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INTEGRATIVE REVIEW ARTICLE

TRAFFIC ACCIDENTS AND THEIR RELATIONSHIP WITH ALCOHOL USE: INTEGRATIVE REVIEW

ACIDENTES DE TRÂNSITO E SUA RELAÇÃO COM O CONSUMO DE ÁLCOOL: REVISÃO INTEGRATIVA

ACCIDENTES DE TRÁFICO Y SU RELACIÓN CON EL CONSUMO DE ALCOHOL: REVISIÓN INTEGRADORA

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ABSTRACT

Objective*:** to analyze the scientific papers published between 2006 and 2012 on the relationship between alcohol use and traffic accidents. ***Methodology*:** integrative literature review conducted on the Nursing Database (BDENF), the International Literature on Health Sciences (MedLine), the Latin American and Caribbean Health Sciences Literature (LILACS), the Scientific Electronic Library Online (SciELO), Saúde na Adolescência (ADOLEC), and the Brazilian Association of Traffic Medicine (ABRAMET). We identified 14 articles that address the relationship between traffic accidents and alcohol use. ***Results*:** most studies were published in 2009 and 2010; it was observed that traffic accidents and alcohol use are directly related, causing serious consequences to the individual, the family, and the community. ***Conclusion*:** it was found that traffic accidents associated with alcohol use may be regarded as a major public health problem in Brazil. ***Descriptors: traffic accidents; alcoholic beverages; public health; nursing.

RESUMO

***Objetivo*:** analisar as produções científicas publicadas entre 2006 e 2012 sobre a relação entre o consumo de álcool e acidentes de trânsito. ***Metodologia*:** revisão integrativa da literatura realizada na Base de Dados de Enfermagem (BDENF), na Literatura Internacional em Ciências da Saúde (MedLine), na Literatura Latino-Americana e do Caribe em Ciências da Saúde (Lilacs), na *Scientific Electronic Library Online* (SciELO), na Saúde na Adolescência (Adolec) e na Associação Brasileira de Medicina do Tráfego (Abramet). Foram identificados 14 artigos que abordam a relação entre os acidentes de trânsito e o consumo de bebidas alcoólicas. ***Resultados*:** a maioria dos estudos foi publicada em 2009 e 2010; observou-se que os acidentes de trânsito e o consumo de álcool estão diretamente relacionados, causando graves consequências ao indivíduo, à família e à comunidade. ***Conclusão*:** constatou-se que os acidentes de trânsito associados ao consumo de álcool podem ser considerados um dos principais problemas de saúde pública no Brasil. ***Descritores*:** acidentes de trânsito; bebidas alcoólicas; saúde pública; enfermagem.

RESUMEN

***Objetivo*:** analizar las producciones científicas publicadas entre 2006 y 2012 acerca de la relación entre el consumo de alcohol y los accidentes de tráfico. ***Metodología*:** revisión integradora de literatura llevada a cabo en la Base de Datos de Enfermería (BDENF), la Literatura Internacional en Ciencias de la Salud (MedLine), la Literatura Latinoamericana y del Caribe en Ciencias de la Salud (LILACS), la *Scientific Electronic Library Online* (SciELO), la Saúde na Adolescência (Adolec) y la Asociación Brasileña de Medicina del Tráfico (Abramet). Se identificaron 14 artículos que abordan la relación entre los accidentes de tráfico y el consumo de alcohol. ***Resultados*:** la mayoría de los estudios fue publicada en 2009 y 2010; se observó que los accidentes de tráfico y el consumo de alcohol están directamente relacionados, provocando graves consecuencias para el individuo, la familia y la comunidad. ***Conclusión*:** se constató que los accidentes de tráfico relacionados con el consumo de alcohol pueden ser considerados como uno de los principales problemas de salud pública en Brasil. ***Descriptores*:** accidentes de tráfico; bebidas alcohólicas; salud pública; enfermería.

