Health in Brazil 5

Violence and injuries in Brazil: the effect, progress made, and challenges ahead

Michael Eduardo Reichenheim, Edinilsa Ramos de Souza, Claudia Leite Moraes, Maria Helena Prado de Mello Jorge, Cosme Marcelo Furtado Passos da Silva, Maria Cecília de Souza Minayo

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This is the fifth in a Series of six papers on Health in Brazil

Department of Epidemiology, Institute of Social Medicine, Rio de Janeiro State University, Rio de Janeiro, RJ, Brazil (Prof M E Reichenheim PhD, Prof C L Moraes PhD); **Latin-American Centre for Studies on Violence and Health (CLAVES), National School of Public Health, Oswaldo Cruz Foundation, Rio de Janeiro, RJ,**

Although there are signs of decline, homicides and traffic-related injuries and deaths in Brazil account for almost two-thirds of all deaths from external causes. In 2007, the homicide rate was 26·8 per 100 000 people and traffic-related mortality was 23·5 per 100 000. Domestic violence might not lead to as many deaths, but its share of violence-related morbidity is large. These are important public health problems that lead to enormous individual and collective costs. Young, black, and poor men are the main victims and perpetrators of community violence, whereas poor black women and children are the main victims of domestic violence. Regional differentials are also substantial. Besides the sociocultural determinants, much of the violence in Brazil has been associated with the misuse of alcohol and illicit drugs, and the wide availability of firearms. The high traffic-related morbidity and mortality in Brazil have been linked to the chosen model for the transport system that has given priority to roads and private-car use without offering adequate infrastructure. The system is often poorly equipped to deal with violations of traffic rules. In response to the major problems of violence and injuries, Brazil has greatly advanced in terms of legislation and action plans. The main challenge is to assess these advances to identify, extend, integrate, and continue the successful ones.

Introduction

Violence and injuries have been prominent causes of morbidity and mortality in Brazil since the 1980s; by 2007, they accounted for 12·5% of all deaths, mostly in young men (83·5%).[1] The pattern in Brazil differs from other parts of the world in some respects: most deaths are due to homicide or are traffic related (figure 1), by contrast with most WHO member countries where 51% of deaths due to external causes are suicides and 11% are due to wars and civil conflicts.[2] In 2007, there were 47 707 homicides and 38 419 traffic-related injuries and deaths in Brazil, which together constituted 67% of the total 131 032 deaths from external causes. However, Brazil is not so different when compared with other Latin American countries.[3]

Domestic violence is another major concern that needs attention. Although not contributing much to mortality from external causes, several studies (reviewed by Krug and colleagues[2]) suggest that it is a very large problem and leads to serious and lasting consequences for individuals, families, and society.

Insecurity felt by many Brazilians should thus not be unexpected. This feeling stems from a combination of high crime rates—especially interpersonal violence—overseen by an often inefficient and corrupt police, as well as by impunity at large.[4] In many respects, use of alcohol and illicit drugs, along with a large amount of weapons in circulation, form the backdrop to the violence. Longstanding insufficient and inadequate responses of the public-security forces and the justice system helped to increase the sense of impunity.

After a steady rise over the years, a declining trend in homicides and traffic-related injuries and deaths has been recorded over recent years, albeit not homogeneously across all regions. Factors that might be influencing this downward trend are still uncertain, but some hypotheses have been proposed. Trends for domestic violence are unknown since there are few studies on this subject.

A renewed commitment of civil society and public agencies to build a national consciousness about violence and injuries has been witnessed over recent years. The

Key messages

- Violence is an important public health problem in Brazil due to it being the source of a large proportion of morbidity (sixth leading cause of hospital admissions and a high prevalence of domestic violence) and mortality (third place in mortality). This results in high individual and collective costs.
- Young, black, and poor men are the main victims and perpetrators of community violence, whereas poor black women are the main victims of domestic violence.
- In Brazil, physical violence between intimate partners has a regional pattern, with higher prevalence in the northern regions—less developed, with a strong patriarchal culture and characterised by gender inequality—as opposed to the historically most developed southern regions.
- Despite some successful experiences in recent years, public safety largely operates by confrontation and repression rather than sharing intelligence and prevention.
- The Brazilian transport system gives priority to roads and private-car use without offering an adequate infrastructure, and is poorly equipped to deal with the infringement of traffic rules.
- Widespread corruption and impunity provide a culture of permissiveness that surrounds violence and its consequences.
- Besides the sociocultural determinants, much of the violence in Brazil is associated with the misuse of alcohol and illicit drugs and wide availability of firearms.
- In response to the major problems of violence and injuries, Brazil has advanced greatly in terms of legislation and action plans. The main challenge is to assess these advances to identify, extend, integrate, and continue the successful ones.

urgency about the need for social and institutional changes has been a catalyst for various movements and actions by civil society and government alike. For several health-related problems covered in this Series, violence is certainly one that has strongly affected the health sector, demanding a restructuring and organisational overhaul to respond to its effects: traumas, injuries, and deaths.

Based on several primary and secondary sources (panel), as well as specific reviews of published work, we provide an overview of violence and traffic-related events affecting the health of Brazilians. We focus on the most relevant aspects and describe strategies used by federal, state, and municipal governments and Brazilian society in general to confront the problems of homicides, domestic violence, and traffic-related injuries and deaths.

Homicides

Scale of the problem

Homicides, since the 1980s, have been largely responsible for the rise in violence-related mortality in Brazil. Mortality rose from 26·8 per 100 000 people in 1991 to 31·8 per 100 000 in 2001; however, since 2003, there has been a downturn (figure 2). By 2007, levels had returned to what they were in 1991 (26·8 per 100 000). Homicide-related mortality is still greater than that reported in China (1·2 per 100 000 in 2007) and Argentina (5·2 per 100 000 in 2007), yet is below that of other countries such as South Africa (36·5 or 100 000 in 2008) and Colombia (38·8 per 100 000 in 2007).[20]

In Brazil, men are at ten-times greater risk of dying from homicides than women (figure 2); the differences by age group are equally striking. In the 1980s the increase in mortality was mainly in children (0–9 years) and adolescents (10–14 years), whereas in the next decade homicides also reached young adults aged between 15 and 29 years. In the 2000s, mortality dropped in nearly all age groups, except those aged 50 years and older.[21]

Epidemiological profile, determinants, and risk factors

The north, northeast, and centre-west regions (the areas of agricultural frontiers and serious conflicts over land) had the highest mortality due to homicide, whereas the southeast and south (the most heavily populated and developed regions) had the lowest (table 1). Over the period assessed there has been a general reduction in mortality in the southeast, north, and centre-west regions, but it has increased in the northeast and the south.

