Identifying Vulnerabilities to NSAID Adverse Events in the US Population: An Analysis of Pre-Existing Conditions and Sex

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Abstract

Purpose: In 2005, the Food and Drug Administration (FDA) issued a decision memorandum regarding nonsteroidal anti-inflammatory drugs (NSAIDs). The memorandum recommended the withdrawal of certain NSAIDs due to potential cardiovascular adverse effects. It highlighted the issue of cardiovascular risk associated with NSAIDs as a class. The NSAID medication guide includes a wide range of adverse drug reactions (ADRs), such as increased blood pressure, liver failure, allergic reactions, heart attack, and intestinal bleeding. Although both sexes have an increased risk of ADRs with NSAID use, females have a greater risk than males due to differences in pharmacodynamics and higher medication concentrations (mg/kg). The prevalence of NSAIDs and the disparity in risk of ADRs by sex within this class of medications make this a significant public health issue. This study quantifies sex-specific differences and other factors associated with prescription NSAID use.

Method: The data for this study was obtained from the National Health and Nutrition Examination Survey (NHANES), a complex survey conducted by the Centers for Disease Control and Prevention (CDC) in two-year cycles. NHANES is designed to make inferences about the health of the US civilian noninstitutionalized population. A survey-weighted logistic regression model was utilized to investigate potential sex differences with prescription NSAIDs in the context of other factors including kidney disease, hypertension, liver disease, insurance status, coronary heart disease, and age within the 2011-2018 NHANES survey data.

Results: Females reported a slightly higher percentage of high blood pressure and kidney disease than males, while males reported a slightly higher percentage of coronary heart and liver disease than females. Furthermore, a larger percentage of females reported having health insurance coverage than males. Last, the model indicated that females were 58% more likely to have used a prescription NSAID than males.

Conclusion: The results confirm that women and people with medical conditions, who would potentially suffer greater harm from NSAID ADRs, are more likely to use a prescription NSAID than individuals without these conditions. Therefore, it is crucial to continue investigating the safety and efficacy of medications, particularly in specific populations, to reduce the risk of harmful side effects from medication use.

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