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Correlation Between ADHD Medication Use and Frequency of Exercise

Sana Malik, Nicole Scott, Natalie Yuvanavattana, Jared Zubin, Dr. Lina Begdache

Abstract

Substance abuse is a prevalent issue in today's society and certain drugs are becoming more readily accessible. Adderall is a drug prescribed to individuals diagnosed with attention deficit hyperactivity disorder (ADHD). These individuals experience symptoms such as hyperactivity, small attention span, and impulsivity due to disruptions in the dopaminergic pathway. Once exploited by non-prescribers such as college students, Adderall becomes an addictive substance as it has temporary enhancing effects on an individual's health and academics. Notably, there is suggested evidence that supports frequent exercising having beneficial effects on attention and executive functioning. Literature has shown that exercise increases confidence, decreases risks of developing mental disorders, and improves cognitive functions. Adderall may boost energy or may cause accelerated heartbeat and fatigue. This study examines whether a significant association is present between ADHD medication use and frequency of exercise. An anonymous Google Forms survey was distributed to undergraduate college students. Data collection is ongoing with 598 responses collected so far. Data was analyzed using Pearson's Bivariate Correlation in SPSS Version 25.0. The results suggest an association between ADHD medication use and certain exercise levels, which requires further investigation.

Introduction

The use of Adderall among unprescribed individuals is a common topic within colleges and universities as a study drug. Adderall is a medication meant for individuals diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) who typically lack the regular production of dopamine. Thus, Adderall provides a temporary sense of euphoria for normal people as it increases the uptake of the hormone. Unprescribed Adderall usage and its correlation with exercise is an important topic which is expanding upon the current literature surrounding this issue. Due to the increasing use of Adderall usage amongst college students, it is important to gauge this relationship to ensure the physical and psychological safety of college students around the nation.

Methods

This study is part of a larger project that aims to assess abuse of Adderall medication among college students. Methods used to examine the relationship between ADHD medications and exercise included the distribution of a Google Forms survey questionnaire that collected 598 anonymous responses to undergraduate college students across the United States. Data was analyzed using Pearson's Bivariate Correlation in SPSS Version 25.0.

Results

Table 1: Correlation between Exercise Frequency and ADHD Medication Use

Took ADHD Medication	-0.056
Suggested to check for ADHD	-0.047
Prescribed by physician	-0.04

Table 2: Correlation between Exercise Frequency and Evaluation of Non-Prescribed ADHD Medication Use

If NOT prescribed by a licensed physician, how frequently was use of these medications?	-0.052
If NOT prescribed by a licensed physician, how effective were these medications in accomplishing their desired purpose?	0.026
If NOT prescribed by a physician, change in GPA following the use of ADHD medications?	.191*

Key

N = 598

*p<0.05

**p<0.01

Discussion

- Considering ADHD medication use not prescribed by a physician, there was a positive, statistically significant correlation between exercise frequency and change in GPA (Table 2).
 - As exercise frequency per week increased, there was more likely to be a slight increase in GPA with ADHD medication use.
 - This finding is supported by existing literature which states that physical activity promotes academic performance due to the impact on cognitive and motor functions (Esteban-Cornejo et al., 2014, Pandelo et al., 2019).
- Because not statistically significant, no correlation between exercise frequency and ADHD medication effectiveness or frequency of use could be established (Table 2).
 - Literature supports that those who use ADHD medication experience exercise induced hypoalgesia, increased heart rate, and increased blood lactate levels, signifying a negative correlation between effectiveness and exercise (Chabreck, 2015).

Discussion cont.

- Literature also supports that long term exercise has the potential to curb the reward efficacy of certain stimulants, thus aiding against its use. This would support a negative correlation between frequency of use and exercise, which was not concluded by these results (Chen et al., 2007).
- No statistically significant correlational relationship was found between exercise frequency and ADHD medication use, suggestion to check for ADHD, or physician prescription (Table 1).
 - The negative correlations between exercise frequency and ADHD medication use is supported through scientific literature that has shown high vigorous amounts of exercise, helps clear the mind and improve focus which in turn results in college students decline in taking ADHD medication (Roessler et al. 2010).
 - More specifically, aerobic exercise can enhance human brain structure and improve cognitive performance (Berwid et al. 2013).
- In all, it can be concluded that those who exercise more frequently are more likely to decrease their use of ADHD medication due to increased focus and attention span which in turn aids in GPA improvement.

Future Works

- Ways to improve our experimental design and findings:
 - Make the experiment longitudinal in regards to GPA and exercise frequency: measuring college students' GPA and exercise frequency before and after Adderall use over a large extent of time and evaluate the changes in GPA
 - Pose a question in our survey in regard to the specific ADHD medication a college student uses
- Investigate the relationship of exercise frequency and study habits among college students
- Administer the survey to high school students in the United States investigate relationship between Adderall usage in high school students and frequency of exercise

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