Although the most populous regions are those with the lowest homicide rates, the highest rates are in the larger cities. Some studies have given the intense urbanisation beginning in the 1990s as an explanation,[22] although others point to social disorganisation and decreased law enforcement capacity.[23] A strong association between homicide, drug trafficking, and the possession of illegal weapons has also been surmised.[22,24]

Several factors have been implicated in the increase of homicides in Brazil. Many of these factors are common

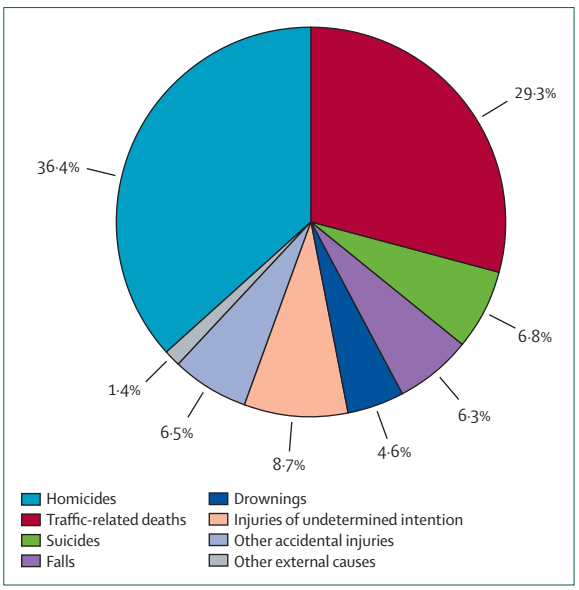

Figure 1: **Proportional distribution of deaths by external causes, 2007**
Original (ad-hoc) analysis (n=131 032) with the Brazilian Ministry of Health's Mortality Information System database.[1]

Brazil (E R de Souza PhD, M C de Souza Minayo PhD); **Mestrado Profissional em Saúde da Família, Estácio de Sá University, Rio de Janeiro, RJ, Brazil** (Prof C L Moraes); **Department of Epidemiology, Public Health Faculty, University of São Paulo, São Paulo, SP, Brazil** (Prof M H P de Mello Jorge PhD); **and Department of Epidemiology and Quantitative Methods in Health, National School of Public Health, Oswaldo Cruz Foundation, Rio de Janeiro, RJ, Brazil** (C M F P da Silva PhD)

Correspondence to:
Dr Michael E Reichenheim, Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro, Rua São Francisco Xavier 524, 7° andar, Rio de Janeiro, RJ 20559-900, Brazil
michael@ims.uerj.br

Panel: Information sources for reviews and data analyses

We include original analyses of secondary data retrieved from the Brazilian Ministry of Health's Mortality Information System,[1] the Information System on Hospital Admissions,[5] the 2000 Brazilian census obtained from the Brazilian Institute of Geography and Statistics and the Institute of Applied Economic Research. Our analysis of homicides covered 1980–2007, in addition to data from 2008 for Brazilian municipalities (counties) with 100 000 inhabitants or more. We assessed traffic-related deaths for 1996–2007 with data from the Mortality Information System, and for 2007 and 2008 with data from the Information System on Hospital Admissions. We used International Classification of Diseases (10th revision) codes X85-Y09 and Y87.1 for assault involving homicide, Y35 for legal intervention, and V01-V89 for traffic-related deaths.[6]

The original health data on homicides and traffic-related deaths are complemented by a review of published work. Besides police reports, police inquiries, court cases, and other official documents, our review is mainly based on data from the Brazilian National Department of Motor Vehicles, the Mobile Emergency Care Service,[7] and the System for Surveillance of Accidents and Violence recently created by the Ministry of Health.[8,9]

As with homicides, the Information System on Hospital Admissions is the best source of data on traffic-related injuries and deaths, since it covers deaths at any time after the event and not only those at the time of the accident. Meanwhile, data from DENATRAN cover only about 70% of all traffic-related deaths,[10] so comparisons need to be viewed with caution when using publications based on different data sources.[9,11] Records on outpatient morbidity after accidents and violence are usually only partial. The existing data are from admissions to hospital recorded in the Information System on Hospital Admissions database and the Mobile Emergency Care Service.[7] Both provide better information on accidents (compared with violence), although the Mobile Emergency Care Service is still not organised as a nationwide system. The System for Surveillance of Accidents and Violence, established in 2006, contains reports of cases of violence that reach outpatient clinics and emergency services.[8,9] Based on the profile of patients admitted to hospital, we have measured morbidity due to traffic-related injuries since 1998.[12]

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All rates are standardised according to the WHO standard population in 2000.[13] Data corrected for under-reporting according to region of the country, sex, and age strata. The webappendix accompanying the Series paper by Victora and colleagues has details of the mortality calculation.[14]

It is difficult to obtain reliable data on child abuse and neglect, intimate partner violence, and domestic violence against the elderly. Mortality data are problematic, since they assume deaths from external causes as a proxy for the problem. Mortality and morbidity databases from law enforcement agencies have many missing data, especially regarding the aggressor, thus hindering interpretation of the data. Surveillance data from reports to health services or Tutelary Councils have limited coverage in different regions of Brazil and tend to emphasise certain aspects of violence more than others.[15] Primary morbidity data are more specific and provide a more detailed picture. We thus chose to prioritise primary sources for our review of published work and as the underlying data for the original analyses. There are few such studies with a nationwide scope in Brazil. So far, only three population-based surveys were identified that specifically assessed domestic and intimate-partner violence and covered states from all regions of the country.[16–19]

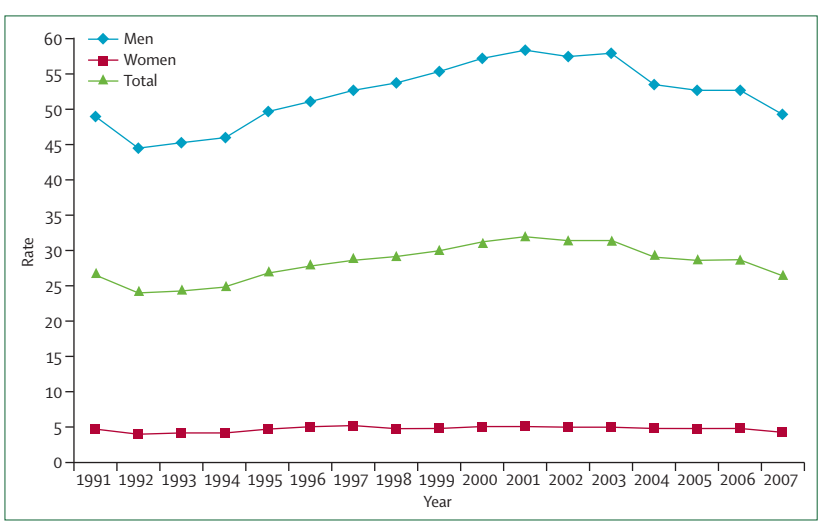

Figure 2: **Total homicide mortality (per 100 000 inhabitants) and by sex, 1991–2007**
Original (ad-hoc) analysis with Brazilian Ministry of Health's Mortality Information System database.[1] Rates are standardised according to the WHO standard population in 2000.[13] Data corrected for under-reporting according to region of the country, sex, and age strata.

