

U.S. Department of Transportation: Medications and Crash Risk

This study examined medical insurance databases to show the relative frequency of various combinations of medications used by drivers who had a motor vehicle crash, analyzing the impairing effects of multiple medications, drug interactions, and drug-disease interactions on motor vehicle crashes for persons 50 years and older.

Lead Agency:

U.S. Department of Transportation
National Highway Traffic Safety Administration (NHTSA)

Agency Mission:

Save lives, prevent injuries and reduce economic costs due to road traffic crashes through education, research, safety standards and enforcement activity.

Principal Investigator:

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General Description:

The main objectives of this study were to determine the relative frequency of various combinations of medications used by those who have experienced a motor vehicle crash and those who have not by analyzing proprietary and non-proprietary databases; and to conduct a case-control study of possible associations between the use of medications (and combinations thereof) and motor vehicle crashes among older drivers.

The results of the study revealed an association between the kinds and number of medications used by older adults and the risk of involvement in a motor vehicle crash. Drugs known to have an impairing effect on the driving ability of older drivers were the most commonly used by older adults who had been involved in crash. The case control analysis suggested an association between crashes and many potentially driver impairing (PDI) medications, diseases, and various combinations of drugs and diseases.

Study subjects taking any medication were found to be 1.43 times more likely to be involved in a crash than older adults taking no medications. Compared to patients taking no PDI medications, those taking one or two PDI medications were 1.29 times more likely to be involved in a crash and that risk increased to 1.87 more likely in patients taking three or more PDI medications. The risk for patients with one or two PDI diseases

was 1.49 times greater than that for older adults without any PDI diseases. Three or more PDI diseases further increased the risk for crash involvement to 2.20 times that of older adults with no PDI diseases. Drug interactions were also associated with a statistically significant increased risk of crash involvement (odds ratio of 1.47 for 1-2 drug interactions and 1.92 for patients with 3 or more drug interactions).

The results of this analysis suggest that both the kinds and number of medication exposures, and the characteristics of diseases/disorders present among study subjects may predict an increase in risk for crashes among older adults. By demonstrating a potential link between multiple drug therapies and crash involvement, this study highlights the need for a more thorough examination of the relationships between drugs, diseases, and the older driver, and the factors affecting aging adults and driving ability.

Excellence: What makes this project exceptional?

This is the only available report that provides current data on prescription medication use, and its relationship to vehicle crashes.

Significance: How is this research relevant to older persons, populations and/or an aging society?

This report provides valuable information to drivers about the potentially impairing effects that combinations of certain medications and illnesses have on the ability to drive safely. Older adults are more likely to take multiple prescription medications past the age of 50.

Effectiveness: What is the impact and/or application of this research to older persons?

The results of this research point to the need to develop educational programs to increase awareness among health care providers and older drivers about the potential driver impairing effects of pharmaceutical use.

Innovativeness: Why is this research exciting or newsworthy?

This research names drug classes and illnesses that are common to older drivers that are potentially dangerous when combined with the driving task. Data come from large medical databases.