Repercussions of Traffic Accidents: An Integrative Review

Repercussões dos Acidentes de Trânsito: Uma Revisão Integrativa

Repercusiones de los Accidentes de Tránsito: Una Revisión Integrativa

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ABSTRACT

Objective: The aim of this review is to map the research on the main repercussions of traffic accidents in Brazil. 

Methods: This is an integrative review of the literature. LILACS and SciELO databases were searched using the descriptor “traffic accident” combined with “rehabilitation”, “disabilities”, “side-effects”, and “quality of life”. 

Results: 12 articles matched the inclusion criteria producing four categories: “Morbimortality due to traffic accidents in Brazil”; “Traffic accidents and the return to work”; “Impacts of traffic accidents on quality of life”; “Repercussions of traffic accidents in for the family and society”; “Suggested and/or adopted measures”. 

Conclusion: Traffic accidents in Brazil negatively impact the physical and psychological well-being of victims and their families, worsening their quality of life and work performance, with repercussions for society and economy.

Descriptor: Traffic Accidents, Statistics on Side-Effects and Disability, Quality of Life.

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An analysis of the scientific productions on traffic accidents in Brazil, which refer to its main repercussions. **Methods:** Integrative review of literature, whose data were collected in the LILACS and SCIELO databases, by means of the descriptors rehabilitation, incapacity, sequelae, and quality of life. **Results:** 12 articles met the inclusion criteria of this review, of which five categories emerged: morbidity and mortality, accidents in the family and social structure; measures suggested and/or adopted; implications of traffic accidents in quality of life; implications of traffic accidents in Brazil; traffic accident and return to work; impact of traffic accidents on health systems and society. Therefore, studies on traffic accidents are fundamental, since they may provide information for the elaboration and implementation of public policies in order to promote traffic accident prevention and victims’ rehabilitation.

Thus, this study had the following guiding question: “What is the scientific knowledge about the repercussions of traffic accidents in Brazil?” In order to answer this question, we mapped the research on the main repercussions of traffic accidents in Brazil.

**INTRODUCTION**

Traffic Accidents (TAs) correspond to an important source of morbidity and mortality worldwide, with social and economic implications because they affect mostly the economically active young.1 In addition, the increase in the number of such accidents overburden the health system, either with prolonged hospitalizations or with the high costs of rehabilitation.5

In this context, it is perceived that TAs cause serious problems for people and their relatives, as well as for the health system and society. Therefore, studies on TAs are of fundamental importance, since they may provide information for the elaboration and implementation of public policies in order to promote TA prevention and the victims’ rehabilitation.

In order to select the studies, the following inclusion criteria were considered: full-text, free, and original scientific articles on TAs developed in Brazil, published from 2007 to 2017, and written in Portuguese, English or Spanish. Theses, dissertations, and articles on other subjects or in more than one database were excluded.

Initially, 9,727 publications were retrieved by searching for publications using the descriptors and combinations of them. From the 17 articles that matched the inclusion and exclusion criteria, 12 were used in this review.

Each article was read in full, observing if it really matched the purpose of this study. After this, a script formed by the characteristics of the articles and other variables of interest was developed. Finally, the texts were analyzed and read critically to extract the relevant results and characteristics.

For the data analysis and summaries of the articles, a synoptic table was used with following aspects: authorship/year, newspaper, title, goal, and conclusions. Afterwards, the
discussions about the results were carried out, which were based on other studies on the subject of this review.

RESULTS AND DISCUSSION

Twelve articles that matched the inclusion criteria were analyzed and their characteristics are described in Table 1. Seven articles were found in SCIELO and five in LILACS. The majority of the articles were published in 2016 (4), but none in 2007 and 2017.

Concerning the research method, ten articles were developed using quantitative methods: nine cross-sectional studies and one longitudinal cohort study. Qualitative approaches were used in two articles.

Based on the articles’ results, four categories emerged: “Morbimortality due to traffic accidents in Brazil”; “Traffic accidents and the return to work; “Impacts of traffic accidents on quality of life”; “Repercussions of traffic accidents for the family and society”; “Suggested and/or adopted measures”. Through the analysis of the articles, it was possible to perceive that TAs is a serious public health problem in Brazil, with disastrous repercussions for the victim, their relatives, and society in general. It was also observed that the improvement of the TA victims’ health condition often depends on large rehabilitation periods, and the effort into preventive actions continues to be the best way to deal with the problem. Hence, four categories emerged from these results, which will be discussed separately.