For more on **data from the Brazilian Institute of Geography and Statistics** see http://www.ibge.gov.br/home/

For more on **data from the Institute of Applied Economic Research** see http://www.ipeadata.gov.br/ipeaweb.dll/ipeadata

For more on **data from the Brazilian National Department of Motor Vehicles** see http://www.denatran.gov.br/

For more on **DENATRAN** see http://www.denatran.gov.br/

to Latin American countries and other parts of the world, but some are particular to Brazil, such as the blending of different cultural aspects of Brazilian society. As in many countries, young brown and black men and poorly educated people are the main victims.[21] In 2007, for instance, men accounted for 43 890 (92%) of 47 707 homicides and 36 124 (81·7%) of 44 216 admissions to hospital involving violence at large. The most heavily affected age-group was 20–29 years, both for deaths (19 226 [40·3%] of 47 707) and admission to hospital (13 928 [31·5%] of 44 216). Of the 47 707 victims of homicides, 26 287 (55·1%) were mixed race (42·5% of the total Brazilian population is mixed race; 79 571 900 of 187 228 000) and 3912 (8·2%) were black (7·5% of the population; 14 042 100 of 187 228 000).[25] Of the 30 107 homicides (63·1%) for which information on the victims was available, 13 458 (44·7%) had 4–7 years of schooling whereas only 1174 (3·9%) had schooling for more than 12 years.

High consumption of alcohol and the use of illicit drugs are also common in Brazil. For example, in the state capital in southern Brazil 99 (76·2%) of the 130 victims or the perpetrators tried between 1990 and 1995 were intoxicated at the time of the crime.[26] Similarly, a toxicological analysis at the Institute of Forensic Medicine in a city of São Paulo State found cocaine in six of the blood samples taken in relation to 42 violent deaths.[27]

Brazil has high homicide rates involving firearms (19·5 per 100 000 people in 2002), compared with both high-income countries like Canada, France, and the USA (from fewer than one per 100 000 to three per 100 000), and other low-to-middle income Latin American countries such as Argentina and Mexico (from three per 100 000 to seven per 100 000).[28] The proportion of homicides committed with firearms increased from 50% to 70% between 1991 and 2000, an increase mostly due to the use of smuggled weapons in organised crime. During this period, while homicides increased by 27·5% overall, those involving firearms increased by 72·5%.[29] According to data from 2007, firearms were used in 71·5% of homicide deaths and 24·4% of admissions to hospital due to assaults.

From a macrostructural standpoint, Brazilian researchers have underscored the severe economic stagnation that took hold of the country in the 1980s and aggravated a historical and enduring concentration of wealth. This stagnation was in the wake of a process of accelerated urbanisation that had already begun in previous decades, a process that led a large portion of the population to move into the peripheries of towns and cities without matching provisions of infrastructure and services. Unprecedented growth of the young population due to the baby boom of the 1960s and the ensuing high rates of unemployment and informal employment of these young people, especially in those with lower levels of formal education, might have also added to the escalating homicide rates.

Contextual factors also made a great contribution to the increase in homicides in the 1980s and 1990s. Notable factors are the intensification of the trade in illicit drugs, smuggling and trafficking of firearms and other merchandise, urban turf wars between criminal gangs, police violence, conflicts in rural towns with agricultural frontiers, and land disputes.[23,30–32]

Consequences

The high homicide rate has major emotional and social costs. Homicide leads to the breakdown of families and affects friends and acquaintances of victims, causing suffering, revolt, fear, and despair, in addition to various psychiatric disorders.[33] Even a non-fatal assault almost always leaves temporary or permanent sequelae.

According to the Institute of Applied Economic Research, violence cost Brazil almost US$30 billion (more than R$87 billion) in 2004. Of this, the cost to the public sector was $9·6 billion (almost R$28 billion).[34] The Unified National Health System (SUS) spent an estimated $39 million (almost R$114 million) in 2004 on admissions to hospital due to assaults, a large share of which related to attempted homicides.[9]

Studies have shown that homicides interfered in the urban layout and negatively affected the real-estate sector. These changes led to the closing off of public spaces and sparked the construction of private gated communities for those purporting to shield themselves from violence.[35] According to simulations for certain neighbourhoods in Belo Horizonte (capital of the State of Minas Gerais), a 50% drop in the homicide rate would increase rental values by 12–16·6%.[36] Perversely, homicides also led to increases in the economy and generated income for the security industry—because of the demand for electric fences and gratings, armoured passenger cars, and alarm systems—and the weapons industry. Homicides also helped the private security industry, which showed an increase of 73·9% in the number of companies from 1997 to 2007; this represented 45·5% of the security services system[37] and automobile insurance industry.[38]

	1991	1995	2000	2007	Difference
North	39·0	32·0	31·1	34·1	–12·6%
Northeast	30·8	31·6	32·0	36·8	19·5%
Centre-west	32·6	29·9	34·6	29·6	–9·2%
Southeast	26·9	28·5	34·6	22·9	–14·9%
South	16·5	13·8	16·0	18·2	10·3%

Original (ad-hoc) analysis with Brazilian Ministry of Health's Mortality Information System database.[1] Rates are standardised according to the WHO standard population in 2000.[13] Data corrected for under-reporting according to region of the country, sex, and age strata.

Table 1: **Homicide mortality per 100 000 inhabitants by macro-regions of Brazil, 1991–2007**

Domestic violence

Scale of the problem

Another major public health problem in Brazil is child and adolescent maltreatment by parents, intimate-partner violence, and domestic violence against elderly people. Although sexual abuse is a serious public health problem in Brazil, it is discussed separately in the webappendix (p 1) since it is not necessarily a domestic form of violence and involves specific determinants and consequences compared with other forms of intimate violence.

The webappendix (p 3) summarises the population-based and services-based studies on domestic violence in Brazil between 1995 and 2010. Most studies are from the southeast, especially from the metropolitan areas of São Paulo and Rio de Janeiro.

According to the 11 studies on child abuse and neglect that we have reviewed, the number of cases of psychological and physical violence against children and adolescents are conspicuously high.[39,40] Regarding physical abuse, for instance, the average period prevalence according to studies published over the past 15 years was 15·7%. Although lower than in some countries such as India (36%), Egypt (26%), and the Philippines (37%), it is far higher than in other countries in the continent such as Chile (4%) and the USA (4·9%).[2] Although national studies highlight the importance of child neglect as part of child and adolescent maltreatment,[41,42] there are no population-based studies accounting for its extent.

Mortality statistics suggest that one woman is killed every 2 h in Brazil, which places the country in 12th position in the world's rankings for the homicide of women.[4] Morbidity data underlines this startling picture. The first large-scale Brazilian survey in 16 major cities, focusing on how couples resolved disputes arising day-to-day, showed that the overall prevalence of psychological aggression in couples was 78·3%, for so-called minor physical abuse was 21·5%, and for severe physical abuse was 12·9%; roughly in agreement with the out-of-pregnancy average prevalence (63·5% of psychological aggression and 22·8% of any type of physical abuse; webappendix p 3).[17] On narrowing down to violence perpetrated against women by their partners, the study showed 67·5% psychological aggression and 7·1% severe physical abuse. The 12-month prevalence of any type of physical abuse was 14·3%, about average if compared with all studies reviewed by Heise and colleagues,[43] Jewkes and colleagues,[44] and Taft and colleagues.[45] Prevalence was far greater than the mean estimates in North America (2%), moderately greater than those in Europe (8%) and sub-Saharan Africa (9%), and close to the levels reported from Asia and Oceania (12%). Yet, the aggregate rate (16 cities) was well below the mean reported from North Africa and the Middle East (33%). The overall prevalence was also lower than Latin America's average of 21%, but closer to the rates in Mexico (15%) and Uruguay (10%).

