

Does periodic vehicle inspection reduce car crash injury?

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Abstract

Research Objectives

Vehicle defects are thought to cause or contribute to at least 12% of motor vehicle crashes. Although compulsory periodic motor vehicle safety inspection programs exist in many countries worldwide, as well as in New Zealand and several Australian States, evidence for the effectiveness of such programs is inconclusive. This paper examines the association between periodic motor vehicle inspection and frequent tyre pressure checks and the risk of car crash injury.

Methods

Data were analysed from the Auckland Car Crash Injury Study, a population-based case-control study conducted in Auckland, New Zealand, where vehicles are required to undergo 6-monthly safety inspections. Cases were all cars involved in crashes in which at least one occupant was hospitalized or killed anywhere in the Auckland region (571 drivers). Controls were 588 drivers of randomly selected cars on Auckland roads. Participants completed a structured interview.

Results

Vehicles that did not have a current certificate of inspection had significantly greater odds of being involved in a crash where someone was injured or killed compared to cars that had a current certificate, after adjustment for age, sex, marijuana use, ethnicity, and licence type (odds ratio 3.08, 95% confidence interval 1.87 to 5.05). Vehicles that had not had their tyre pressure checked within the past 3 months also had significantly greater odds of being

involved in a crash, compared to those that had a tyre pressure check, after adjustment for age, sex, ethnicity, seatbelt use, licence type, self-reported speed, and hours per week of driving exposure (odds ratio 4.10, 95% confidence interval 1.71 to 9.84).

Conclusions

This study provides new evidence, using rigorous epidemiological methods and controlling for multiple confounding variables, that periodic vehicle inspections and 3-monthly tyre pressure checks reduce the risk of car crash injury.

Discussion

Our results support continuation of existing periodic vehicle inspection programs as well as their introduction where they do not currently exist, for example in several Australian States. Furthermore, simple interventions that encourage vehicle owners to perform frequent tyre pressure may be effective in reducing the risk of car crash injury.