Substance Use, Poor Sleep, and Gestational Diabetes: Concerns in Adolescent Pregnancy

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Sleep Sci 2025;18(4):e451–e452.

Abstract

Adolescence is a stage of development in which several social and biological parameters change drastically. Behavioral alterations are common during puberty, including the appearance of risk-taking behaviors such as substance use and unprotected sex, which can lead to unintended pregnancy. Of note, in addition to the inherent risks of pregnancy at a young age, sleep impairment and substance use are commonly seen in adolescents, even during pregnancy. The increased risk for the development of gestational diabetes, which has been linked to both sleep impairment and drug use, further complicates this scenario and deserves consideration among the scientific community and in the clinical setting. Therefore, in this commentary, we discuss the pathways connecting the risk of substance misuse, sleep impairment, and the development of gestational diabetes, a network that demonstrates the vulnerability of the pregnant teenage population. Future studies evaluating the complicating factors and modulators of pregnancy outcomes in these individuals are of the utmost importance.

Keywords
- sleep
- gestational diabetes
- substance use disorder
- adolescent pregnancy

Adolescence is accompanied by multiple health and behavioral challenges in modern society. Increased impulsivity and risk-taking behavior, which may include drug-seeking behavior and can be influenced by insufficient sleep, are extremely prevalent in adolescence.[1] Alongside unprotected sex, substance use (encompassing the use of both licit substances, such as alcohol and tobacco, and illicit substances, such as cocaine and cannabis) and sleep has been considered highly clustered lifestyle factors among adolescents.[2] The implications of this synergy need to be discussed, because sleep impairment, substance use, and teenage pregnancy significantly affect the health of this population.

Of importance, the use of tobacco, alcohol, or illicit substances during pregnancy has been shown to impair the health of the offspring.[3] Rates of lifetime alcohol, tobacco, and illicit substance use (namely cannabis, cocaine, and heroin) were found to be significantly higher in adolescent mothers compared to the general teenager population.[4] Even

received
August 23, 2024
accepted
March 20, 2025

DOI https://doi.org/10.1055/s-0045-1809992.
ISSN 1984-0659.

Thieme Revinter Publicações Ltda., Rua Rego Freitas, 175, loja 1, República, São Paulo, SP, CEP 01220-010, Brazil

when substance use is interrupted during pregnancy, substance use tends to resume after birth, presenting other risks to both the mother and the newborn.[4]

Poor sleep is both a contributor to and a consequence of licit and illicit drug use,[5] and is also markedly present during pregnancy.[6] Therefore, sleep impairment may contribute to the negative health outcomes of drug use during pregnancy, including gestational diabetes.[7] Gestational diabetes increases the risk for infant development problems, including alterations in size, birth injuries, being admitted to the neonatal intensive care unit, and developing metabolic syndrome in childhood and later life.[8] This disease, when associated with the use of substances (of which the most commonly reported were alcohol, tobacco, cannabis, and cocaine/crack), has been associated with a higher occurrence of orofacial clefts in newborns,[9] contributing to an already critical health setting.

Therefore, sleep, teenage pregnancy, and substance use might form a network that plays an important role in the risk of gestational diabetes. Considering how vulnerable adolescents are to substance use and sleep impairment, both of which may directly affect diabetes outcomes, future studies addressing this relationship are needed for a better understanding of this triad in the context of teenage pregnancy.

Funding
Associação Fundo de Incentivo à Pesquisa Conselho Nacional de Desenvolvimento Científico e Tecnológico.

Conflict of Interests
The authors have no conflicts of interest to disclose.

Acknowledgments
Our studies are supported by grants from the Associacão Fundo de Incentivo à Pesquisa (AFIP), by the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brazil (CAPES) – Finance Code 001) and by Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP – grant #2020/13467-8 to MLA). Dr. Andersen and Dr. Tufik are fellowship recipients from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq). Dr. Berro's research is supported by the National Institutes of Health (DA049886).

Our studies are supported by the Associação Fundo de Incentivo à Pesquisa (AFIP).

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