

Alcohol consumption during pregnancy: the result of a risky consumption trajectory?

*Claudia de Souza Lopes*¹

doi: 10.1590/0102-3111XEN129523

The article by Cabral et al.¹, published in this issue of CSP, addresses a public health problem in Brazil and worldwide: the high prevalence of alcohol consumption during pregnancy and its effect on the health of the mother and fetus.

Alcohol consumption during pregnancy is associated with many gestational outcomes, including stillbirth, miscarriage, preterm delivery, intrauterine growth retardation and low birth weight^{2,3,4}, and a variety of lifelong conditions known as fetal alcohol spectrum disorders (FASDs)^{5,6}. One of the most disabling potential outcomes of alcohol consumption during pregnancy is the risk of developing fetal alcohol syndrome (FAS), the most severe and visibly identifiable FASD, which causes permanent brain damage, congenital anomalies, and deficits in cognitive behavioral, emotional, and adaptive functioning⁷.

To mitigate the problem, for more than a decade, guidelines from international organizations/institutions have recommended that women who are pregnant or planning to become pregnant abstain from any alcohol consumption during this period^{8,9}.

Despite this, the prevalence of this consumption during pregnancy remains high worldwide. However, Brazil has a gap on this topic, with few studies and most of them conducted in specific populations. The article by Cabral et al.¹ fills this gap as the first nationally representative population study to evaluate the set of factors related to the Brazilian reality of inequalities in access to services and social vulnerability that contribute to the high prevalence of alcohol consumption among pregnant women. Among the factors associated with higher prevalence of alcohol consumption during pregnancy and the presumptive diagnosis of misuse, young age at pregnancy stands out, especially among adolescents aged 12 to 19 years. This is one of the most important indicators of social vulnerability, causing psychosocial and economic harm in women's lives.

Thus, understanding the role of early alcohol consumption in this scenario will allow the development of public policies aimed at greater surveillance of alcohol consumption in this age group and the screening of groups at higher risk for alcohol consumption during pregnancy. To what extent does the high prevalence of alcohol consumption among women in adolescence and early adulthood affect its persistence during pregnancy?

To answer this question, we need to take a step back and consider trends in alcohol consumption among adolescents and young adults in recent decades.

¹ Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, Brasil.



Studies have shown that, despite a downward trend in the prevalence of alcohol consumption among women (a trend also observed among men), binge drinking has grown among young women of reproductive age worldwide ^{9,10,11}. However, these findings are quite heterogeneous when considering different regions of the world, age groups, and drinking patterns.

Data from two editions of the *Global Status Report on Alcohol and Health* ^{8,9} show that, from 2010 to 2016, despite the reduction in overall alcohol consumption among women aged 15 years and older in almost all countries in Latin America, this was not the case in Brazil, where rates remained the same (8.9% for both periods). Moreover, prevalence rates of heavy episodic drinking (≥ 60 ml of pure alcohol at least once in a month) among women aged 15 years and older who had ever consumed alcohol in their lives increased in almost all countries in Latin America, with rates ranging from 0.1% in Chile to 11.1% in Brazil in 2010 and from 14.7% in Chile to 27.4% in Peru in 2016 (in Brazil, this rate was 25.1%). The only exceptions were Venezuela and Paraguay, with rates of 21.8% and 41%, respectively, in 2010, which decreased to 18.2% and 24.6%, respectively, in 2016. Most of these rates are significantly higher than the overall prevalence of heavy episodic drinking among women, which was 19.9% in 2016. These data show that Latin American women not only drink at high rates, but many of them are involved in risky patterns of alcohol consumption. Thus, some women are likely to continue drinking during pregnancy or before they know they are pregnant. Moreover, a study showed that Latin America and the Caribbean have the highest proportion of unintended pregnancies (56%), while in other continents (Africa, Asia, Europe, North America, and Oceania) these rates range from 35% to 51%, within a world average of 40% ¹². Coupled with the relatively high rates of alcohol consumption and risky drinking patterns, this may lead to a higher risk of alcohol-exposed pregnancy in these countries.

In Brazil, population studies have pointed to high alcohol consumption among women, with an increase also among adolescents.