Brazilian estimates were higher when assessing lifetime intimate-partner violence. The *WHO Multi-Country Study on Women's Health and Domestic Violence* reported prevalence of about 27% for São Paulo (city) and 34% for the State of Pernambuco's costal region.[46] Intimate-partner violence is also common against pregnant women. A study in Rio de Janeiro showed a 9-month period prevalence of 18·2% for physical assault,[47] which is at the upper limits reported by other investigators.[48]

Research on domestic abuse of elderly people is still scarce in Brazil. Two population-based studies show prevalence rates of about 10% for physical abuse by family members or caregivers (webappendix p 3),[49,50] which is substantially higher than those reported in the USA (2%),[51] England (2%),[52] and the Netherlands (1·2%).[53]

Epidemiological profile, determinants, and risk factors

Table 2 shows the profile of conflict-resolution related intimate-partner violence.[17] Focusing on women as victims, there are some regional differences in prevalence,

	North (n=828)	Northeast (n=1920)	Centre-west (n=772)	Southeast (n=2008)	South (n=1246)	Aggregate (n=6797)
Psychological aggression						
Age of women (years)						
<20	79·8%*	69·2%	65·6%	75·3%	76·2%†	73·9%†
≥20	73·3%	66·6%	62·2%	66·7%	66·2%	66·8%
Duration of schooling (years)						
≤7	75·7%	70·7%*	64·6%	67·0%	68·5%	68·4%
>7	73·6%	64·6%	62·2%	68·2%	67·3%	67·5%
Total	74·1%	66·8%	62·7%	67·4%	67·2%	··*
Physical abuse (any)						
Age of women (years)						
<20	21·0%	16·0%	10·8%	13·1%	20·9%‡	14·9%
≥20	24·2%	19·3%	13·0%	12·8%	11·1%	14·5%
Duration of schooling (years)						
≤7	29·6%†	27·8%†	14·1%	19·2%†	16·6%†	21·2%‡
>7	20·1%	12·4%	11·9%	9·9%	10·5%	11·2%
Total	23·8%	18·9%	12·8%	12·4%	12·0%	··‡
Physical abuse (severe)						
Age of women (years)						
<20	6·1%†	7·8%	3·7%	4·3%	9·4%†	5·5%
≥20	12·6%	11·7%	7·5%	5·9%	4·9%	7·4%
Duration of schooling (years)						
≤7	16·9%‡	18·6%‡	7·6%	10·4%‡	9·6%‡	12·3%‡
>7	8·4%	5·7%	6·9%	3·6%	3·7%	4·5%
Total	11·8%	11·3%	7·1%	5·6%	5·4%	··‡

Original (ad-hoc) analysis with data from the Household Survey on Risk Behaviours and Reported Morbidity from Non-Communicable Diseases.[55] Portuguese (Brazilian) version of the Conflict Tactics Scales used to measure intimate-partner violence.[53,54] Point-estimates and p values were calculated with Stata 10 svy allowing for design effect (stratified, multi-stage sampling with unequal sampling fractions). *p <0·05. †p<0·01. ‡p <0·001.

Table 2: **Period-prevalence (12 months) of psychological and physical abuse against women by region**

as well as women's age and schooling. In all regions, about three-quarters to two-thirds of the women reported that they were the recipients of at least one act of psychological aggression in the 12 months before they were questioned. About one in five (north and northeast) to one in eight (centre-west, southeast, and south) women reported an episode of physical force during the same period. There is a clear regional gradient with regard to the form of severe physical abuse such as punching, beating, choking, or even brandishing or actually using a knife or firearm. The findings are also consistent with higher levels of intimate-partner violence in lower-income strata, a profile similar to that found in other studies.[2,47,56] The pattern with regard to women's age is less regular: in the south, adolescents are the more common victims of intimate-partner violence; whereas in the north, the victims are older women.

Although table 2 centres on women as victims, additional findings depict a more intricate pattern. Defining a positive case of intimate-partner violence as one act perpetrated within the 12-month recall period, women were shown to be at the same level as men for committing violent acts.[17,47] However, and most importantly, male perpetrators consistently committed more such acts, and consequences to women victims were more severe. A document prepared by the Institute of Public Security of Rio de Janeiro[57] shows that women accounted for 27 149 (88%) of 30 851 cases of grievous bodily harm registered at police stations in 2008, and that the perpetrators were the present or former partners of the victims in more than half of these cases. This is clearly a very asymmetrical situation that relates to power structures within couples that might lead to a greater potential for one partner to hurt and severely injure the other.

Many Brazilian studies have identified sociocultural risk factors for domestic violence such as sex inequality,[58] permissiveness towards violence in childhood education,[59] devaluation of elderly people,[49,60] precarious socioeconomic conditions,[17] a weak network of support, and social isolation.[61] A history of violence in the family[62] and use of alcohol and illicit drugs also plays an important part.[58,61] Physical violence against children is more common in boys, children with health problems, and in families with concomitant intimate-partner violence.[63,64] This violence against children tends to happen in younger couples, but also in those couples with more children and household crowding.[17,58,65] As in other countries, intimate-partner violence in Brazil also seems related to a history of childhood sexual abuse, multiparity, lack of financial autonomy for the woman, informal partnership, and if consent was given at first sexual intercourse.[58] Women married to men who do not practise any religion or women who are housewives are also at higher risk.[66]

Consequences

Research in Brazil shows that the health consequences of violence in childhood can happen in different aspects of growth and development, and extend into adulthood. Physical traumatic effects tend to leave visible marks, mainly on the skin and in the musculoskeletal system. Less tangibly, studies have shown associations between child abuse and psychiatric disorders in general,[67] drug use,[68] depression and low self-esteem in adolescence,[39,69] conduct disorders,[70] post-traumatic stress disorder,[71] and transgressive behaviour in adulthood.[62]

Intimate-partner violence also has serious consequences.[72] Brazilian studies have reported many health problems, ranging from scratches to death. The consequences on women's mental health are substantial.[73,74] Intimate-partner violence during pregnancy threatens not only the mother's health but also that of the infant;[75–78] it has also indirect effects, as in other contexts, children who witness violence between their parents also suffer serious repercussions.[62,79,80] There is little evidence in Brazilian published work on the consequences of domestic violence against elderly people, so international work has been relied upon to raise the awareness of government agencies and civil society of the relevance of domestic violence and the importance of implementing measures to deal with it.

Traffic-related injuries and deaths

Scale of the problem

The first epidemiological studies on traffic-related deaths in Brazil date to the 1970s and already showed high and rising mortality.[81,82] Based on the profile of patients admitted to hospital, it has been possible to measure morbidity from traffic-related injuries since 1998.[12] The VIVA System,[8] established in 2006, has allowed the characteristics of patients treated in emergency services to be identified (panel).