Morbimortality due to traffic accidents in Brazil

According to data from the Pesquisa Nacional de Saúde (PNS) [National Health Survey], 3.1% of Brazilians aged 18 years and older (4.4 million people) reported having involvement in TAs. This data corroborates the results of other studies analyzed, which show the predominance of economically active male motorcyclists among the injured. According to a study, the greater vulnerability of the young population can be attributed to the social and cultural behaviors of these individuals, such as less use of protective equipment, increased alcohol consumption, speeding, and lack of driving skills. The greater frequency of motorcyclists among the victims can be explained by the increase in the fleet of motorcycles, motivated by urban and rural mobility difficulties, the precariousness of the collective transportations, and the advantages of motorcycles, such as agility, fuel economy, and low repair costs.

Among the Brazilian regions, the fragility of the North, Northeast and Central-West regions was verified regarding TA rates, use of protective equipment, as well as access to fast hospital care. These results may be influenced by the small number of municipalities in these regions registered with the Sistema Nacional de Trânsito [National Traffic System], with a municipal traffic management that can supervise the traffic and execute safety actions. In addition, a large part of the municipalities do not present a prehospital service network and a hospital qualified to respond to the rapid increase in...
the vehicle fleet, nor actions for urban and road planning enough to deal with these accidents.\textsuperscript{11}

In 2013, 52.4\% of the Brazilian TA victims received some health care and 7.7\% (345,000 people) needed hospitalization.\textsuperscript{7} Also, data from the Sistema de Vigilância de Violências e Acidentes (VIVA) [Violence and Accident Surveillance System], in 2011, indicate that approximately 30\% of TA patients attending emergency and urgent care services in 23 Brazilian capitals and Federal District were hospitalized or transferred to another health care service within the first 24 hours, which shows the severity of the injuries caused by TAs.\textsuperscript{12}

Limbs were the most damaged part of the TA victims, especially the lower limbs. In addition, traumatic brain injury (TBI) was the main cause of death by TA.\textsuperscript{13-14} Crushing injuries, amputations and spinal cord injuries, although less frequent, are of great importance because of the severity of their side-effects.\textsuperscript{13-15}

Furthermore, TAs and their complications overburden the health system with high hospital readmission rates and long-term rehabilitation treatment. In a study that analyzed the causes of hospital readmission in TA victims after one year from hospital discharge, it was observed that 17.4\% of the patients needed readmission, with a rate of 174/1,000 people per year, being surgical site infection the main cause.\textsuperscript{16} In addition, temporary or permanent inability contribute to the increase in these rates, as well as to the decrease in functional capacity and muscular strength, postural instability and higher victims’ fall rates.\textsuperscript{16}

Regarding the mortality, a study showed that 42,266 deaths by TAs were recorded throughout the country in 2013, with a projected mortality rate of 21.0 deaths per 100,000 inhabitants, being young adults, males and motorcyclists the main victims.\textsuperscript{17} In the same year, more than one million potential years of life were lost due to these accidents in Brazil, especially in the age group 20-29 years, which represents not only a personal or family impact but a collective one due to the population with high economic and intellectual potential being impaired.\textsuperscript{17}

For TA survivors, statistics indicate that about 2 million Brazilians aged 18 years and more left their work as a result of TAs in 2013, and approximately 670,000 had some side-effects and/or inability due to the accident.\textsuperscript{12} Corroborating these results, a study on the prevalence of physical side-effects among hospitalized TA people in the country from 2000 and 2013 showed that 23.5\% (about 400,000) of the hospitalized patients presented a suggestive diagnosis of side-effects.\textsuperscript{18}

The main impacts of TAs as a result of this review were: overburden of health services; potential years of life lost; absenteeism; early retirement; victims’ physical and emotional limitations; and damages to the family and society.

