HHS Public Access

Author manuscript

J Addict Med. Author manuscript; available in PMC 2024 March 31.

Published in final edited form as:

J Addict Med. 2023 ; 17(5): 528–535. doi:10.1097/ADM.0000000000001169.

The postpartum period: An opportunity for alcohol screening and counseling to reduce adverse health impacts

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Abstract

Objectives: The postpartum period presents an opportunity to engage in discussions about alcohol consumption and related health harms. This study examined the prevalence of alcohol consumption among a sample of postpartum persons with a recent live birth and screening and brief intervention (alcohol SBI) or counseling by their providers.

Methods: We analyzed 2019 data from a telephone survey conducted 9 to 10 months postpartum among individuals who responded to the standard Pregnancy Risk Assessment Monitoring System survey in 6 states. Weighted prevalence estimates were calculated for alcohol consumption and alcohol SBI after birth through up to 10 months postpartum.

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Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Note: The following text focuses on pregnancy-related or associated events. It makes use of concepts or descriptions that align with the traditional gender definitions by using concepts such as "maternal", "pregnant women", or "women". However, the concepts described are translatable to all persons that experience a pregnancy, regardless of their gender identity. Wherever possible, we have used the term "pregnant persons" to describe the individuals in this study, unless citing research studies that were conducted exclusively among pregnant women.

CRediT author statement: Amy Board: Conceptualization, Methodology, Formal analysis, Writing-Original Draft. **Youngjoo Park:** Conceptualization, Formal analysis. **Clark H. Denny:** Conceptualization, Methodology, Writing-Review & Editing. **Shin Kim:** Conceptualization, Methodology, Writing-Review & Editing, Supervision. **Beatriz Salvesen von Essen:** Methodology, Validation, Writing-Review & Editing. **Denise V. D'Angelo:** Conceptualization, Methodology, Writing-Review & Editing. **Kathryn Miele:** Writing-Review & Editing. **Janae Dunkley:** Writing-Review & Editing. **Brenda Bauman:** Methodology, Resources.

Conflicts of interest: None

Results: Among 1,790 respondents, 53.1% reported consuming alcohol postpartum. Among those who drank postpartum, 70.8% reported being asked about alcohol use by a healthcare provider. Slightly over half of respondents who drank postpartum and were trying to get pregnant (52.4%) or were not using birth control at the time of the survey (59.8%) reported being asked about alcohol use. Approximately 25% of respondents who drank alcohol postpartum were advised about risky alcohol levels by a healthcare provider. Small proportions of individuals who drank alcohol postpartum and were pregnant or trying to get pregnant at the time of the survey were advised to reduce or stop drinking alcohol (10.6% and 2.3%, respectively).

Conclusions: These findings suggest missed opportunities to promote health and prevent adverse alcohol-related health outcomes during the postpartum period through evidence-based tools such as alcohol SBI.

Keywords

alcohol; drinking; screening; brief intervention; postpartum; PRAMS

INTRODUCTION

Excessive alcohol consumption is defined as consuming 8 or more drinks per week for women (15 or more for men), binge drinking (drinking 4 or more alcoholic beverages on a single occasion for women or 5 or more drinks on a single occasion for men), and any drinking by people younger than age 21 or people who are pregnant.[1] Excessive alcohol consumption can lead to adverse health outcomes throughout the life course. There is no known safe amount of alcohol consumption during pregnancy.[2] However, more than 10% of women who are pregnant in the U.S. report drinking alcohol in the past month, with 5% reporting past-month drinking.[3] Alcohol consumption during pregnancy is associated with adverse infant outcomes, including fetal alcohol spectrum disorders (FASDs), and may increase risk of miscarriage and stillbirth.[2] Excessive alcohol use can cause a number of health concerns for pregnant and postpartum people including increased risk of depression, as well as liver disease and breast and other cancers later in life.[4]

Alcohol screening and brief intervention (alcohol SBI) or counseling is an effective approach for reducing excessive alcohol consumption among adults,[5] including pregnant and postpartum individuals.[6,7] The American College of Obstetricians and Gynecologists (ACOG) and the U.S. Preventive Services Task Force (USPSTF) recommend alcohol SBI using a validated screening tool for all adults, followed by a brief motivational intervention or counseling for those who screen positive for excessive alcohol use (including any alcohol use during pregnancy).[4,8] Additionally, ACOG recommends alcohol screening for pregnant people in the first trimester and monitoring alcohol use during follow-up and postpartum visits,[4] including providing information during a postpartum visit on infant exposure to alcohol through human milk and discussing postpartum emotional health, long-term management of chronic health conditions, and options for contraceptive use.[4,9]