In 2007, traffic-related deaths represented almost 30% of all deaths from external causes in Brazil (figure 1). Figure 3 shows the mortality trend from 1991 to 2007. Mortality peaked by 1996 and 1997 (28·1 per 100 000 inhabitants per year). This rate was still greater than the world's average (19·0 per 100 000) and all low-to-middle-income countries put together (20·2 per 100 000), and far greater than in high-income countries (12·6 per 100 000). The decline happened by 1998 and rates stayed at about 23 per 100 000 thereafter. Brazil's position remained close to the Latin America and Caribbean average (26·1 per 100 000), yet still above some countries such as Argentina (9·9 per 100 000) and Chile (10·7 per 100 000), although below others such as El Salvador (41·7 per 100 000).[83] The decline—about 14%—might be attributable in part to the new Brazilian Traffic Code, enacted in 1998, which includes, not only strict enforcement of seatbelt use and drinking-and-driving laws, but also provides severe sanctions for offending drivers.[84] The sharpest fall was in the centre-west region, although it remained with the highest rate at the end of the 16-year series (figure 3). There was also a small decline in the southern regions (south and southeast), similar to the aggregate Brazilian trend. Rates in the northeast were stable at about 28 per 100 000.

Pedestrians are the largest category of traffic-related deaths (34·6%; figure 4), even with the decrease of 40·4% over the study period. In 2007, mortality of pedestrians was 6·2 per 100 000; however, the worst problem today concerns motorcyclists. Motorcycle deaths as a proportion of total traffic-related deaths rose from 4·1% in 1996 to 28·4% in 2007; the risk increased at an alarming pace (820%), with rates rising from 0·5 to 4·2 per 100 000 inhabitants. Contributing to this increase was the huge expansion in the country's motorcycle fleet, which almost doubled from 2001 to 2005.[10] Until the 1980s, motorcycles were still seen as pleasure vehicles in Brazil, but their low cost and agility in heavy traffic has, since the 1990s, turned them into work vehicles, initially to transport merchandise and to act as couriers (motor-boys) and more recently to transport passengers (motor-taxis).[85]

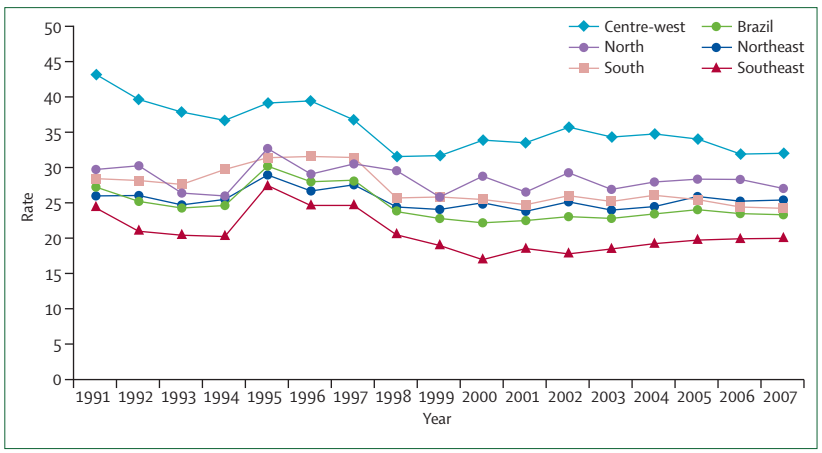

Figure 3: **National traffic-related mortality (per 100 000 inhabitants) and by macroregions, 1991–2007**
Original (ad-hoc) analysis with Brazilian Ministry of Health's Mortality Information System database.[1] Rates are standardised according to the WHO standard population in 2000.[13] Data corrected for under-reporting according to region of the country, sex, and age strata.

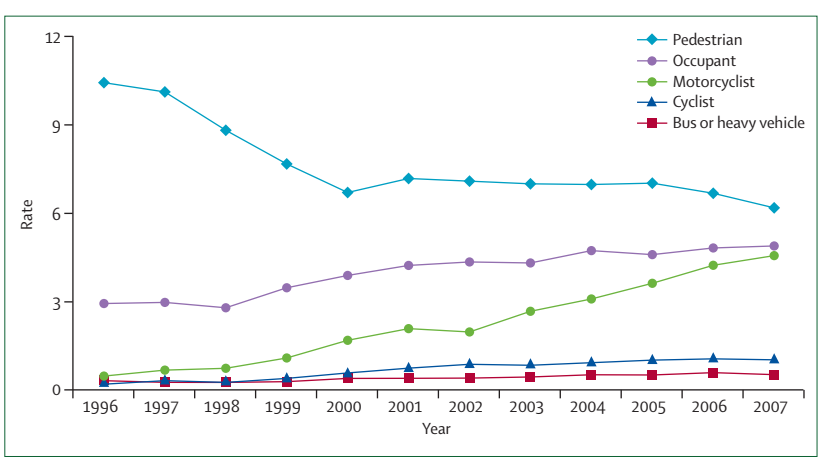

Figure 4: **Traffic-related mortality (per 100 000 inhabitants) by type of victim, 1996–2007**
Original (ad-hoc) analysis with Brazilian Ministry of Health's Mortality Information System database.[1] Rates are standardised according to the WHO standard population in 2000.[13] Data corrected for under-reporting according to region of the country, sex, and age strata.

Epidemiological profile, determinants, and risk factors

Traffic-related deaths mostly involve men (81·2% of deaths in 2007); the male-to-female ratio depends on the type of accident. This ratio is greater for cyclists (9·8 men killed for every woman), motorcyclists (8·1 men killed), and occupants of heavy vehicles and buses (6·8 men killed). The sex ratios are lower for the occupants of cars (3·5:1) and pedestrians (3·1:1). The elderly population (≥60 years) has the highest death rates as pedestrians, although individuals aged 40–59 years also make up a large share (table 3). Motorcycle-related and car-related deaths are more common in young adults (aged 20–39 years).

Several studies have attempted to clarify the risk factors for traffic-related injury and death.[86] Human factors include drinking and driving, stress, fatigue, and drowsiness. The latter is particularly common in taxi, lorry, bus, and ambulance drivers because of their long and exhausting work hours.[87–89]

Drinking is an important factor beginning at early ages.[90] Galduróz and Caetano[91] refer to two important studies. One study, done in 1997 in three State capitals (Curitiba,

	Pedestrian (n=6·2)	Cyclist (n=1·0)	Motorcyclist (n=4·6)	Car occupant (n=4·9)	Occupant of heavy vehicles and buses (n=0·5)
<10 years	2·7	0·2	0·1	1·3	0·1
10–19 years	2·5	0·7	3·4	2·4	0·2
20–39 years	5·1	1·1	9·4	7·0	0·8
40–59 years	8·5	1·6	4·1	6·6	0·8
≥60 years	15·0	1·5	1·5	5·2	0·4

Original (ad-hoc) analysis with Brazilian Ministry of Health's Mortality Information System database.[3] Rates are standardised according to the WHO standard population in 2000.[33] Data corrected for under-reporting according to region of the country, sex, and age strata.

Table 3: **Traffic-related mortality per 100 000 inhabitants by type of victim and by age group, 2007**

Recife, and Salvador) and the Federal District (Brasília), showed that in 865 victims, 27·2% had blood alcohol content greater than 0·6 g/L, the amount allowed before the law changed in 2008. The other study, done in 1995 by the Centre for Studies on Drug Abuse (Centro de Estudos e Terapia do Abuso de Drogas) in the city of Salvador showed that 37·7% of drivers involved in traffic-related injuries had been drinking. Injuries as a consequence of heavy drinking were most common at night and on weekends; most of the intoxicated drivers were young single men.[92] To these factors one must add speeding, sleepiness, and inexperienced young drivers, clearly a very dangerous and sometimes fatal combination.