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INTRODUCTION

Traffic accidents have been a frequent subject in the media. The approach taken greatly reflects the large number of tragedies, which make new victims every day, regardless of social class and cultural level. Traffic accidents are a major public health problem due to the great impact on morbidity and mortality, especially among the young male population. According to estimates of the World Health Organization (WHO), each year about 1.2 million traffic deaths are registered in the world, representing 3,000 deaths/day.[1]

In Brazil, violent deaths, including homicides, traffic accidents, and suicide, are the second leading cause of death among young people from 15 to 24 years, representing about 70% of deaths in this age group, statistical data which put it among the 10 countries where traffic accidents are responsible for more than 60% of deaths.[2]

This reality implies both loss of lives and physical consequences due to brain injury and spinal cord injuries.[3] Traffic accidents may be related to several factors, such as deficiency in maintenance of vehicles and roads, human errors, or psychoactive substance use.[4] Evidence show a causal link between alcohol use and the occurrence of traffic accidents, given the effects of this substance on the individuals' perception, vision, reflexes, consciousness, and behavior, and they stop using the seat belt and drive at high speed.[5]

Alcohol is the main psychoactive substance used throughout the world[6] and, in contemporary society, its use has a connotation different from the other drugs, because, as a lawful, inexpensive, and easily accessible substance, it has greater social acceptance, something which hinders dealing with it. In addition, its use is stimulated by the alcohol industry, making it difficult to see this substance as a public health problem.

This context certainly influenced the Brazilian Congress to approve, in 2008, Law 11,705, popularly known as "Alcohol Prohibition Law"[7], which reduces to zero the alcohol level permitted to drivers in Brazil, increases the administrative penalty, and makes the person who drives with 0.6g/L or more of alcohol per liter of blood criminally accountable. The new legislation also ensures the adoption of other strategies to confirm drunk driving. In addition to the breath alcohol test, the driver involved in a traffic accident or under surveillance may underwent a test, clinical examination, underwent forensic examination, or another procedure that, through technical or scientific means, provides evidence of the influence of alcohol or another psychoactive substance that determines addiction.[8]

The problems arising from alcohol use by drivers are broadly studied at an international level and they are regarded as a major public health problem, especially in developing countries.[9] In Brazil, there is still a need that new knowledge listing the problems that link alcohol use to traffic accidents is taken into account in order to contribute to developing strategies to control and reduce their effects.

Considering the urgent need for further studies that support the change of behaviors related to the binomial alcohol/accidents, this study aims to analyze the scientific papers published between 2006 and 2012 on the relationship between alcohol use and traffic accidents.

METHODOLOGY

Integrative review is the broadest methodological approach among the reviews, since it allows using experimental and non-experimental studies for a rather complete understanding of the phenomenon under analysis.[10]

The question used to design the study was: which are the evidence of the relationship between alcohol use and traffic accidents in studies published between 2006 and 2012? To obtain answers, a literature survey was conducted in these databases: Nursing Database (BDENF), International Literature on Health Sciences (MedLine), Latin American and Caribbean Health Sciences Literature (LILACS), Scientific Electronic Library Online (SciELO), Saúde na Adolescência (ADOLEC), and Brazilian Association of Traffic Medicine

(ABRAMET), adopting as descriptors: *traffic accidents* and *alcoholic beverages*, included in the Health Sciences Descriptors (DeCS).

The inclusion criteria established were: scientific articles addressing the theme, published in Portuguese, English, and Spanish between 2006 and 2012. The exclusion criteria were: scientific articles not available in full text and dissertations or theses published outside this time frame. Based on the combination of descriptors, 56 articles were obtained, but after applying the criteria above, only 14 articles could make up the sample under analysis.

To collect data, a previously validated instrument[11] was used, which included the items: article identification, methodological features of the study, evaluation of methodological rigor, and results found. Data analysis was done in a descriptive way, enabling evaluation of the problem and identification of the need for further research on the theme.

RESULTS AND DISCUSSION

The studies analyzed confirm the existence of a close relationship between alcohol use and traffic accidents, whose results are serious consequences to the individual, the family, and the community, and they were mostly published in 2009 and 2010 (Figure 1).