While studies estimate that over 90% of pregnant persons are screened prenatally for alcohol use,[10] research on postpartum alcohol screening is more limited. In one study, less than one-third of postpartum women reported being asked about alcohol use by a healthcare provider

during the year after giving birth.[11] The postpartum period is an important opportunity for health promotion and intervention for both the postpartum individual and the infant that has been garnering increased awareness and attention more recently. Alcohol and other substance use is correlated with a higher prevalence of postpartum depression.[12] Only 1 in 10 parenting women who needed treatment for a substance use disorder in the past year received treatment; among these, most needed treatment for alcohol use disorder.[13] Drug-induced deaths, including those involving alcohol, are a leading cause of pregnancy-associated mortality, and the majority of these occur after the initial 6 week postpartum period and up to one year after birth.[14] ACOG recommends that individuals have ongoing interactions with the healthcare system and receive individually-tailored services and support during the postpartum period[9] and has recently pushed for expanded Medicaid coverage through 12 months postpartum to reduce interruptions in access to care during this critical period.[15] Given the paucity of literature and the importance of postpartum alcohol SBI for reducing adverse health outcomes associated with excessive alcohol use, we aimed to describe the prevalence of alcohol consumption up to 10 months postpartum among persons with a recent live birth in 6 states, and whether they reported receiving alcohol SBI by their providers.

METHODS

Study Sample

We analyzed 2019 data from the Pregnancy Risk Assessment Monitoring System (PRAMS), a population-based surveillance system designed to capture pregnancy-related information before, during, and after birth. Using birth certificates, jurisdictions sample between 1,300 and 3,400 individuals with a recent live birth (occurring in the preceding 2 to 6 months) each year.[16] Sampled individuals are contacted by mail, and then by telephone if no response to the mail survey is received. Data collection tools and procedures are standardized among participating jurisdictions.[17] The PRAMS protocol has been approved by the institutional review boards of the Centers for Disease Control and Prevention (CDC) and all participating jurisdictions.

In addition to the standard PRAMS survey, there are optional supplemental surveys, such as the opioid supplement and opioid callback survey (https://www.cdc.gov/prams/special-projects/opioid-supplement-call-back-survey/index.html). Data were included from the 6 states that participated in the optional PRAMS opioid supplement and callback survey in 2019 and achieved a response rate of ≥50% on their regular PRAMS survey (Kentucky, Louisiana, Massachusetts, Missouri, Pennsylvania, and Utah). The opioid callback survey was a follow-up survey related to substance use that included questions on postpartum alcohol consumption and SBI (Figure 1). The opioid callback survey was sent out to all respondents of the regular PRAMS survey who did not opt-out of being recontacted between 9 and 10 months postpartum. Because prescription opioid use was the focus of the opioid supplement and callback survey, all states in this study oversampled counties with high rates of opioid overdose.[18] Data were weighted to account for sampling design with adjustments for nonresponse and are representative of all births in each state from January through May of 2019.

Measures

Postpartum alcohol use, including binge drinking (defined as drinking 4 or more alcoholic drinks during a two-hour time span), screening by a healthcare provider in person or on a form, and brief intervention or counseling (through 9 to 10 months after live birth) was assessed using questions on the opioid callback survey (see Figure 1). Sociodemographic variables, including age, race/ethnicity, and education level, were obtained from the birth certificate. Other sociodemographic variables, behaviors, and experiences during pregnancy, including screening for depression and for emotional/physical abuse, were obtained through the main PRAMS survey. The callback survey also included questions about whether respondents were currently pregnant, trying to get pregnant, or using birth control. Use of a more effective method of birth control at the time of the callback survey was defined as any of the following: sterilization, intrauterine device, implant, depot-medroxyprogesterone acetate injection, or contraceptive pills, patches, or vaginal rings, while less effective methods were defined as use of condoms, natural family planning or the rhythm method, withdrawal, or no method or abstinence.[19,20] We also assessed prenatal discussions about alcohol consumption reported on the regular PRAMS survey (https://www.cdc.gov/prams/pdf/questionnaire/Phase-8-Core-Questions-508.pdf). Using a question from the regular PRAMS survey, we conducted a sensitivity analysis (data not shown) to explore whether alcohol SBI results were substantially different among respondents who attended a postpartum visit 4 to 6 weeks after birth (N = 1,651; 92.3% of respondents who answered the question about attending a postpartum visit). The callback survey did not capture information about whether a respondent attended any non-pediatric healthcare visits from the time of the postpartum visit 4 to 6 weeks after birth until the time of the survey.

Statistical Analyses

Prevalence estimates and Wald 95% CIs were calculated for postpartum alcohol screening using the proc surveyfreq function in SAS software (v9.4; SAS Institute; Cary, NC). Rao-Scott chi-square tests were run to test for association. Prevalence estimates and 95% CIs were also calculated for postpartum alcohol consumption and postpartum alcohol brief intervention or counseling overall and among select subgroups (Figure 1). Additionally, prevalence estimates and 95% CIs were calculated for prenatal alcohol screening among respondents who reported they received any prenatal care by select sociodemographic characteristics.

RESULTS

Among 1,790 respondents who answered the question about postpartum alcohol consumption 9 to 10 months after a live birth, 53.1% (95% CI: 49.7–56.6) reported drinking any alcohol and among these, 14.9% (11.8–18.0) reported binge drinking at any time after the baby was born until the time the survey was conducted (Figure 2). Approximately 23% (23.2%, 1.1–45.3) of respondents who reported they were trying to get pregnant and 14.2% (2.2–26.2) of respondents who were pregnant at the time of the survey reported binge drinking at some point during the postpartum period.