Roadway-related factors include deficient traffic signs and poor road maintenance, bad or non-existent lighting, poor maintenance of the road surface, lack of highway shoulders, and inadequate inclines, embankments, and curves—all common in Brazil. Vehicle-related factors include inadequate maintenance of engines, brakes, and tyres, lack of airbags in economy vehicles, and hazardous car design.[86] Surprisingly, figures suggest that the increase in the number of cars in Brazil did not have a corresponding effect on mortality. From 1998 to 2007, motor vehicles increased by 104% (cars 75% and motorcycles 270%); however, according to our original ad-hoc analysis with a database provided by the National Traffic Department death rates decreased between 1998 and 2007 from 23·9% to 23·5%, and from 27·3 to 23·5 from 1991 onwards. This decrease suggests that other factors are involved such as speeding, driving under the influence of alcohol, and the lack of use of safety equipment (seatbelts, airbags, harnesses for children, and helmets for motorcyclists).[86]

Consequences

Brazilian traffic accidents have a high personal and social cost: at the individual level, there is not only high mortality, but also major physical and psychological sequelae in injured survivors, especially in young victims. In 2005, for example, 500 patients were discharged from Brazilian hospitals with spinal-cord injuries related to traffic accidents.[93] Data from the Hospital Information System for 2007 show that there were 17 265 admissions to hospitals because of traffic-related injuries.[5]

In 2006, the Brazilian Government's Institute of Applied Economic Research estimated the economic costs of traffic-related injuries in urban regions.[94] The total annual cost was about $9·9 billion (almost R$22 billion), or the equivalent of 1·2% of Brazil's gross domestic product that year. This total included $2·9 billion (R$6·4 billion) on federal highways (45% from lost productivity and 25% on patient treatment), $6·4 billion (more than R$14 billion) on State highways, and about $632 million (almost R$1·4 billion) on municipal roadways. Although the mean duration of hospital stay for injuries resulting from traffic-related injuries and death is shorter than that for other external causes, admission to hospital as the result of traffic-related injury are far more costly than others.[95]

Social responses to violence and traffic-related deaths and injuries

Past and present policies and measures

Several measures have been undertaken to reduce the number of homicides. Macrostructural measures implemented by the Brazilian Government feature initiatives for young people like the First Job Programme and Family Grant Programme (*Programa Bolsa Família*) that aim to keep children and young people in school. In 2004, the government created the National Public Security Force (*Força Nacional de Segurança Pública*) to address urban violence and reinforce the State's presence in regions with high-crime rates. More recently, in 2008, Brazil launched the National Public Security Programme with Citizenship (*Programa Nacional de Segurança Pública com Cidadania*) to link strict security policies with preventive social measures in projects for women at risk and young people in trouble with the law.[96]

In 2003, the National Congress passed Law 10 826—known as the Disarmament Statute—ruling on the registration, possession, and commercialisation of firearms and establishing the National Weapons System (*Sistema Nacional de Armas*). In 2004, a major campaign for voluntary disarmament, led predominantly by non-governmental organisations, resulted in more than 450 000 guns being turned in. However, a subsequent national referendum in 2005 did not enforce the control of the possession of illegal firearms, since 67% of the population voted against a ban on the sale of guns and ammunition. Regional governmental and non-governmental initiatives have however implemented comprehensive programmes of gun control.[97–101]

We do not know whether the noted decline in recent years is consistent and widespread. In the absence of specific studies, one cannot pinpoint what the effects of such initiatives really are. However, the downturn in mortality since 2003 might be the result of a combination of socioeconomic, demographic, and specific measures. For one, there is the influence of recent improvements in

the quality of life, such as rising education levels, income, and purchasing power.[102] The drop in the proportion of young in the population might also play a part.[103] At a more specific level, besides the stricter enforcement of the purchase and possession of firearms and the country's disarmament campaign,[104] there is the growing incarceration rate,[105] preventive social projects, investment in public security actions, and use of intelligence for planning interventions.[96]

Table 4 provides a brief history of the key actions taken in the past 30 years to deal with domestic violence. As the Brazilian women's movement grew in the late 1970s,

	Name or number	Details
Intimate-partner violence		
1980	Convention on the elimination of all forms of discrimination against women (I)	Brazil joins the international movement for sex equality and signs the bill passed 3 years previously by the UN General Assembly
1985	National council for women's rights Women's defence precinct	Founding of the council Created in the State of São Paulo; first in country
1986	Special precinct for women	Created in the State of Rio de Janeiro; first in country
1988	Convention on the elimination of all forms of discrimination against women (II)	Brazilian Government ratifies the UN Convention in full
1995	Inter-American convention on the prevention, punishment, and eradication of violence against women	Brazil also signs the Convention in a meeting that came to be known as the Convention of Belém do Pará
2003	Law number 10 778 Executive order 103	Providing for nationwide mandatory reporting of violence against women by public and private health services Creation of the Special Secretariat for Women's Policies
2004	National policy for comprehensive women's health care Law number 10 886 1st National Conference on Women's Policies, Brasilia	Aimed at developing policies for women's health in liaison with other technical areas of the Ministry of Health Its role is to develop technical standards, technical manuals, publications on topics related to women's health and provide technical support to states and municipalities in developing and implementing policies Adding paragraphs to Article 129 of Decree Law number 2848 of the 1940 penal code, and specifically defining domestic violence Ministry of Health formally acknowledges intimate-partner violence as a health problem, according to the National Policy for the Reduction of Morbidity and Mortality from Accidents and Violence and the National Plan for the Prevention of Violence
2005	Women's hotline (180)	Implemented as a free 24 h, 7 days a week telephone service with nationwide coverage
2006	Law number 11 340	The so-called Maria da Penha law
2007	2nd National Conference on Women's Policies	Follow-up of the 1st National Conference in 2004
2008	Publication of the 2nd National Plan for Women's Policies	Strengthens the political will of the federal government to reverse the pattern of inequality between men and women, guided by the principles of equality and respect for diversity, equity, Brazilian women's autonomy, secularity of the state, universality of policies, social justice, transparency of public acts, participation, and social control
Children and adolescent maltreatment		
1988	Article 227 of the Brazilian Constitution	Aims to ensure protection of children by the family, society, and state
1990	Law number 99 710 Law number 8069	Brazil adopts in full the text of the International Convention on the Rights of Children, passed by the UN General Assembly in 1989 Passage of the Statute of Children and Adolescents creating the so-called Tutelary Councils (for minors)
1991	Bill of Law number 8242	Creation of the National Council for the Rights of Children and Adolescents
1998	Implementation of the Information System on Childhood and Adolescence	In support of the work by the Tutelary Councils and the Councils for the Rights of Children at the municipal, state, and federal levels
1999	Ruling number 1354 by the Rio de Janeiro State Health Secretariat	The first major step towards mandatory reporting of child abuse
2001	Ministry of Health Ruling number 737 Ministry of Health Ruling number 1968	Institutes the National Policy for the Reduction of Morbidity and Mortality from Accidents and Violence Makes it mandatory for health services nationwide to report confirmed and suspected cases of child and adolescent abuse
2002	National Programme to Combat Sexual Violence against Children and Adolescents	Created in response to demands by the National Plan to Combat Violence Against Children and Adolescents
2003	Programme for the Protection of Children and Adolescents Threatened with Death (I)	Aim at providing accommodation to threatened children and adolescents; social programmes aimed at full protection; legal, psychological, pedagogical and financial support and assistance; and support in case of civil and administrative obligations that require their attendance
2004	Ministry of Health Ruling number 2406	Establishes the reporting service, reporting forms, and referral flows
2007	Decree number 6231	Officially establishes the Programme for the Protection of Children and Adolescents Threatened with Death started in 2003 The Programme launched a social agenda for children and adolescents, especially with regards to violence related deaths in children and juveniles
2010	Law project ruling out corporal punishment and degrading and cruel treatment against children and adolescents	Submitted to the National Congress on July 14, 2010, in commemoration of the 20 year anniversary of the Statute of Children and Adolescents

