more than one time point	No	No gender differences in alcohol consumption; 2020 cohort decreased alcohol consumption compared with 2019 cohort, especially those > 21; gender interaction with time was statistically significant, but direction not reported.
12	Stevenson ¹¹²	Any drinking; drinking intensity on drinking days	Self-report of current drinking at more than one time point	Yes	Cisgender men more likely to report any drinking; no change in drinking during COVID; no gender interaction reported.
13	Eastman ¹¹³	"Over the past week, have any of your usual daily activities or behaviors changed?"	Self-perceived changes in alcohol use	Yes	Of those who said they were drinking more than usual, 58.9% were cisgender women.
Specific Populations and Demographic Differences: Demographic Differences by Race/Ethnicity					
1	Hanson ¹¹⁴	Quantity/frequency	Retrospective report of current drinking in past vs. drinking now	N/A	24.2% of cisgender women reported drinking more now and 50% reported binge drinking since pandemic started; 54.8% had 8+ drinks per week.
2	Hicks ¹¹⁵	Alcohol use frequency from AUDIT	Pre- and post/during pandemic data	Yes	No differences by sexual identity; cisgender men more likely to decrease alcohol use during pandemic compared to cisgender women. No significant gender differences between cisgender and TNB participants.
Specific Populations and Demographic Differences: Frontline Workers					
1	Beiter ⁹⁵	AUDIT	Retrospective recall of pre-pandemic AUDIT	Yes	Cisgender men higher AUDIT than cisgender women; all reported increases in AUDIT compared with pre-pandemic; no gender by time interaction assessed.
2	Hennein ¹¹⁹	AUDIT-C	N/A	No	Cisgender women were no more likely than men to report AUD symptoms despite higher rates of PTSD.
Specific Populations and Demographic Differences: Couple Relationships, Pregnancy, and Parenting					
1	Ahlers-Schmit ¹¹⁶	Unclear measurement	Self-perceived changes in alcohol use	N/A	Increases in alcohol use significantly higher postpartum than during pregnancy.
2	McMillan ¹¹⁷	Epidemic Pandemic Impact Inventory (EPII) ¹⁹⁶	Self-perceived changes in alcohol use	N/A	Almost one-third (28%) reported that they or their partner's alcohol consumption had increased since the start of the pandemic.
3	Rodriguez ¹¹⁸	Daily Drinking Questionnaire; ¹⁹⁷ Shortened Inventory of Problems-Alcohol and Drugs scale; ¹⁹⁸ Drinking to cope using two visual analog scales	N/A	Yes	Cisgender men reported significantly more alcohol-related problems than did cisgender women, but drinking levels did not differ by gender. Cisgender women's drinking was significantly associated with their partner's drinking and stress; cisgender men's drinking was unrelated to their partner's drinking or stress. Cisgender women's levels of stress were unrelated to their drinking.

Appendix 2. Description of Studies Included in This Review (N = 51): Measurement of Alcohol Use and Changes in Alcohol Use and Brief Findings* (Continued)

#	First Author	How was alcohol use measured?	How were changes in alcohol use measured?	Gender Differences	
				Gender differences?	Findings
Coping, Stress, and Mental Health					
1	Lannoy ⁹⁴	AUDIT	Pre- and post/during pandemic data	No	No sex differences, stable AUDIT scores between assessments
2	Tucker ¹⁰⁰	Quantity and frequency; Alcohol problems assessed with the Short Inventory of Problems ¹⁹⁵	Pre- and post/during pandemic data	Yes	Analyses were stratified by gender. Cisgender men's alcohol use started out higher than cisgender women but declined whereas cisgender women's stayed static. By time 3, drinking levels were about the same. Both cisgender men and cisgender women had increased alcohol problems over time. Coping and social reasons for drinking and loneliness had distinct associations with alcohol use, alcohol problems, and change over time and these varied by gender.
3	Hennein ¹¹⁹	AUDIT-C	N/A	No	Cisgender women were no more likely than cisgender men to report AUD symptoms, despite higher rates of PTSD.
4	Cummings ¹²⁰	Quantity, frequency, and two items adapted from Drinking Motives Questionnaire ¹⁹⁹	Pre- and post/during pandemic data	Yes	No differences in drinking to cope comparing pre- and during pandemic samples (did not look at gender differences). Significant associations between COVID-19 stress and drinking to cope for cisgender men and women but associations were stronger for men.
5	Devoto ¹²¹	AUDIT-C; Alcohol, Smoking, and Substance Involvement Screening Test ²⁰⁰	N/A	N/A	Among cisgender women, high-risk alcohol associated with significantly higher levels of depression and anxiety than lower risk use. Cisgender women with moderate drinking risks reported higher levels of social support than cisgender women with high-risk drinking. Almost 17% said that they increased their drug or alcohol use to cope with relationship problems.
6	Graupensperger ¹²²	Daily Drinking Questionnaire, ¹⁹⁷ binge drinking item from Monitoring the Future questionnaire ²⁰¹	N/A	No	No gender differences in rates of binge drinking or number of drinks per week.
7	Helminen ¹²³	AUDIT-C	N/A	N/A	Nearly half (47.1%) of the sample reported alcohol use consistent with probable AUD.
8	Martinez ¹²⁴	Two drinking to cope questions adapted from the Drinking Motives Questionnaire ¹⁹⁹	Pre- and post/during pandemic data	Yes	Among cisgender women, 13.8% reported drinking to cope prior to the pandemic and 15.6% reported drinking to cope during the pandemic, compared to 10.7% before and 17% during the pandemic for cisgender men. These rates were not statistically different. Among cisgender women, those with moderate to severe symptoms of depression or mild symptoms of anxiety were significantly more likely to report drinking to cope. No significant associations were identified for cisgender men.
9	Nesoff ¹²⁵	Adapted quantity and frequency items from NSDUH	Self-perceived changes in alcohol use	Yes	Odds of high-risk drinking were significantly elevated for cisgender women when controlling for stress, depressive symptoms, and household job loss. Cisgender men had lower odds of high-risk drinking than cisgender women.
10	Vogel ¹²⁶	Short Inventory of Problems—Alcohol and Drugs (SIP-AD) ¹⁹⁸	N/A	No	Sex, race/ethnicity, marital status, and other pandemic-related variables were not associated with SIP-AD scores.
Transgender and Nonbinary Populations					
1	Coakley ¹⁰¹	Quantity and frequency	Self-report of current drinking at more than one time point	Yes	Pre-pandemic (retrospectively reported), cisgender men drank more than cisgender women who drank more than TNB people. During pandemic, consumption increased across groups, but cisgender men still drank more than cisgender women, who drank more than TNB people. Cisgender men and TNB people had greatest percentage change during pandemic.