The prevalence of prenatal alcohol screening was 94.5% (92.9–96.1; see Table, Supplemental Digital Content 1) and postpartum alcohol screening was 65.7% (62.2–69.1) (Table 1). Postpartum screening was higher for Hispanic persons (78.0%, 71.4–84.5) than for persons who were White, non-Hispanic (67.1%, 62.7–71.4), persons who were Black, non-Hispanic (55.8%, 47.0–64.6), and persons of another race/ethnicity (non-White and non-Hispanic; 53.9%, 40.2–67.6). Based on the *P* value, prevalence of postpartum alcohol screening was significantly different among respondents who were screened for depression (68.3%, 64.6–72.0; $P = 0.011$) and for emotional/physical abuse (72.5%, 68.2–76.8; $P < 0.001$), compared with respondents who were not screened for depression (53.2%, 41.6–64.9) or abuse (57.6%, 51.6–63.5) postpartum. Additionally, a higher proportion of participants who received prenatal alcohol screening, compared with those who did not, reported receiving postpartum alcohol screening (67.6%, 64.1–71.1 vs. 32.4%, 28.9–35.9; Table 1). When we limited the analysis to respondents who reported attending a 4-to-6-week postpartum visit, results for postpartum alcohol consumption and SBI were similar to those in the main analysis among all respondents (data not shown).

Among respondents who reported drinking any alcohol since their baby was born, 70.8% (66.3–75.2) also reported being asked about alcohol use by a healthcare provider at any point up to 9 to 10 months postpartum (Figure 3). Postpartum screening prevalence was 52.4% (27.4–77.4) for those who were trying to get pregnant at the time of call back survey and drank alcohol any time postpartum and 59.8% (48.4–71.2) for those who were not using any method of birth control at the time of the call back survey and drank alcohol at any time postpartum. Approximately 1 in 4 respondents (25.4%, 21.1–29.7) who reported drinking alcohol at any time in the postpartum period, for whom a brief intervention would be recommended if excessive alcohol use was reported, received advice from a healthcare provider about harmful or risky levels of drinking. Among those who reported drinking any alcohol since their baby was born, 3.9% (2.5–5.4) overall, 10.6% (0.0–28.0) of those who were pregnant, and 2.3% (0.0–6.8) of those who were trying to get pregnant at the time of the survey were advised by a healthcare provider to reduce alcohol use at any point up to 9 to 10 months postpartum.

DISCUSSION

In a sample of respondents who participated in PRAMS and completed follow-up surveys 9 to 10 months postpartum, approximately two-thirds reported being asked about alcohol use by a healthcare provider in person or on a form between delivery and 9 to 10 months postpartum. One in four respondents reporting any postpartum drinking was advised by a healthcare provider about harmful or risky levels of alcohol use at any point up to 9 to 10 months postpartum. Although we could not determine how many of the individuals screened were drinking alcohol at levels that would indicate the need for a brief intervention, the finding of low levels of postpartum alcohol screening and brief intervention among individuals who reported drinking postpartum in this sample represents an opportunity for additional patient education both during and beyond the initial postpartum visit. Lower attendance at a postpartum visit compared to prenatal care visits may be a factor in the lower postpartum screening numbers compared to prenatally.[21] In addition, the risk of alcohol use to the infant and the definition of excessive drinking reflected in the

recommendations differ for prenatal and postpartum populations.[1,2] However, individuals reporting excessive drinking prior to pregnancy might resume excessive drinking during the postpartum period,[22] and alcohol SBI, in combination with supportive services, resources to reduce excessive drinking, and linkage to treatment where indicated, can play a key role in reducing associated health risks throughout the lifespan.[4,6,23] Several factors may be associated with providers not screening for alcohol use, such as a lack of resources available to providers for conducting SBI, competing priorities, and limited time with patients.[24] These factors may be exacerbated in the postpartum period, particularly in the 12 weeks after birth when the postpartum person is transitioning out of perinatal care services. Due to interruptions in health insurance coverage and other barriers,[25] many individuals may not see a general practitioner or other health provider until their next pregnancy. Opportunities exist for healthcare providers in multiple specialties, including addiction medicine, to establish referral systems, protocols, and other strategies for ongoing clinical care during the critical first year after birth.[26] Importantly, screening alone may not be sufficient for individuals who report excessive alcohol use without being accompanied by a brief intervention and resources to reduce excessive alcohol use.[6]

