INPLASY

The Impact of Untreated Attention-Deficit/ Hyperactivity Disorder on Motor Vehicle Accidents

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ADMINISTRATIVE INFORMATION

Support - Tris Pharma, Inc.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - Hirah Malik and Jim Potenziano are employees of Tris Pharma, Monmouth Junction, NJ.
Ann Childresshas been a consultant for Aardvark, Attentive, Aytu, Corium, Lumos, Neos Therapeutics, Neurocentria, Noven, Otsuka, Purdue, Rhodes, Sky, Sunovion, Supernus, Tris Pharma, and Zevra Therapeutics Inc. (previously KemPharm Inc.); participated on speakers' bureaus for Ironshore, Supernus, and Tris Pharma; has received research support from Aardvark, Adlon, Akili, Allergan, Emalex, Ironshore, Lumos, Otsuka, Purdue, Rhodes, Servier, Sunovion, Supernus, Takeda Shire, Tris Pharma, US Food and Drug Administration, and Zevra Therapeutics Inc. (previously KemPharm Inc.); and has received writing support from Arbor, Ironshore, Neos Therapeutics, Purdue, Rhodes, Sunovion, Takeda Shire, and Tris Pharma; and participated on advisory board for Adlon, Akili, Cingulate, Corium, Otsuka, Sunovion, Supernus, and Tris Pharma.

INPLASY registration number: INPLASY202640057

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 April 2026 and was last updated on 16 April 2026.

INTRODUCTION

Review question / Objective A systematic literature review and meta-analysis of published data was performed to determine the correlation between driving with untreated ADHD and motor vehicle accidents (MVAs). Separate analyses were performed for alcohol use and driving, excessive speed, cannabis use, sleepiness/fatigue, opioids/benzodiazepines, and cell phone use.

Rationale • Motor vehicle accidents (MVAs) are a leading cause of death in the United States, and risk factors include alcohol use, drug use, excessive speed, and cell phone use.
• Less publicized when considering MVAs, is Attention-Deficit/Hyperactivity Disorder (ADHD).

Condition being studied Attention-Deficit/ Hyperactivity Disorder
ADHD, a neurodevelopmental condition, is characterized by symptoms of hyperactivity, distractibility, poor sustained attention, and impaired impulse control.

METHODS

Search strategy A systematic literature review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement to find studies that observed populations of individuals between the ages of 18 and 65 with diagnosed, but untreated, ADHD compared to normal controls (see supplementary information for complete details). An online PubMed search was performed with the following primary MeSH terms: “Attention Deficit Disorder with Hyperactivity,” “Sleepiness,” “Epidemiology,” “Automobile Driving,” “Distracted Driving,” OR “Driving Under the Influence,” “Aggressive Driving,” OR “Automobiles” AND “Accidents, Traffic”), “Odds Ratio,” AND “Female,” OR “Male”. Additionally, a search in the Simon Fraser University Library https://www.lib.sfu.ca/, and Google Scholar (15/Nov/2023) was also conducted with keywords: “ADHD,” AND “Driving,” AND “Accidents,” AND “Risk”.

Participant or population ADHD patients aged 18-65 years compared to normal controls.

Intervention Non-interventional.

Comparator Control.

Study designs to be included Clinical trials.

Eligibility criteria Studies that observed populations of individuals between the ages of 18 and 65 with diagnosed, but untreated, ADHD compared to normal controls.

Information sources PubMed
Simon Fraser University Library https://www.lib.sfu.ca/, and Google Scholar (15/Nov/2023).

Main outcome(s) Four studies showed significantly higher odds of an accident among untreated ADHD drivers versus the general population of drivers -- a 93% increase (significant pooled odds ratio (OR), 95% confidence interval [CI] for the overall effect, p<0.001). The odds of having an accident was increased by 85% in THC/cannabis users (significant pooled OR, 95% CI, p<0.001); 162% increase in sleepy/tired drivers (significant pooled effect OR, 95% CI, p=0.004); and 53% increase in opioid or benzodiazepine users (significant pooled OR, 95% CI, p<0.001).

Additional outcome(s) None.

Data management The same systematic literature review process conducted according to the PRISMA statement was utilized to determine the increased incidence of auto accidents associated with the well-known risk factors of cannabis use, sleepiness/fatigue, use of illicit drugs, alcohol consumption, speeding, and cell phone use/texting. A PubMed search was performed using “Accidents,” “Traffic” Medical Subject Headings (MeSH) for each of the following individual risk factors: “Driving Under the Influence," "Distracted Driving," "Cell Phone,” “Alcoholic Intoxication," “Illicit Drugs,” “Marijuana Abuse,” “Cannabis,” “Marijuana,” “Prescriptions,” “Medications,” “Fatigue," “Drowsiness,” and “Speeding”. A total of 555 articles were retrieved, and after screening based on the inclusion and exclusion criteria, 21 articles remained for further evaluation.

Quality assessment / Risk of bias analysis Differences in outcomes between the studies (heterogeneity) was analyzed using Cochran’s Q test and the I2 statistic, and a funnel plot was produced to display any potential publication bias.

Strategy of data synthesis The same systematic literature review process conducted according to the PRISMA statement was utilized to determine the increased incidence of auto accidents associated with the well-known risk factors of cannabis use, sleepiness/fatigue, use of illicit drugs, alcohol consumption, speeding, and cell phone use/texting. A PubMed search was performed using “Accidents,” “Traffic” Medical Subject Headings (MeSH) for each of the following individual risk factors: “Driving Under the Influence," "Distracted Driving," "Cell Phone,” “Alcoholic Intoxication," “Illicit Drugs,” “Marijuana Abuse,” “Cannabis,” “Marijuana,” “Prescriptions,” “Medications,” “Fatigue," “Drowsiness,” and “Speeding”. A total of 555 articles were retrieved, and after screening based on the inclusion and exclusion criteria, 21 articles remained for further evaluation.

Subgroup analysis None.

Sensitivity analysis None.

Language restriction English.

Country(ies) involved United States - Tris Pharma, Inc., 2031 US-130, Monmouth Junction, NJ 08852.

Keywords Accidents; ADHD; Attention-Deficit/Hyperactivity Disorder; Crashes; Drivin.

Dissemination plans Seeking publication in a peer-reviewed journal.

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