**Traffic accidents and the return to work**

Three selected articles had as objective evaluating the return to work in TA victims. In one of these studies, it was shown that 48\% of the victims did not return to work after six months from hospital discharge, and among those who returned to work, 4.9\% changed their job due to post-traumatic conditions.\textsuperscript{8} In the study carried out with victims of motorcycle accidents seen at a rehabilitation center, it was observed that 86\% of the interviewees were unable to return to work after the accident, and 79.6\% were looking for some type of social security benefit, of which 4\% were self-employed, with the aim of increasing family income.\textsuperscript{19}

Furthermore, a study on the use of lower limb prosthesis and the return to work in TA amputees found that all the individuals left their jobs after the accident, and 66.7\% were on medical leave by the Instituto Nacional do Seguro Social (INSS) [National Social Security Institute], 25\% were retired due to disability and 8.3\% due to age. Five people on medical leave returned to work, and four retired people reported working beside receiving the pension.

In the analyzed studies, the reduction in family income after the accident was evidenced, which may be related to the victim or family member leaving their unpaid jobs, to unemployed people, or to the value of medical pensions being lower than wages.\textsuperscript{3}

One selected publication verified the factors associated with return to work after TAs, in which no statistically significant results were found.\textsuperscript{4} However, several factors related to trauma are linked to return to work, such as initial injury type, injury severity and presence of cranioencephalic injury. In addition, predictive factors related to return to work were reported after six months from the accident, such as the presence of physical or neuropsychological side-effects and persistent pain.\textsuperscript{21}

In assessing the TA victims’ quality of life regarding return to work, a study showed that the people who returned to work scored better evaluation in the Medical Outcome Survey 36-item short (SF-36) questionnaire, while in those who did not return to work, it was observed that the most affected domains were functional capacity, physical aspects, and emotional aspects.\textsuperscript{5} In addition, when comparing the patient groups according to the average values found in each instrument domain, it was verified that the group that returned to work scored higher values in all domains and only vitality was not statistically significant.\textsuperscript{5}

Thus, the return to work after a TA depends on conditions related to the individual, pathology or injury, the rehabilitation process and the socioeconomic environment in which the victim is inserted.\textsuperscript{7} This is a complex problem, with repercussions on the quality of life and serious social costs.

**Impacts of traffic accidents on quality of life**

The selected studies indicate that traumas reduce the health-related quality of life in the medium and long term.\textsuperscript{21} Many factors can influence the quality of life after a trauma, such as the quality of care offered by the health system, type and severity of injuries, number of surgical interventions,
side-effect degree, pain, rehabilitation access, socioeconomic conditions, among others.22

Among the articles included in the review, two evaluated the quality of life of individuals under TA side-effects. In one study, quality of life was measured using the World Health Organization Quality of Life-100 (WHOQOL-100) and the SF-36 questionnaires; while in the other, a questionnaire created by the researchers was used.

The WHOQOL-100 analysis showed that individuals suffering from TA side-effects reported having an average value of quality of life (not so good/not so bad) considering the level of independence in daily life activities, dependence on medications or treatments, and capability of doing work, in addition to aspects related to physical security and protection, home environment, financial resources, health care and social aspects.23 It was also observed that the Spiritual Aspects/Religion/Personal Beliefs domain presented the highest score, which may mean that personal beliefs contribute to understand and face difficulties, that is, spirituality promotes hope, security and perseverance, collaborating for the TA patients’ psychological well-being and better life quality.23

The results obtained from the SF-36 showed that individuals with AT side-effects present physical, emotional, and functional impairment.23 According to the authors, these results may be related to long periods of physical limitation, hindering work because of the difficulties and interferences in performing daily activities, as well as the consequences of the psychological condition for the patient’s well-being, which may be caused by abrupt lifestyle changes, mainly caused by injuries.23

Considering the study that evaluated the quality of life of TA victims with secondary spinal cord injury, a strong association was found between trauma complications and the medium and high levels of quality-of-life impairment. As a result, emotional aspects, autonomic dysreflexia, and intestinal disorders were closely related to the high level of impairment. On the other hand, pressure ulcers and urinary disorders were related to the medium impairment level.24

A study carried out with victims suffering from secondary spinal cord injury indicates that the domains of emotional aspects and mental health are impairing them, suggesting an imbalance between body and mind with a decreased quality of life, which is reflected in all domains, especially in social aspects.25

Thus, it can be inferred that TAs and its complications cause limitations to the victims, impairing their most basic and important actions, such as mobility, work, health and autonomy for daily activities, which impacts on their quality of life.