In this study, the highest prevalence of postpartum alcohol screening was among Hispanic respondents, and the lowest prevalence was among non-Hispanic Black respondents and respondents of another race/ethnicity (non-White and non-Hispanic). Prior research has found that persons who were Black or American Indian/Alaskan Native were more likely to be screened for prenatal alcohol or other substance use compared to persons who were White, but that persons who were Hispanic were less likely to be screened compared to persons who were not Hispanic.[10] The authors of this study raised concerns based on their findings that some subpopulations of pregnant people may be screened more often than others due to clinician biases about who uses substances.[10] Although screening should be conducted with the goal of providing individuals with education, resources, and support to promote healthier behaviors, inequitable screening practices that are rooted in biases may lead to harmful results. For example, studies have found that despite similar rates of substance use during pregnancy, individuals from racial and ethnic minority groups, particularly Black persons, who test positive for prenatal substance use are reported to child protective services at much higher rates than White persons who test positive for prenatal substance use.[27] However, racial/ethnic differences in postpartum alcohol screening may also in part reflect disparities in access to postpartum care.[28]

We observed significant differences in postpartum alcohol screening among respondents who were asked by a healthcare provider at any point up to 9 to 10 months postpartum if they were feeling down or depressed or if someone was hurting them emotionally or physically, as compared with those who were not asked. This may reflect an increased likelihood of performing alcohol screening based on results of these other screenings or may reflect that some providers are more likely to perform screening in general. This may also be reflected in the finding that providers who screened for alcohol use prenatally may also be more likely to perform screening for alcohol use postpartum. Regardless, combining substance use screening with screening for depression or anxiety (such as the Edinburgh Postnatal Depression Scale[29]) and intimate partner violence or abuse might increase uptake and reduce the burden of administrating alcohol SBI among healthcare

providers. Depression and substance use often co-occur among postpartum persons,[12] as do substance use and intimate partner violence;[30] thus, combined screening for all three may also facilitate comprehensive interventions, referrals, and treatment.

Although temporality related to contraception use could not be established, at the time of the survey, nearly half of individuals trying to get pregnant and those not using birth control who reported consuming alcohol at any point postpartum did not report receiving any postpartum alcohol screening. The prevalence of brief intervention among individuals who were pregnant or trying to get pregnant at the time of the survey was approximately 1 in 5 respondents, though it could not be determined whether these individuals drank alcohol while pregnant or trying to become pregnant, or whether these individuals were drinking at the time they received a postpartum alcohol screening, at which point the brief intervention would become applicable. Additionally, due to small samples of these subgroups and wide confidence intervals, these prevalence estimates should be interpreted with caution.

Standardization of alcohol SBI across a health system's clinic environments to promote alcohol SBI integration into USPSTF-recommended clinical visits is one strategy that may improve SBI and overall patient education about alcohol consumption. This is especially important considering the burden of alcohol- and drug-related morbidity and mortality that occurs in the later postpartum period, after recommended postpartum visits.[14] Ensuring access to care and incorporating SBI in a variety of healthcare settings may improve identification of excessive alcohol or other substance use and related health harms during the postpartum period. For example, pediatric and family practice clinics may screen parents for alcohol and other substance use as well as offer brief counseling, resources, and referrals when necessary. The emergence of virtual, online, or electronic versions of alcohol SBI could also expand the reach and address barriers to the traditional approach.[31] For those patients who have a substance use disorder, prompt identification and linkage to treatment that is parent-centered, family-oriented, provides compassionate care, and accounts for the bonding and caretaking needs of the infant is ideal.[32,33] Addiction medicine and behavioral health providers can play a critical role in this process by considering the unique stressors and challenges faced by individuals during the postpartum period in treatment planning, integrating therapies for concurrent substance use and depression or other mood disorders, identifying opportunities to increase access to care such as through telehealth services, and coordinating with the full continuum of providers involved in the patient's care.[34]

It is possible that some clinicians are not performing alcohol screening due to concerns about mandatory reporting. Researchers have documented the negative effects that punitive laws equating substance use during pregnancy with child abuse and neglect can have on alcohol and drug screening rates,[10] as well as prenatal care-seeking behaviors by pregnant people.[35] The findings from our study shed light on the importance of improving efforts for alcohol SBI for postpartum people to reduce the burden of adverse health outcomes associated with excessive alcohol use. Systemic barriers that may hinder postpartum visit attendance and alcohol SBI include punitive parental substance use policies,[10,35] systemic racism in healthcare systems,[35] and discrimination and disparities in access to healthcare services;[28] addressing these may help enhance SBI for pregnant and postpartum persons.

This analysis was subject to several limitations. First, while findings are representative of live births during the study period in each state, findings may not be generalizable beyond the 6 states in this study, each of which had high rates of opioid overdose.[18] Second, survey responses are self-reported and may have been influenced by recall and social desirability biases. Third, we were limited in our ability to assess the timing of alcohol use because the question regarding alcohol use covered the entire period from birth until the time of the survey. For example, although we could assess whether respondents who were pregnant at the time of the survey had used alcohol or had been screened for alcohol use at any time during the postpartum period, we could not determine whether these individuals were currently using alcohol, whether their alcohol use was at levels requiring a brief intervention, or whether their physicians were aware of their pregnancy status, contraceptive use, or pregnancy intentions. Finally, we could not distinguish which respondents had been seen by a healthcare provider between the time of their postpartum visit through the time of the callback survey; respondents with few or no healthcare visits would have had fewer opportunities to receive alcohol SBI, and our rates of postpartum visit attendance were higher than those observed in some but not all other studies.[36] However, sensitivity analysis among respondents who reported a postpartum visit 4 to 6 weeks after birth revealed no substantial differences.