The study by Caetano et al. ¹³ with data from the *Brazilian National Survey of Alcohol and Drugs* showed an increase among both men and women in consumption per week (men: 12.82 in 2006, 15.78 in 2012, $p < 0.01$; women: 4.89 in 2006, 7.66 in 2012, $p < 0.001$) and in the proportion of excessive alcohol consumption (men: 57% in 2006, 66% in 2012, $p < 0.05$; women: 39% in 2006, 48% in 2012, $p < 0.05$), although this did not occur in all genders and age groups.

The *Study of Cardiovascular Risk Factors in Adolescents* (ERICA), a Brazilian school-based study that evaluated 74,589 adolescents, observed a similar prevalence of alcohol consumption in the last 30 days for boys (21%) and girls (21.5%), with higher among adolescents aged 15 to 17 years (29.3%) ¹⁴.

A study based on data from 100,914 ninth-grade students from the 2015 *Brazilian National Survey of School Health* (PeNSE) observed that girls were more likely to try alcohol (OR = 1.09; 95%CI: 1.05-1.12) and to have consumed it in the last 30 days (OR = 1.09; 95%CI: 1.00-1.13) compared with boys. PeNSE 2015 also showed that regular alcohol consumption, despite its very high prevalence, especially among girls, decreased from 27.3% (2009) to 23.2% (2015) ¹⁵.

In a recent study conducted in the 2004 Pelotas (Brazil) birth cohort, the prevalence of alcohol and cigarette experimentation increased at age 15 among girls ¹⁶.

Studies conducted in different regions of the world show that high alcohol consumption before pregnancy is one of the most important risk factors for persistent consumption during pregnancy^{17,18,19}. Moreover, many pregnant women may consume alcohol before they discover their pregnancy and maintain their usual pattern of alcohol consumption in the early weeks of an unplanned pregnancy^{20,21}. A recent study conducted in Canada from five cohort studies of pregnant women pointed that, after adjustment for multiple risk factors, women's alcohol consumption during pregnancy – both normal consumption and binge drinking – was related to alcohol consumption before pregnancy²².

Other important studies sought to assess risk behaviors among adolescents and young people, the concomitance of these behaviors, the most vulnerable groups, and the effect of such behaviors on adulthood, including the persistence of heavy alcohol consumption^{23,24}.

According to the 2018 *Global Status Report on Alcohol and Health*⁹, alcohol consumption, especially by adolescents and young women, is associated with unprotected sex^{25,26} and increases the risk of unwanted pregnancy^{27,28,29} and the risk of fetal exposure to alcohol due to delayed pregnancy discovery²⁷, with negative implications for newborns³⁰. In Brazil, a study with data from the 2019 *Brazilian National Health Survey* (PNS) showed that heavy alcohol consumption among women aged 18 to 24 who were single/not cohabiting was associated with inconsistent condom use³¹.

Studies also pointed that early age of onset of alcohol consumption is associated with increased early initiation of sexual intercourse and early pregnancy³², favoring the persistence of alcohol consumption during pregnancy³³. According to another study, maternal age at first birth was associated with high risks: younger mothers were more likely to have a history of high-risk drinking compared with older mothers³⁴.

Therefore, knowing the scale of the problem and better understanding the groups most at risk will allow the establishment of public policies aimed at surveillance during prenatal care and developing screening strategies to increase access to health services for pregnant women.

Promoting studies that seek to understand the factors involved in alcohol consumption by adolescents and young people – especially early age and heavy drinking among girls – should be the initial step for the implementation of public policies aimed at preventing this consumption and counseling on alcohol consumption by women of reproductive age. This consumption, as aforementioned, affects not only the health of adolescents and young people in the short term, but when it coexists with conditions of socioeconomic vulnerability, it often persists, increasing the risk of alcohol consumption during pregnancy. Thus, studies aimed at assessing the prevalence of alcohol during pregnancy and seeking to identify the most vulnerable groups, such as the study by Cabral et al.¹, are an important step. Periodic nationally representative population surveys that include adolescents and adults are also needed to assess trends in alcohol consumption. Moreover, cohort studies that allow the follow-up of adolescents into adulthood have the ideal conditions for analyzing the trajectory of these disorders throughout life and the main risk factors involved in the initiation and persistence of alcohol consumption.

