Caffeine Intoxication In Adolescents

Lauren Gonzalez-Perez, Jakeline Alvarez, Ana Puente, Daniela Villanueva, Hailey Martinez

Background

Caffeine is the most widely consumed psychoactive substance in the world and is found in popular beverages like coffee, energy drinks, tea, and soda. Many teens rely on caffeine for energy, often unaware of how much they consume or the risks involved. While the safe daily limit for adults is 400 mg, it is recommended that adolescents consume no more than 100 mg per day. Overconsumption can lead to caffeine intoxication, a condition with both physical symptoms (such as increased heart rate, nausea, and digestive issues) and psychological symptoms (like anxiety, insomnia, panic attacks, and in severe cases, hallucinations and seizures).

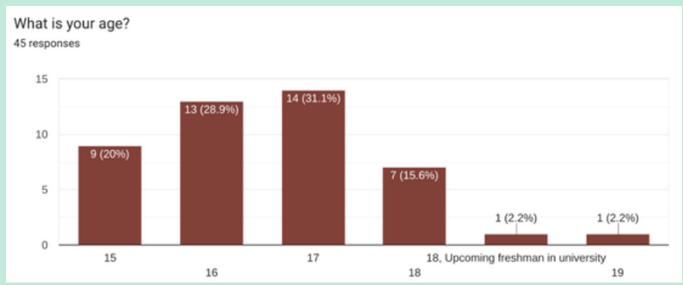
Caffeine affects sleep quality and can contribute to a cycle of poor rest and increased caffeine dependence. It is especially concerning among teens who already experience academic and social pressures. Despite its widespread use, awareness about the hidden effects of caffeine on adolescent mental health remains low.

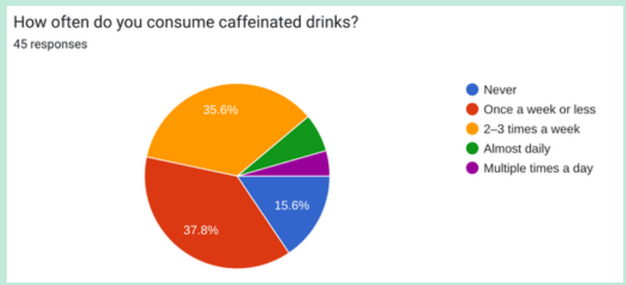
This study explores how caffeine intoxication may impact teens' mental health, focusing on symptoms like anxiety, insomnia, and panic attacks. Through a survey at YMHA Manuel Dominguez High School, we aim to measure caffeine consumption levels and assess awareness among students.

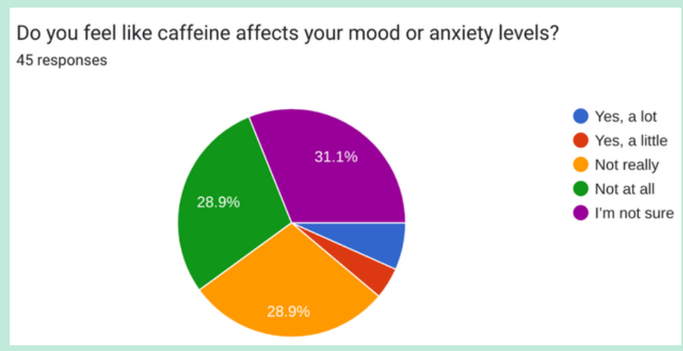
Method & Procedure

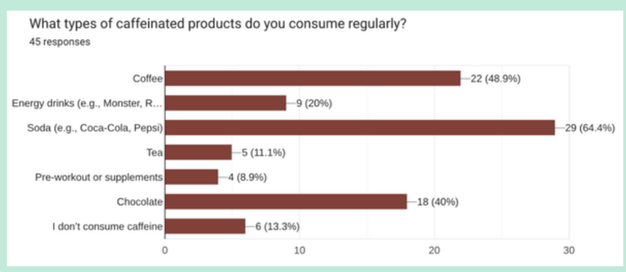
The survey, conducted among high school students, revealed that most respondents were aged 16 to 17—16-year-olds comprised 28.9%, and 17-year-olds 31.1%, while both 15-year-olds and those 18 or older each represented 20%. In terms of grade level, nearly half were seniors (48.9%), followed by juniors (33.3%), sophomores (13.3%), and freshmen (4.4%). Gender distribution skewed female, with 70.5% identifying as female and the remaining 29.5% as male. study combined a thorough review of existing literature with quantitative and archival research methods to investigate caffeine consumption among adolescents. We developed a detailed survey to collect primary data on caffeine intake, targeting high school students from freshmen to seniors, aged 15 to 18 and older. The survey included questions about frequency, types, and timing of caffeine consumption, as well as any physical effects experienced. To encourage honest and accurate responses, we ensured participant anonymity throughout the process. The collected data were then analyzed to identify patterns in caffeine use and related physical symptoms. This approach allowed us to link specific consumption habits with a variety of physical effects, providing a comprehensive understanding of caffeine's impact on adolescent health.