CONCLUSIONS

The postpartum period presents an opportunity to identify and intervene to reduce health risks of excessive alcohol use, support people in managing postpartum difficulties without harmful use of alcohol or other substances, and reduce the potential for alcohol consumption during a future pregnancy. However, clinical intervention points and resources for reducing excessive alcohol use postpartum are more limited than in the prenatal period. In this analysis of a sample of postpartum persons surveyed 9 to 10 months after a live birth in 6 states, over half reported alcohol use at any time during the postpartum period, yet 1 in 3 respondents had not received postpartum alcohol screening. One in four respondents who reported drinking alcohol at any time during the postpartum period were advised about risky alcohol use postpartum, and 1 in 5 respondents who drank postpartum and were pregnant, trying to get pregnant, or not using birth control at the time of the survey were advised about risky alcohol use at any time postpartum. These findings suggest a need to identify opportunities for additional health promotion efforts and highlight the importance of improved coordination of care to enhance postpartum alcohol SBI and expanded supportive and treatment resources to minimize adverse alcohol-associated health outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

ACKNOWLEDGEMENTS:

Carolyn Cody Bennett, MPH, Leslie Harrison, Lucas Gosdin, PhD, PRAMS (Pregnancy Risk Assessment Monitoring System) Working Group: Tammie Yelldell, MPH, Kathy Perham-Hester, MS, MPH, Enid Quintana-Torres, MPH, Letitia de Graft-Johnson, DrPH, MHSA, Ashley Juhl, MSPH, Jennifer Morin, MPH, George Yocher, MS, Fern Johnson-Clarke, PhD, Tara Hylton, MPH, Fay Stephens, Matt Shim, PhD, MPH, Julie Doetsch, MA, Brittany Reynolds, MPH, Jennifer Pham, Lisa Williams, Tracey D. Jewell, MPH, Rosaria Trichilo, MPH, Virginia

Buchanan, LMSW, Laurie Kettinger, MS, Hafsatou Diop, MD, MPH, Peterson Haak, Mira Grice Sheff, PhD, MS, Brenda Hughes, MPPA, Venkata Garikapaty, PhD, Miriam Naiman-Sessions, PhD, MPH, Jessica Seberger, Tami M. Conn, David J. Laflamme, PhD, MPH, Sharon Smith Cooley, MPH, Sarah Schrock, MPH, Anne Radigan, Lauren Birnie, MPH, Kathleen Jones-Vessey, MS, Grace Njau, MPH, Ayesha Lampkins, MPH, CHES, Cate Wilcox, MPH, Sara Thuma, MPH, Wanda Hernandez Virella, MPH, Karine Tolentino Monteiro, MPH, Harley T. Davis, PhD, MPSH, Maggie Minett, Tanya Guthrie, PhD, Ransom Wyse, MPH, CPH, Nicole Stone, MPH, Peggy Brozicevic, Kenesha Smith, PhD, MSPH, Linda Lohdefinck, Melissa Baker, MA, Fiona Weeks, MSPH, Lorie Chesnut, PhD

This project was supported in part by an appointment to the Research Participation Program at the Centers for Disease Control and Prevention administered by the Oak Ridge Institute for Science and Education through an interagency agreement between the U.S. Department of Energy and the Centers for Disease Control and Prevention.