Additional information

ORCID: Claudia de Souza Lopes (0000-0002-0401-689X).

1. Cabral VP, Moraes CL, Bastos FI, Abreu AMM, Domingues RMSM. Prevalence of alcohol use during pregnancy, Brazil, 2011-2012. *Cad Saúde Pública* 2023; 39:e00232422.
2. Henriksen TB, Hjollund NH, Jensen TK, Bonde JP, Andersson AM, Kolstad H, et al. Alcohol consumption at the time of conception and spontaneous abortion. *Am J Epidemiol* 2004; 160:661-7.
3. Kesmodel U, Kesmodel SP. Drinking during pregnancy: attitudes and knowledge among pregnant Danish women, 1998. *Alcohol Clin Exp Res* 2002; 26:1553-60.
4. Patra J, Jha P, Rehm J, Suraweera W. Tobacco smoking, alcohol drinking, diabetes, low body mass index and the risk of self-reported symptoms of active tuberculosis: individual participant data (IPD) meta-analyses of 72,684 individuals in 14 high tuberculosis burden countries. *PLoS One* 2014; 9:e96433.
5. Chudley A, Conry J, Cook JL, Looock C, Rosales T, LeBlanc N, et al. Fetal alcohol spectrum disorder: Canadian guidelines for diagnosis. *CMAJ* 2005; 172(5 Suppl):S1-S21.
6. Lange S, Probst C, Gmel G, Rehm J, Burd L, Popova S. Global prevalence of fetal alcohol spectrum disorder among children and youth: a systematic review and meta-analysis. *JAMA Pediatr* 2017; 171:948-56.
7. Popova S, Lange S, Probst C, Gmel G, Rehm J. Global prevalence of alcohol use and binge drinking during pregnancy, and fetal alcohol spectrum disorder. *Biochem Cell Biol* 2018; 96:237-40.
8. World Health Organization. Global status report on alcohol and health 2014. Geneva: World Health Organization; 2014.
9. World Health Organization. Global status report on alcohol and health 2018. Geneva: World Health Organization; 2018.
10. Dawson DA, Goldstein RB, Saha TD, Grant BF. Changes in alcohol consumption: United States, 2001-2002 to 2012-2013. *Drug Alcohol Depend* 2015; 148:56-61.
11. Lange S, Probst C, Heer N, Roerecke M, Rehm J, Monteiro MG, et al. Actual and predicted prevalence of alcohol consumption during pregnancy in Latin America and the Caribbean: systematic literature review and meta-analysis. *Rev Panam Salud Pública* 2017; 41:e89.
12. Sedgh G, Singh S, Hussain R. Intended and unintended pregnancies worldwide in 2012 and recent trends. *Stud Fam Plann* 2014; 45:301-14.
13. Caetano R, Mills B, Madruga C, Pinsky I, Laranjeira R. Discrepant trends in income, drinking, and alcohol problems in an emergent economy: Brazil 2006 to 2012. *Alcohol Clin Exp Res* 2015; 39:863-71.
14. Coutinho ESF, França-Santos D, Magliano ES, Bloch KV, Barufaldi LA, Cunha CF, et al. ERICA: patterns of alcohol consumption in Brazilian adolescents. *Rev Saúde Pública* 2016; 50 Suppl 1:8s.
15. Arruda PSM, Silva AN, Rinaldi AEM, Silva LS, Azeredo CM. Individual and contextual characteristics associated with alcohol use among Brazilian adolescents. *Int J Public Health* 2022; 67:1604397.
16. Bozzini AB, Maruyama JM, Munhoz TN, Barros AJD, Barros FC, Santos IS, et al. Trajectories of maternal depressive symptoms and offspring's risk behavior in early adolescence: data from the 2004 Pelotas birth cohort study. *BMC Psychiatry* 2021; 21:18.
17. Nilsen P, Holmqvist M, Hultgren E, Bendtsen P, Cedergren M. Alcohol use before and during pregnancy and factors influencing change among Swedish women. *Acta Obstet Gynecol Scand* 2008; 87:768-74.
18. Skagerström J, Chang G, Nilsen P. Predictors of drinking during pregnancy: a systematic review. *J Womens Health (Larchmt)* 2011; 20:901-13.
19. Skagerström J, Alehagen S, Häggström-Nordin E, Årestedt K, Nilsen P. Prevalence of alcohol use before and during pregnancy and predictors of drinking during pregnancy: a cross sectional study in Sweden. *BMC Public Health* 2013; 13:780.
20. McDonald SW, Hicks M, Rasmussen C, Nagulesapillai T, Cook J, Tough SC. Characteristics of women who consume alcohol before and after pregnancy recognition in a Canadian sample: a prospective cohort study. *Alcohol Clin Exp Res* 2014; 38:3008-16.
21. McCormack C, Hutchinson D, Burns L, Wilson J, Elliott E, Allsop S, et al. Prenatal alcohol consumption between conception and recognition of pregnancy. *Alcohol Clin Exp Res* 2017; 41:369-78.