Result, Tables & Figures









Discussion

Our project explores the complex relationship between caffeine overconsumption and adolescent mental health, focusing particularly on sleep disturbances like insomnia and anxiety. Drawing from national studies, such as Chaudhary et al. (2016) and Shirlow & Mathers (1985), we found strong evidence that high caffeine intake is linked to shorter sleep duration and increased symptoms of insomnia, especially non-restorative sleep (NRS). These studies highlight how caffeine use, often intended to combat daytime sleepiness, can paradoxically worsen sleep quality, creating a harmful cycle. Additionally, factors like anxiety and race/ethnicity influence how caffeine impacts sleep, adding complexity to the relationship. Our research supports the hypothesis that excessive caffeine use not only disrupts sleep but also exacerbates mental health issues such as anxiety and panic attacks. Overall, these findings underscore the need for greater awareness of caffeine's hidden effects on adolescent well-being and the importance of monitoring caffeine consumption to prevent long-term health consequences.

Regarding stimulant consumption, habits varied: 15.6% never consumed these substances, 37.8% used them once weekly or less, 35.6% consumed them 2–3 times per week, while 6.7% used them almost daily and 4.4% reported multiple daily usages. Soda was the most popular stimulant (64.4%), followed by coffee (48.9%), chocolate (40%), energy drinks (20%), tea (11.1%), and pre-workout supplements (8.9%); notably, 13.3% reported consuming none at all. Consumption timing showed that 44.4% took stimulants in the evening, 42.2% in the afternoon, 40% in the morning, 20% at late night hours, and 17.8% abstained entirely.

When it came to side effects, more than half (52.3%) reported no symptoms. However, 34.1% experienced upset stomachs, 22.7% had trouble sleeping, 15.9% reported shakiness, jitters, or headaches, 11.4% experienced anxiety or nervousness, and 9.1% noted a rapid heart rate.

Conclusion

Caffeine intoxication contributes to many negative effects that often go unnoticed. While it was once commonly believed that caffeine only caused insomnia, research and experience have shown it can also lead to symptoms such as jitters, nervousness, and headaches. These side effects can significantly impact daily functioning and overall mental health. It is especially important for more people to become aware of the decline in wellness that excessive caffeine consumption can bring, particularly among adolescents, who may be more vulnerable to its harmful effects. This mental health disorder should be spread for awareness through educational programs that provide knowledge on these potential effects of caffeine intoxication. Additionally, if an individual is suffering from this mental disorder, they could contact a school counselor, psychologist, or neurologist.

References

Chaudhary, N. S., Grandner, M. A., Jackson, N. J., & Chakravorty, S. (2016). Caffeine consumption, insomnia, and sleep duration: Results from a nationally representative sample. *Nutrition*, *32*(11-12), 1193–1199. https://doi.org/10.1016/j.nut.2016.04.005

SHIRLOW, M. J., & MATHERS, C. D. (1985). A Study of Caffeine Consumption and Symptoms: Indigestion, Palpitations, Tremor, Headache and Insomnia. *International Journal of Epidemiology*, *14*(2), 239–248. https://doi.org/10.1093/ije/14.2.239

Whalen, R. (2004). Ongoing caffeine anaphylaxis: A differential for mental illness. Medical Veritas, 1(2), 252–260. medicalveritas.com

Nardi, A. E., Lopes, F. L., Valença, A. M., Freire, R. C., Veras, A. B., de-Melo-Neto, V. L., Nascimento, I., King, A. L., Mezzasalma, M. A., Soares-Filho, G. L., & Zin, W. A. (2007). Caffeine challenge test in panic disorder and depression with panic attacks. Comprehensive Psychiatry, 48(3), 257–263. https://doi.org/10.1016/j.comppsych.2006.12.001