Author/year	Journal	Method	Objective
Duailibi et al. (2007)[12]	Rev Saúde Pública	Quantitative	Estimate the prevalence of alcohol use by drivers.
Malta et al. (2012)[13]	Epidemiol Serv Saúde	Quantitative	Describe the profile of victims of traffic accidents provided with care in public emergency services in 23 Brazilian state capitals and in the Federal District, in 2009.
Mascarenhas et al. (2009)[14]	Ciênc Saúde Coletiva	Quantitative	Describe the frequency of reference to alcohol use among emergency room cases due to external causes based on the Violence and Accidents Surveillance System (VIVA), in sentinel services.
Pechansky et al. (2009)[15]	Rev Bras Psiquiatr	Quantitative	Analyze information about drunk driving based on general population samples.
Leyton et al. (2009)[16]	Revista Abramet	Quantitative	Analyze traffic deaths related to alcohol use in the state of São Paulo in 2006.
Modelli et al. (2008)[17]	Rev Saúde Pública	Quantitative	Analyze the presence of alcohol in fatal traffic accidents in the Federal District, in 2005.
Abreu et al. (2009)[18]	Esc Anna Nery Rev Enferm	Quantitative	Analyze deaths due to traffic accidents, registered in the Forensic Medicine Institute (IML), in Rio de Janeiro city, according to the frequency of tests on blood alcohol levels.
Moura et al. (2009)[19]	Rev Saúde Pública	Quantitative	Analyze the proportion of adults who drive drunk in Brazilian state capitals and the Federal District since the enactment of Law 11,705. Data from the system of Risk Factors Surveillance and Protection against Chronic Diseases through Phone Interviews (VIGITEL) were analyzed.
Abreu et al. (2007)[20]	Esc Anna Nery Rev Enferm	Quantitative	Describe the profile of fatal victims of traffic accidents in Rio de Janeiro city based on the records of the Forensic Medicine Institute (IML) and compare them to blood alcohol levels detected in laboratory tests.
Nascimento et al. (2011)[21]	Psico-USF	Qualitative	Analyze the social representations of the work done by young volunteers in the Urgent Life Program in Espírito Santo.
Boni et al. (2012)[22]	Rev Saúde Pública	Quantitative	Evaluate differences and similarities in

			relation to drinking and driving in the 5 Brazilian macro-regions.
Malta et al. (2010)[23]	Epidemiol Serv Saúde	Quantitative	Discuss the impact of restrictive alcohol legislation on morbidity and mortality due to traffic accidents in Brazil.
Macêdo (2006)[24]	Cadernos ESP	Reflective	Think through the unfolding of the subjective conflict between individual rights and collective needs in the traffic environment.
Bacchieri, Barros (2011)[25]	Rev Saúde Pública	Quantitative	Describe the situation of traffic accidents in Brazil since the enactment of the Brazilian Traffic Code, from 1998 to 2010.

Figure 1. Characterization of selected studies. Teresina, 2014.

According to these studies, it is undeniable that drunkenness is one of the biggest social problems of our times, characterized as the main reason for a series of crimes, accidents, and personal failures in a significant portion of the population. Alcohol and the other psychoactive substances act directly on the central nervous system (CNS), significantly decreasing responsiveness in face of the adversities arising in traffic.[12]

Alcohol use associate with inexperience, search for emotions, pleasure in experiencing risk sensations and impulsivity represents a significant risk factor in unexpected behaviors among adolescents and young adults, something which may contribute to the higher incidence of traffic accidents among this population group.[13]

Brazil, despite having a rather poor knowledge production that describes the epidemiology of traffic accidents related to alcohol use, is one of the countries with the highest rate of problems related to this practice, with immeasurable social costs.