22. Schmidt RA, Wey TW, Harding KD, Fortier I, Atkinson S, Tough S, et al. A harmonized analysis of five Canadian pregnancy cohort studies: exploring the characteristics and pregnancy outcomes associated with prenatal alcohol exposure. *BMC Pregnancy Childbirth* 2023; 23:128.
23. Guilamo-Ramos V, Litardo HA, Jaccard J. Prevention programs for reducing adolescent problem behaviors: implications of the co-occurrence of problem behaviors in adolescence. *J Adolesc Health* 2005; 36:82-6.
24. Silva RMA, Andrade ACS, Caiaffa WT, Bezerra VM. Co-occurrence of health risk behaviors and the family context among Brazilian adolescents, National Survey of School Health (2015). *Rev Bras Epidemiol* 2021; 24:e210023.
25. Scott-Sheldon LA, Carey KB, Cunningham K, Johnson BT, Carey MP; MASH Research Team. Alcohol use predicts sexual decision-making: a systematic review and meta-analysis of the experimental literature. *AIDS Behav* 2016; 20 Suppl 1:S19-39.
26. Rehm J, Shield KD, Joharchi N, Shuper PA. Alcohol consumption and the intention to engage in unprotected sex: systematic review and meta-analysis of experimental studies. *Addiction* 2012; 107:51-9.
27. Connery HS, Albright BB, Rodolico JM. Adolescent substance use and unplanned pregnancy: strategies for risk reduction. *Obstet Gynecol Clin North Am* 2014; 41:191-203.
28. Oulman E, Kim HMT, Yunis K, Tamim H. Prevalence and predictors of unintended pregnancy among women: an analysis of the Canadian maternity experiences survey. *BMC Pregnancy Childbirth* 2015; 15:260.
29. Lundsberg L, Peglow S, Qasba N, Yonkers K, Garipey A. Is preconception substance use associated with unplanned or poorly timed pregnancy? *J Addict Med* 2018; 12:321-8.
30. Schoeps A, Peterson ER, Mia Y, Waldie KE, D'Souza S, Morton SMB. Prenatal alcohol consumption and infant and child behavior: evidence from the growing up in New Zealand cohort. *Early Hum Dev* 2018; 123:22-9.
31. Gomes NL. Comportamentos sexuais de risco, orientação sexual, uso de substâncias e saúde mental: um estudo de base populacional no Brasil [Doctoral Dissertation]. Rio de Janeiro: Universidade do Estado do Rio de Janeiro; 2022.
32. Deardorff J, Gonzales NA, Christopher FS, Roosa MW, Millsap RE. Early puberty and adolescent pregnancy: the influence of alcohol use. *Pediatrics* 2005; 116:1451-6.
33. Hutchinson D, Spry EA, Mohamad Husin H, Middleton M, Hearps S, Moreno-Betancur M, et al. Longitudinal prediction of periconception alcohol use: a 20-year prospective cohort study across adolescence, young adulthood and pregnancy. *Addiction* 2022; 117:343-53.
34. De Genna NM, Goldschmidt L, Marshal M, Day NL, Cornelius MD. Maternal age and trajectories of risky alcohol use: a prospective study. *Alcohol Clin Exp Res* 2017; 41:1725-30.

Submitted on 12/Jul/2023
 Approved on 13/Jul/2023