

International Trends in Alcohol and Drug Use Among Motor Vehicle Drivers

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ABSTRACT: Trends in the use of alcohol and drugs among motor vehicle drivers in Australia, Brazil, Norway, Spain, and the United States have been reviewed. Laws, regulations, enforcement, and studies on alcohol and drugs in biological samples from motor vehicle drivers in general road traffic and fatal road traffic crashes (RTCs) are discussed. Roadside surveys showed a reduction of drunk driving over time in the studied countries; however, the pattern varied within and between different countries. The reduction of alcohol use may be related to changes in road traffic laws, public information campaigns, and enforcement, including implementation of random breath testing or sobriety checkpoints. For non-alcohol drugs, the trend in general road traffic is an increase in use. However, drugs were not included in older studies; it is therefore impossible to assess the trends over longer time periods. Data from the studied countries, except Brazil, have shown a significant decrease in fatal RTCs per 100,000 inhabitants over the last decades; from 18.6 to 4.9 in Australia, 14.5 to 2.9 in Norway, 11.1 to 3.6 in Spain, and 19.3 to 10.3 in the United States. The number of alcohol-related fatal RTCs also decreased during the same time period. The proportion of fatal RTCs related to non-alcohol drugs increased, particularly for cannabis and stimulants. A general challenge when comparing alcohol and drug findings in biological samples from several countries is connected to differences in study design, particularly the time period for performing roadside surveys, biological matrix types, drugs included in the analytical program, and the cutoff limits used for evaluation of results. For RTC fatalities, the cases included are based on the police requests for legal autopsy or drug testing, which may introduce a significant selection bias. General comparisons between high-income countries and low- and middle-income countries as well as a discussion of possible future trends are included.

KEYWORDS: Alcohol, driving under the influence, drugs, legislation, roadside surveys, road traffic crashes (RTCs), trends.

INTRODUCTION

Alcohol and Drug Use as Traffic Safety Risks

Road traffic crashes (RTCs) are killing more than 1.2 million people and injuring up to 50 million worldwide every year [247]. The number of RTCs is decreasing in high-income countries but significantly increasing in low- and middle-income countries [8]. Middle-income countries have the highest annual RTC fatality rates, at 20.1 per 100,000 population, slightly above low-income countries (18.3 per 100,000) and much higher than high-income countries (8.7 per 100,000) [247]. In 2013, RTCs in middle-income countries accounted for 80% of the world's RTC fatalities, while those countries had 72% of the world's population and 52% of the world's vehicles [247]. Some middle-income countries have had large economic growth during the last years, enabling more people to buy motor vehicles. According to estimates, the annual worldwide number of RTC deaths may double to 2.4 million by 2030, due mainly to increases in motorization and RTCs in low- and middle-income countries, if no effective measures are taken [248].

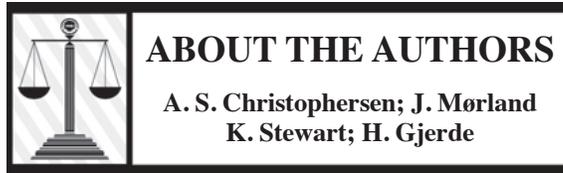
Driving under the influence (DUI) of alcohol has for many years been well known as a risk for road traffic safety [28,156]. Despite extensive focus in the scientific literature on the negative effects caused by alcohol, general

warnings in mass media, and improving law enforcement, alcohol is still one of the main contributing factors for RTCs [161,247].

The negative effects caused by use of illicit drugs and psychoactive medicines on the ability to drive safely gained little attention until the 1970s, when the first studies on drugs relevant to traffic safety were published [158]. Later, traffic safety related to drug use received steadily increasing attention at international conferences organized by the International Council on Alcohol, Drugs and Traffic Safety (ICADTS), and many studies have been performed to document the effects of drugs on traffic safety. Numerous review articles have been published [105,158,168,171, 177,183,222,225].

The majority of the world's countries do not have robust data on the involvement of alcohol and drugs in nonfatal RTC injuries [248], and almost half of all countries lack data on alcohol-related RTC deaths. Only 73 countries test all fatally injured drivers for blood alcohol levels. Furthermore, the World Health Organization (WHO) identified only 87 countries with death registration data meeting either of the following completeness criteria: completeness for the year estimated at 80% or more, or average completeness for the decade including the country-year of 80% or more [247]. More accurate data are available for fatal RTCs in some high-income countries, particularly

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