(Continues on next page)

	Name or number	Details
(Continued from previous page)		
Domestic violence against elderly people		
1994	National Policy for the Elderly (law 8842)	Launched by government creating the National Council for the Elderly
1999	Ruling 1395/99	Enacts the National Policy for the Health of the Elderly
2003	Law 10 741 Law 10 741, and Articles 19 and 57	Establishes the Statute of the Elderly, after the International Action Plan for Aging approved by the 2nd UN World Assembly on Aging in 2002 Makes it the responsibility of health professionals and institutions to report abuses against the elderly to the Council for the Elderly (Municipal, State, or Federal)
2005	Action Plan to Combat Violence against Senior Citizens (I)	Presentation of the plan by the National Under-Secretariat for Human Rights, Office of the President Scheduled for implementation in 2005 and 2006
2006	Ruling number 2528	Updates the National Policy for the Health of the Elderly of 1994
2007	1st National Conference on the Rights of the Elderly	The initial step in establishing the National Network for the Protection and Defence of the Elderly

Table 4: **Important benchmarks in tackling domestic violence in Brazil, by year**

intimate-partner violence was the first form of domestic violence to become a priority. The initial measures were small, but have since gained impetus, establishing specialised and multidisciplinary care in police precincts and mandatory reporting of suspected and confirmed cases of intimate-partner violence. The process led to passage of the so-called Maria da Penha Law, which defined domestic violence as a human-rights violation and led to changes in the penal code. The law provides for measures to protect women whose lives are endangered, such as restraining orders or the arrest of aggressors.[106]

For more on the **Institute PROMUNDO** see http://www.promundo.org.br/en/

For more on **NOOS** see http://www.noos.org.br/

Advances in legislation have been accompanied by accomplishments aimed at expanding services to women in situations of violence. There has been an increase of Offices of Public Defenders, specialised courts, dedicated police precincts for women, shelters for handling emergency situations, and referral centres. However, this work is unfinished since the coverage of services is still concentrated in the south and southeast regions, especially in big cities.[107]

Another important step was the enactment of the Statute of Children and Adolescents (*Estatuto da Criança e do Adolescente*) in 1990, when it became mandatory to report suspected or confirmed cases of domestic violence to the authorities. The health sector was also made responsible for reporting and preventing cases, in addition to providing psychosocial and medical care for confirmed cases.[72]

Prevention of violence against elderly people is a more recent concern. The Statute of the Elderly, enacted in 2003, was the first specific stance to guarantee the rights of citizens older than 60 years. Civil society and governmental institutions have also been uniting efforts. For instance, as an important strategy arising from the *Action Plan for Combating Violence against the Elderly*,[108] precincts for their care (*Centros Integrados de Atenção e Prevenção à Violência contra a Pessoa Idosa*) have been set up by the Special Secretariat for Human Rights. At present, 16 states in Brazil have such centres in operation.

The 20 years of mobilisation seems to be paying off. The mandatory reporting of suspected or confirmed cases of violence is a reality in most Brazilian cities.[109] So too are the calls to complaints free-phone services (*disque-denúncia*).[110] Registrations in specialised precincts have grown steadily, as well as the number of institutions focused on equality of the sexes and in reducing violence against children and elderly people.[60,107,109,111] Fruitful initiatives for assessing the effectiveness of programmes and policies such as those developed by some non-governmental institutions are still isolated and sparse (eg, the Institute PROMUNDO and NOOS).

Several Brazilian institutions have taken measures to deal with the problem of traffic-related injuries and deaths (table 5). The important role of driving under the influence of alcohol in traffic-related injuries and deaths, for example, led to the setting of maximum permissible blood alcohol concentrations. In 1998, the Brazilian Traffic Code specified the legal limit at 0·6 g/L.[84] In 2008, Law 11705 was passed, widely known as the Dry Law, which revised the legal blood alcohol limit to zero.[112] Although it is still too early to assess the Law's effects, some studies have shown a reduction in morbidity and mortality from traffic-related injuries and deaths since it was enacted.[95,113]

The growing demand for emergency services, hospital admission, and rehabilitation led the Ministry of Health to launch, in 2001, the Project for the Reduction of Traffic Accidents in several cities. The aim was to integrate the efforts by health services with that of the transport sector;[114] another initiative was the Policy for Emergency Care. The guidelines have been used to finance and organise the prehospital-care system through the Mobile Emergency Care System, a crucial service for survival of victims and the reduction of sequelae.[115] Non-governmental sectors in Brazil have also responded to the problem of traffic-related injuries and deaths, organising social movements of parents and relatives of victims to lobby for heavy punishment for drunk drivers that have caused injuries and deaths.

Although several of the initiatives might contribute to the reduction of traffic-related injuries and deaths, the Brazilian rates are still high when compared with many Latin American countries, and still little is known about

	Name or number	Details
1966	Law 5108	Establishes the Brazilian National Traffic Code
1974	Law 6194	Rules on compulsory insurance for personal damages caused by automotive vehicles, or by their cargo, to third parties, both occupants and non-occupants
1997	Law 9053	Enacts the new National Traffic Code, which regulates Brazilian traffic along with complementary rulings; The States and municipalities also complement this legislation with their own rulings and ordinances and are free to enforce specific details concerning their own traffic The law includes the mandatory use of seatbelts by drivers and passengers on all roadways in Brazil
2001	Law 10 350	Amends the National Traffic Code by making periodic psychological tests mandatory for professional drivers
2006	Law 11 275 Law 11 334	Alters articles 165 277, and 302 of the National Traffic Code in relation to driving under the influence of alcohol Amends article 218 of the National Traffic Code, altering the speed limits for purposes of defining violations and penalties
2007	..	The Senate Committee on the Constitution and Justice issues a positive review on a bill to ban the sale and consumption of alcoholic beverages in service stations and convenience stores within city limits and on Federal highways Some States, like Pernambuco, Rio de Janeiro, and Espírito Santo enacted this bill into law
2008	Executive Decree number 415 Ruling 277 of the National Traffic Council Law 11 705	Places a nationwide ban on the sale of alcoholic beverages along Federal highways Rules on the transportation of children younger than 10 years and the use of restraining devices for children in motor vehicles Better known as the so-called Dry Law Sets a zero limit on blood alcohol content and places strict penalties on driving under the influence of alcohol
2009	Law 12 006 Law 11 910	Adds an article to the National Traffic Code to establish mechanisms for displaying and broadcasting traffic awareness messages, like advertising and campaigns Amends article 105 of Law number 9503, establishing mandatory use of complementary restraining device (airbag)

Table 5: **Measures related to traffic-related injuries and deaths in Brazil, by year**

their effectiveness since there are very few studies assessing these interventions. Although not comprehensive, there are suggestions of some improvements (figure 3).