Appendix 2. Description of Studies Included in This Review (N = 51): Measurement of Alcohol Use and Changes in Alcohol Use and Brief Findings* (Continued)

#	First Author	How was alcohol use measured?	How were changes in alcohol use measured?	Gender Differences	
				Gender differences?	Findings
2	Hicks ¹¹⁵	Alcohol use frequency from AUDIT	Pre- and post/during pandemic data	Yes	No differences by sexual identity; cisgender men were more likely than cisgender women to decrease alcohol use during pandemic. No significant gender differences between cisgender and TNB participants.
3	Dyar ¹²⁷	Daily drinking questionnaire, ¹⁹⁷ quantity	Self-report of current drinking at more than one time point	No	No significant differences between cisgender women and TNB participants for alcohol use or drinking to cope.
4	Salerno ¹²⁸	Indicated if alcohol use had changed since the start of pandemic.	Self-perceived changes in alcohol use	Yes	The effect of increased alcohol use on psychological distress since the start of COVID-19 was nonsignificant for AMAB but was significant for AFAB people.
5	Sumetsky ¹²⁹	Quantity and frequency of drinking and number of days of intoxication	Retrospective report of past drinking vs. current drinking	Yes	Compared to cisgender women, cisgender men had more drinks on drinking days during pandemic, and more days intoxicated pre-pandemic. There were no significant differences for TNB people.
6	Zhang ¹³⁰	AUDIT	Self-perceived changes in alcohol use	Yes	Transgender and GNC people had lower problem drinking, and were less likely to have perceived increase in their drinking during COVID-19 than cisgender participants.
7	Akré ¹³¹	PROMIS Alcohol Use Negative Consequences 7-item short-form scale	Self-report of changes in alcohol consumption due to the pandemic	Yes	No substantial difference in rates of increased alcohol use between transgender and cisgender, straight respondents, but some elevated use among cisgender, sexual minority respondents.
Sexual Minority Women					
1	Dyar ¹²⁷	Daily drinking questionnaire, ¹⁹⁷ quantity	Self-report of current drinking at more than one time point	No	No significant differences between cisgender women and TNB participants for alcohol use or drinking to cope.
2	Salerno ¹²⁸	Indicated if alcohol use had changed since the start of pandemic.	Self-perceived changes in alcohol use	Yes	The effect of increased alcohol use on psychological distress since the start of COVID-19 was non-significant for AMAB but significant for AFAB people.
3	Dyar ¹³²	AUDIT, Drinking motives, Brief Young Adult Alcohol Consequences Questionnaire ²⁰²	Self-perceived changes in alcohol use	N/A	Nearly all participants reported more anxiety and depression in the past month compared to before the pandemic; approximately half also reported increases in alcohol and cannabis use.
4	Peterson ¹³³	AUDIT	Self-perceived changes in alcohol use	Yes	SMW more likely to report alcohol use increased since beginning of pandemic than SMM and cisgender heterosexual women

*Within each section, studies are listed in the order in which they are cited. Some studies are listed in more than one section.

Note: AFAB, assigned female at birth; AMAB, assigned male at birth; AUD, alcohol use disorder; AUDIT, Alcohol Use Disorders Identification Test; AUDIT-C, Alcohol Use Disorders Identification Test-Consumption; BRFSS, Behavioral Risk Factor Surveillance System; COVID-19, coronavirus disease 2019; DSM-V, *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition; GNC, gender nonconforming; N/A, not applicable (in the Gender Differences column, N/A indicates that the sample includes cisgender women only); NSDUH, National Survey on Drug Use and Health; PROMIS, Patient-Reported Outcomes Measurement Information System; PTSD, post-traumatic stress disorder; SBIRT, screening, brief intervention, and referral to treatment; SIP-AD, Short Inventory of Problems-Alcohol and Drugs; SMM, sexual minority men; SMW, sexual minority women; TNB, transgender and nonbinary.