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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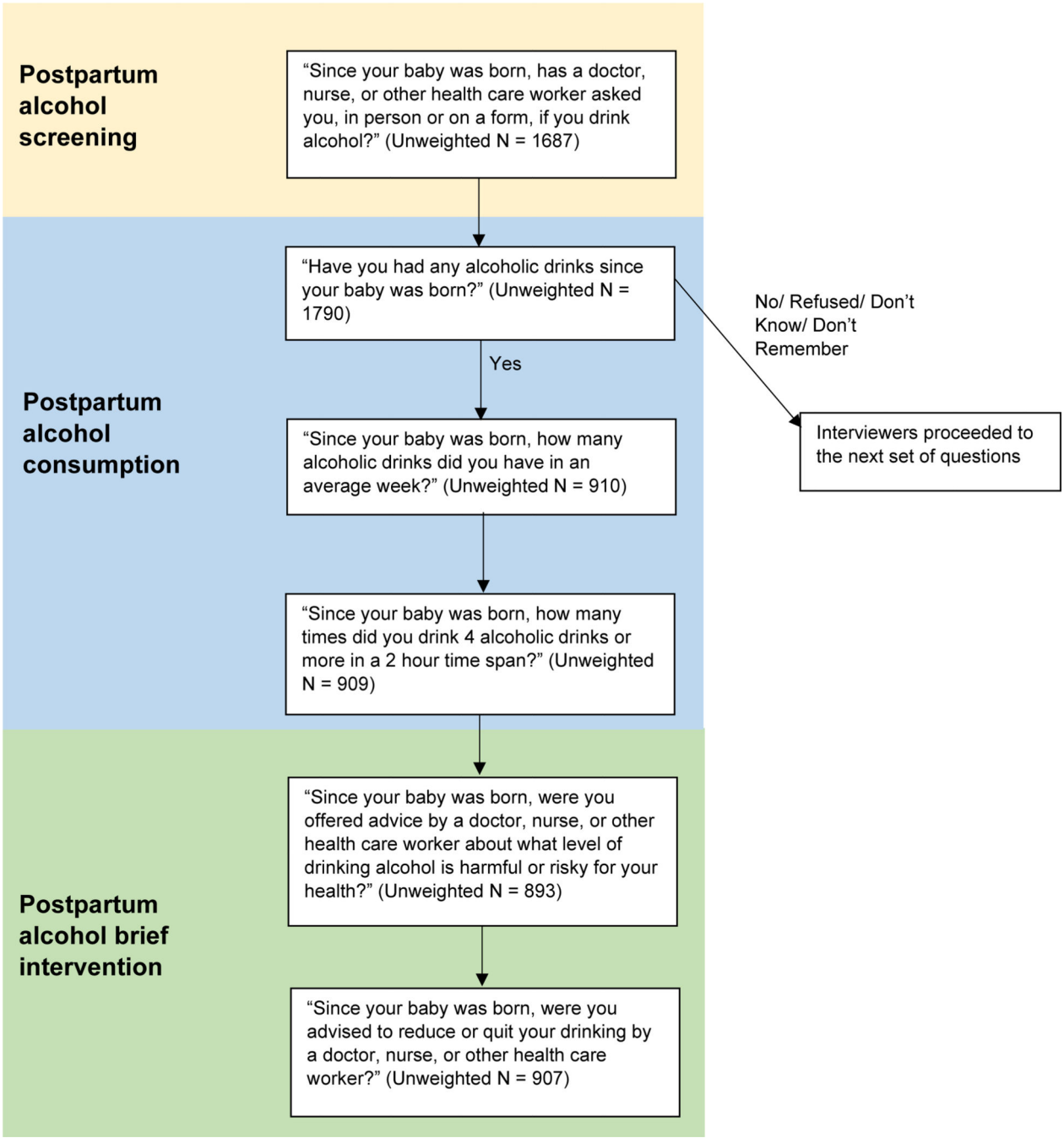

FIGURE 1:
Flow diagram of questions related to postpartum alcohol consumption, screening, and brief intervention on the Pregnancy Risk Assessment Monitoring System (PRAMS) opioid callback survey