Brazil has always been a violent country: national development began with the enslavement of Indians and Black Africans, and the scars of the country's colonial past persist to this day. This unfavourable legacy of exclusion, inequality, poverty, impunity, and corruption, often led by the state itself, has for centuries failed to fully guarantee basic social and human rights like safety and security, health, education, housing, work, and recreation.[116,117] Aggravating such violations are deeply rooted cultural values that are often used to justify various expressions of violence in subjective and interpersonal relationships, like machismo, patriarchalism,[118–120] and prejudice and discrimination against blacks, poor, women, elderly people, and homosexuals.[109,121]

Yet, despite this legacy, in the past 15 years there has been a shift at the macro-level. This change ranges from improved quality of life, reduction of poverty and inequality (social protection schemes etc), reduction of unemployment, increased and more universal access to schooling, social mobility, and promotion of social inclusion with recognition of rights of the individual.[102] There has been widespread mobilisation by society and government to respond to the challenges raised by the scale of violence; this is shown in the large and diverse board of nationwide debate forums, new policies, and enactment of specific laws.

However, there is still an enormous task ahead. Beyond a well established legal framework now available, the challenge now rests in implementing and assessing specific action plans. The difficulties in monitoring and enforcing laws and policies are huge, because of the size of Brazil and its cultural diversity. From the perspective of management there are also barriers, such as corruption and the lack of prioritisation of resources to upgrade infrastructure. An example, one of the most contentious issues in Brazil today, is that despite the sanctioning of the drink-and-drive law across the country, some cities still lack breathalysers needed to enforce it.

However, supported by the emerging legislation and policies, various National Plans with well established guidelines and priorities were developed, providing for financial, operational, and technical support. However, there are still no comprehensive large-scale studies to assess the effect of actions to reduce homicides, domestic violence, and traffic-related injuries and deaths. What one finds are localised process assessments done for the sole purpose of guiding actions. These assessments have consistently raised concerns and emphasise an urgent need for intrasectoral and intersectoral integration. It has become clear that there is discontinuity and lack of communication between programmes and actions, both within the same sector of government, and across different sectors such as health, justice, welfare, and education.

Specific measures are also needed. In the case of homicides, the law enforcement sector is still dominated by ineffective policies based primarily on repression. Widespread impunity for crimes committed by common criminals, as well as by businessmen and politicians, fuels the perception that crime pays. It is thus important

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to reinforce and redefine actions for fighting drug trafficking and crime in general, drawing on experiences that respect and promote human rights.[97,98] This involves strict control of smuggling and illegal possession of firearms, improving police investigation methods, and providing a swifter judicial system to speed up potential convictions and thus curb impunity. Along with structural changes aimed at broadening opportunities for teenagers and young adults—many of whom do not attend school, are unemployed, and are away from their families, and thus at risk of involvement in crime. Attention must also be paid to the implementation of socioeducational schemes for convicted young people; this, in turn, needs a complete restructuring and overhaul of the institutions aiming at reintegrating offenders, which could be extended to the substandard prison system as a whole.

Brazilian society should strive for equitable and respectful interaction between partners and family members that promotes sex equality and the rights of children, adolescents, and elderly people. Replacing the common punishment-based and aggression-based disciplining of children, communication between partners, and caring for elderly people, with strategies that foster dialogue and affection should be encouraged. To this end, the involvement of media campaigns that promote peace and condemn violence are crucial to enhance cultural change. Introduction of these issues in the curricula of elementary and secondary schools could lead to positive results in the future.

From the health-service perspective, integrating professionals so that they become the backbone for the formation and strengthening of intersectoral networks for care and protection of victims is crucial. There is a need for expanding programmes concerned with mapping local vulnerabilities, such as unwanted pregnancy in adolescents, alcohol and drug misuse, and family history of violence. These programmes need to be based on multidisciplinary and geographically well distributed teams, including health-care workers drawn from the communities as many thousands already operating within the Brazilian primary health care strategy the Family Health Programme (widely known as *Programa Saúde da Família*).[122]

Only focusing on prevention or early detection of cases is clearly not enough. So far, the Brazilian health system is poorly prepared to deal with cases of domestic violence. Properly trained personnel must be able to decide whether the situation should be handled locally or be referred. Liaison with other sectors is vital. The expansion and coordination of a safety net of specialist care for victims of violence should include welcoming police precincts, specialised courts, guardianship councils, shelters, rights councils, and health services directed at the care of victims and perpetrators.

Brazil's traffic problem needs the strong implementation of laws derived from the Brazilian Traffic Code and others related to traffic safety. There needs to be stricter enforcement and prosecution of traffic violations. Better, honest, and credible policing is indispensable; as is improving the quality and integration of several information systems concerning traffic-related deaths and injuries used by police and the health sector. There is also an urgent need to intensify measures to tackle drinking and driving, as provided by the so-called Dry Law; although this law has received strong public support in many parts of the country, its implementation is far from complete. A solid infrastructure remains to be made universally available. Restrictions on alcoholic beverage sales along intercity highways and roads might be considered, as are campaigns to discourage drinking and driving. The cooperation of mass media would be crucial, not just to promote proactive educational campaigns of the need of defensive and responsible driving, but also to avoid advertisements and entertainment programmes that encourage speeding and reckless driving.

Efforts should be geared towards improving the automotive fleet and the transport network as a whole. Stricter annual licensing procedures would ease the withdrawal from circulation of unroadworthy vehicles. The introduction of modern safety features to all new vehicles sold would also help. Renewing and improving the mass transport systems and restoring the partly dilapidated extant road networks are also of utmost importance; this involves improving the quality of asphalting and extending the number of highway and road tracks across the country, adequately signposting roads, and providing walkways for pedestrians. Because of the great increase in motorcycle crashes, it is now essential to regulate motorcycle use for work purposes, create exclusive traffic lanes for motorcycles, and enforce the use of protective equipment by motorcyclists. From the perspective of health care, there is still room for development, such as in expanding the coverage and quality of hospital emergency care—before and during admission—and by the upscale of rehabilitation services for the survivors of traffic-related incidents.

Advances have been made in the study of violence and injuries. Growing investment by national research agencies led to an increase in the number of dedicated research groups (seven in 2000 to 80 in 2009).[123] Yet, research efforts have mostly concentrated on the size, determinants, causes, and consequences of violence. It is time to go further and also focus on assessing the ever increasing number of public policies and related plans. More and better placed investment should go to studies on monitoring methods, systematic and in-built process assessments, and studies on effect that should be sufficiently comprehensive to guide actions.

Finally, to reduce violence, Brazil must take a proactive stance and complete its full democratisation process,[124] especially with regards to strengthening and organising

the state, providing education for all, and fostering dialogue between law enforcement and the poorer segments of society, without which the legal efforts to tackle this serious social problem will be insufficient to deal with its enormous complexity.

Contributors

MER, ERS, MHPMJ, and CMFPS participated in the original data analysis. All authors participated in the search of published work and the writing of sections of the report. All authors revised subsequent drafts of the article and approved its final version.

Conflicts of interest

We declare that we have no conflicts of interest.

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