Repercussions of traffic accidents for the family and society

In a study that quantified the costs of accidents on Brazilian highways, the Instituto de Pesquisa Econômica Aplicada (Ipea) [Institute of Applied Economic Research], pointed out the need to know the impact of TAs on the health and life of the victims directly or indirectly involved in those accidents, such as family members, rescue teams, and health teams, which are directly affected by stress, since they deal with disaster side-effects, life-threatening risks and deaths by tragic circumstances on a daily basis.26

Victims and their families face problems caused by TAs that are apparently hidden, such as changes in lifestyle, sadness, and discouragement, which are intensified by severe physical injuries, impairment and death of a loved person.27 According to a study that analyzed the context of hospitalizations due to TAs according to the injured person and his/her family member/companion, the most relevant contexts are the emotional, familial, economic and social ones.27

The participants reported having moments of anxiety, especially due to stoppage of surgeries, delayed surgery scheduling, prolonged hospital treatment and delayed health recovery. They also reported feeling sad/depressed, which is intensified by the death of a loved person; distance from family, friends and work; and uncertainty about the future.27 Impotence and lack of skill for caring for children and member amputation were also reported as reasons that contribute to these individuals’ emotional instability.27

Moreover, it was observed that the concern with the hospitalized person, homesickness, and lack of financial and/or emotional support increase the dissatisfactions of both the injured person and his/her family member-companion.27

Conversely, a study shows that when injured people receive family support, they see the family as a source of support and safety, which is the key to their recovery.28 For these patients, the family represents the possibility of self-reorganization. It is of fundamental importance that the health professionals and other participants know the characteristics of the victim and his/her family caregiver, as well as their individual needs, in order to promote adequate support for caregivers and victims.28

Suggested and/or adopted measures

Due to the relevance and magnitude of the injuries and deaths caused by TAs in Brazil, some measures were adopted to deal with the problem. Among them, the creation of the Brazilian Traffic Code in 1998, and integrated inspection initiatives, such as the implementation of the “Lei Seca” in June 2008 and its revision in December 2012, and the creation of the Rodovida project from the Federal Highway Police, which contribute significantly to the reduction of traffic-related morbimortality in the country.10

Furthermore, the creation of VIVA in 2006 by the Brazilian Ministry of Health was also a relevant initiative2 for quantifying, characterizing and monitoring cases of TA victims attending urgency and emergency services in the country; and the Projeto Vida no Trânsito [Life in Traffic Project] in 2010, initially implemented in five Brazilian capitals, and later expanded to the other capitals and the Federal District,
with the objective of acting on the main risk factors for TAs by qualifying information and by planning, monitoring, and evaluating interventions.30

Regarding public policies, it is highlighted the creation of the Política Nacional de Redução da Morbimortalidade por Acidentes e Violências [National Policy for Reducing Morbidity and Mortality due to Accidents and Violence] in 2002. According to this policy, the Ministry of Health recognizes TAs as a public health problem in Brazil and defines actions for prevention, promotion, and rehabilitation of health.31 Also, the Política Nacional de Atenção às Urgências [National Policy on Emergency Care] was implemented in 2003. One of its objectives was establishing the mobile prehospital component through the creation of the Serviço de Assistência Móvel às Urgências (SAMU-192) [Mobile Emergency Service] in municipalities and regions across the country.32

Furthermore, the selected studies emphasized that the obsolete human-vehicle-road triad must be overcome in order to approach TAs.33 Thus, interventions must be linked and integrated to the governmental and non-governmental departments, which are responsible for promoting safe and sustainable transportation of the population and for promoting safe environments within the perspective of human mobility and quality of life.34 In addition, when considering the multi-causality of these events, communication and education actions must also be implemented in a continuous and systematized way.34

CONCLUSIONS

In this review, it was observed that TAs in Brazil have a negative impact on the physical and psychological well-being of the victims and their families, worsening their quality of life and capacity for working, also producing repercussions for economy and society. The need for more in-depth investigations on the occurrence of side-effects due to these accidents, their risk factors and their impact on the victims’ quality of life was also evidenced.

It is believed that this review may contribute to broadening the discussions on TA repercussions, as well as provide relevant information for creating public policies for health prevention and rehabilitation treatment.

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