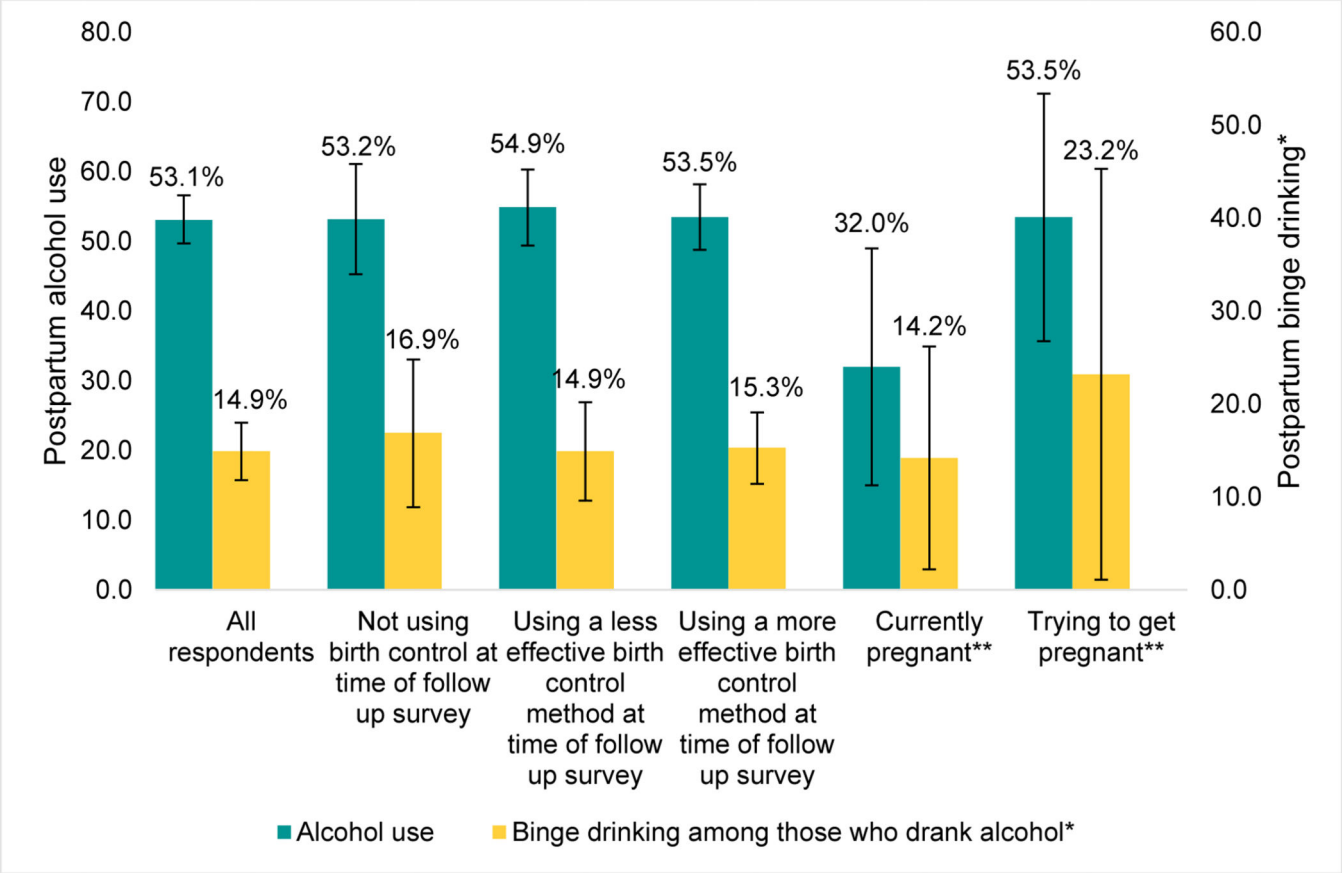

FIGURE 2:

Prevalence of postpartum alcohol use (unweighted N=1790) and binge drinking (unweighted N=909), overall and by select subgroups,[a] six states,[b] 2019

[a] Trying to get pregnant was asked only of those participants who reported they were not using birth control at the time of the follow-up survey. Use of a more effective birth control method was defined as sterilization, intrauterine device, or implant, depot-medroxyprogesterone acetate injection, or contraceptive birth control pills, patches, or vaginal rings, while less effective methods were defined as use of condoms, natural family planning or the rhythm method, withdrawal, or no method or abstinence.

[b] Kentucky, Louisiana, Massachusetts, Missouri, Pennsylvania, and Utah

* Binge drinking prevalence was calculated among those who reported any alcohol use postpartum; binge drinking could have been reported at any time since the baby was born

** For binge drinking, the denominator contains <60 respondents; interpret prevalence estimates with caution

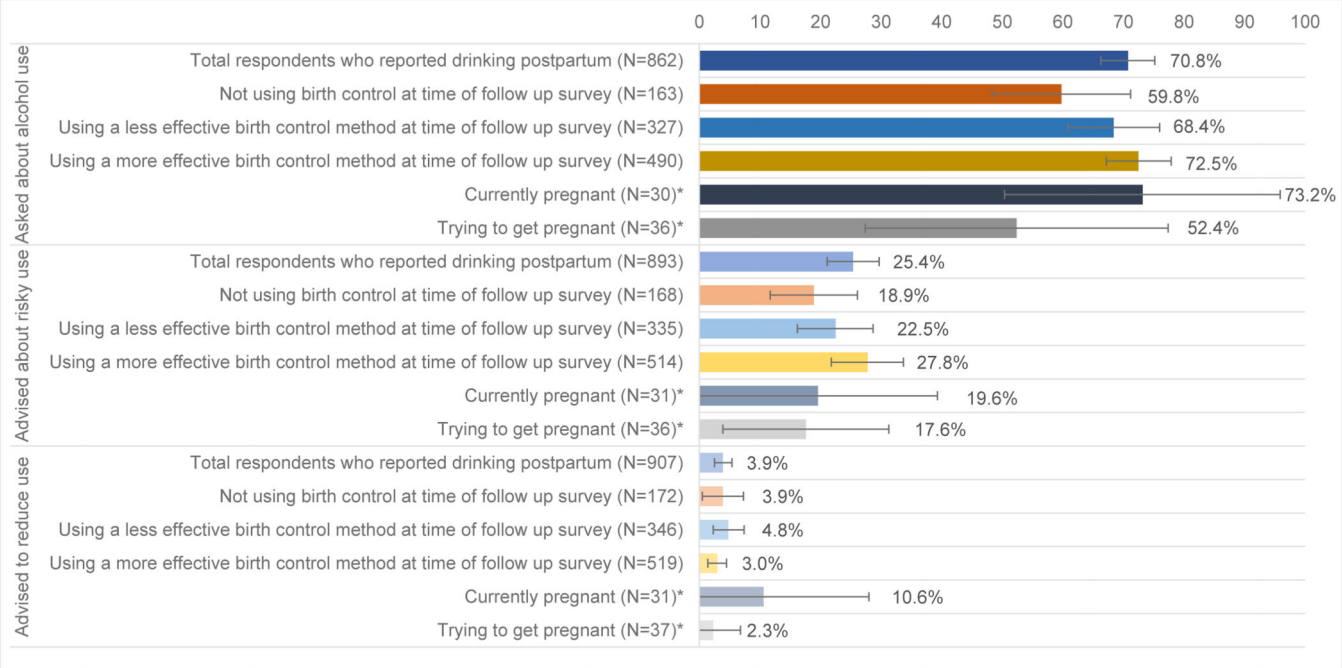

FIGURE 3:

Prevalence of postpartum alcohol screening and brief intervention among those who reported drinking alcohol postpartum (unweighted N = 909),[a] six states,[b] 2019[c]

[a] Due to the cross-sectional nature of the survey, it could not be determined at what point alcohol was consumed postpartum and whether or not drinking alcohol overlapped with use of birth control, current pregnancy, or trying to get pregnant.