An epidemiological survey conducted in Brazil, having data from the Violence and Accidents Surveillance System (VIVA), in sentinel services, as a basis, showed that alcohol use among victims of accidents and violence is usual. In this study, the highest proportions of suspected alcohol use occurred among the patients involved in traffic accidents, affecting 16.8% of these victims.[14]

Another population-based study, the I Brazilian National Household Survey on Alcohol Use Patterns, conducted by the Center for Research on Alcohol and Drugs of the Federal University of Rio Grande do Sul (CPAD/UFRGS), in 143 Brazilian municipalities, in 2009, indicated that 35% of the cases of traffic accidents are directly associated with alcohol use.[15]

Epidemiological surveys that related alcohol use and fatal victims in the state of São Paulo, the Federal District, and in Porto Alegre, found blood alcohol concentration in 45%, 43%, and 32% of the cases, respectively. Among non-fatal victims provided with assistance in the trauma and emergency care centers in São Paulo and Uberlândia, Minas Gerais, Brazil, the prevalence of victims of alcohol use was, respectively, 24% and 29%.[16,17]

A study conducted in Rio de Janeiro city showed that 42.5% of fatal victims of traffic accidents had positive blood alcohol concentrations, out of which 66.2% had values between 0.6 and 2.0 g/L of blood alcohol levels, something which may indicate excessive use of alcoholic beverages within the last hours before the accident, estimated, on average, from 4 to 8 doses.[18]

In the Northeast region, evidence is even more worrisome. A study conducted in Camaragibe, Pernambuco, Brazil, showed that 47.5% of users of the Mobile Emergency Care Service (SAMU) were related to alcohol use.[19]

As for the nature of accidents associated with alcohol use, a study conducted in Rio de Janeiro showed that most of them involved running over (38.3%). Collisions are another usual kind of accident. When victims were riding a motorcycle, data increased significantly, reaching 66.6%.[20]

A cross-sectional study carried out through epidemiological survey in emergency care services in the Brazilian state capitals and the Federal District

showed that among the cases resulting from traffic accidents that involve drivers/motorcyclists, especially motorcycle riders, suspected alcohol use ranged from 5.8% in Rio de Janeiro to 28.6% in Teresina.[13]

The studies analyzed also point out another problem: alcohol use among a specific group of drivers – truck drivers. One of them reveals that 91% of truck drivers use alcoholic beverages during working hours, as well as 17% of them have already been involved in road accidents due to alcohol use. The preferred locations to drink are gas stations (43%).[21]

To overcome this problem, Porto Alegre approved, in 2006, a law prohibiting the use of alcoholic beverages in gas stations. However, a research conducted in this context showed that there is no statistically significant difference in alcohol use among customers of these commercial facilities before and after this law was enacted.[22]

Another study, however, showed a decreased frequency of deaths and hospital admissions due to traffic accidents after the implementation of a rather orthodox legislation, such as the new guidelines of the Alcohol Prohibition Law, which favor the protection of life, and this is a significant measure to break with this paradigm. Thus, there is an imperative need to maintain and expand the inspection and control measures, as well as communication measures and systematic education in order to prevent walking in the opposite direction with regard to so many advances.[23]

From this perspective, there emerges the need for a deeper reflection on this problem, so that issues having a cultural, sociological, historical, political, and psychological nature are discussed, able to produce significant changes in action and paradigm and enable a multi-dimensional analysis of this phenomenon.[24]

The significantly increased number of cars and motorcycles, encouraged by low interest funding and as a result of economic growth, along with a rapidly aging population, are increasingly difficult challenges to overcome, given the current national public policy for traffic.[25]

Therefore, there is no doubt that we need to prevent and suppress the use of alcohol by drivers of motor vehicles, although that alone is not enough. Grasping the complexity of the relationships between alcohol use and traffic accidents is, perhaps, the starting point to overcome this challenge.

FINAL REMARKS

All studies examined addressed the consequences of traffic accidents associated with alcohol use, and this is regarded as a major public health problem in Brazil. Therefore, it is worth drawing attention to the need for greater awareness and responsibility among all individuals involved in this issue, to reduce the number of fatal victims in traffic accidents where alcohol beverages represent an actual determining factor.

It is clear, then, that there is need for an awareness raising campaign and guidance aimed at the population regarding the risks of such a lethal association and the importance of complying with traffic laws.

We stress the importance of continuity in studies that addressed this issue, thus contributing to design strategies to tackle these health problems, minimizing both the accident itself and its drastic consequences.

It is crucial that studies in this area are encouraged to implement public health policy actions and continuing education and the prevention of traffic accidents. In face of the data shown, it is worth discussing the preparation of public policies, emphasizing the development of interventions from the education perspective.

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