[b] Kentucky, Louisiana, Massachusetts, Missouri, Pennsylvania, and Utah

[c] Trying to get pregnant was asked only of those participants who reported they were not using birth control at the time of the follow-up survey. Use of a more effective birth control method was defined as sterilization, intrauterine device, or implant, depot-medroxyprogesterone acetate injection, or contraceptive birth control pills, patches, or vaginal rings, while less effective methods were defined as use of condoms, natural family planning or the rhythm method, withdrawal, or no method or abstinence.

* <60 respondents in the denominator; interpret prevalence estimates with caution

TABLE 1:

Prevalence of alcohol screening postpartum among individuals with a recent live birth, six states,[a] 2019

	Asked about alcohol use any time from birth to 10 months postpartum (Unweighted N = 1687)[b,c]		
Characteristic	**Unweighted N**	**Weighted %**	**95% CI**
Total	1121	65.7	62.2–69.1
Age			
< 20 years[d]	26	46.7	25.8–67.6
20–24 years	168	63.8	56.3–71.4
25–29 years	339	64.0	57.6–70.5
30–34 years	342	65.1	58.5–71.7
≥ 35 years	246	73.4	66.3–80.5
Race/ethnicity [e]			
Black, non-Hispanic	215	55.8	47.0–64.6
Hispanic	171	78.0	71.4–84.5
White, non-Hispanic	635	67.1	62.7–71.4
Another race/ethnicity	91	53.9	40.2–67.6
Education			
Less than high school	101	63.8	52.3–75.2
High school graduate	240	58.0	50.3–65.6
More than high school	766	68.7	64.6–72.8
Rural/urban status			
Urban	1016	66.1	62.4–69.8
Rural	105	63.2	53.9–72.4
Insurance postpartum			
Private	655	68.4	63.9–72.8
Medicaid	352	62.3	55.9–68.8
Uninsured	89	64.5	53.0–76.0
Asked by a healthcare provider if feeling down or depressed [f]			
Yes	941	68.3	64.6–72.0
No	89	53.2	41.6–64.9
Asked by a healthcare provider if experienced abuse [g]			
Yes	640	72.5	68.2–76.8
No	384	57.6	51.6–63.5
Reported drinking 3 months prior to pregnancy			
Yes	640	71.6	67.4–75.9
No	475	58.3	52.9–63.7
Reported drinking during the last 3 months of pregnancy [h]			
Yes	42	69.0	51.9–86.1

	Asked about alcohol use any time from birth to 10 months postpartum (Unweighted N = 1687)[b,c]		
Characteristic	**Unweighted N**	**Weighted %**	**95% CI**
No	422	63.8	58.4–69.1
Reported drinking postpartum			
Yes	604	70.8	66.3–75.2
No	516	59.8	54.4–65.1
Reported binge drinking postpartum			
Yes	111	66.8	55.7–77.8
No	1005	65.5	61.9–69.2
Asked about alcohol use during a prenatal visit [i]			
Yes	1040	67.6	64.1–71.1
No	495	32.4	28.9–35.9

[a] Kentucky, Louisiana, Massachusetts, Missouri, Pennsylvania, and Utah

[b] Statistical significance was assessed using chi-square tests. Race/ethnicity, education, being asked by a healthcare provider if feeling down or depressed, being asked by a healthcare provider if experiencing abuse, reporting drinking in the 3 months prior to pregnancy, reporting drinking postpartum, and being asked about alcohol use during a prenatal visit were statistically significant at $p<0.05$.

[c] Due to missing responses, some variables may not add up to the total amount reported here

[d] <60 respondents; interpret with caution

[e] Due to small sample sizes, the following were grouped into the category of another race/ethnicity: American Indian/Alaskan Native, Asian/Pacific Islander, mixed race, and another race not previously specified

[f] Participants were asked whether they were asked by a healthcare provider during a postpartum visit 4–6 weeks after birth if they were feeling down or depressed

[g] Participants were asked whether they were asked by a healthcare provider during a postpartum visit 4–6 weeks after birth if someone was hurting them emotionally or physically

[h] This was an optional question on the main PRAMS survey. Only 3 states who participated in the callback survey (Louisiana, Missouri, and Pennsylvania) included this question, for a total sample size of 1022 respondents in our study who were asked about alcohol use during the last 3 months of pregnancy

[i] Among those who had any prenatal care (1643 out of 1687); 97.4% of individuals who responded to the question about whether they were asked about alcohol use postpartum