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ADDRESSING THE SOCIOECONOMIC SAFETY DIVIDE: A POLICY BRIEFING

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ABSTRACT

Injury and violence are a leading cause of death and disability in the WHO European Region. Wealth is a major determinant of health, and there is a steep social gradient of ill health due to injuries and violence. People in low- and middle-income countries and more deprived people in high-income countries are worse off. Social and economic policies affect families' susceptibility to injury by affecting social and physical environments. This policy briefing summarizes evidence on the socioeconomic safety divide from a large systematic review. It then provides messages for policy-makers, researchers and public health advocates and safety planners on what can be done to address this safety divide. Action for preventing injury and violence needs to be intersectoral. Governments need to aim for equity across all types of government policies to address the uneven distribution of injuries. Action needs to be taken both to reduce injuries and violence universally in the population using passive interventions to make the social and physical environment inherently safer and to target disadvantaged populations. Addressing this important cause of inequity in health is a matter of social justice.

KEYWORDS

VIOLENCE
WOUNDS AND INJURIES - prevention and control
SOCIAL JUSTICE
PUBLIC POLICY
SOCIOECONOMIC FACTORS
EUROPE

ISBN: 978 92 890 4300 7

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Text editing: David Breuer
Layout and printing: Servizi Tipografici Carlo Colombo srl, Rome, Italy

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Acknowledgements

This policy briefing summarizes and uses materials originally developed for a systematic review *Socioeconomic differences in injury risks: a review of findings and a discussion of potential countermeasures* by Laflamme et al. The full report is published in electronic format and is also provided on a CD in the inside cover of this publication. Many international experts and WHO staff have contributed to developing this policy briefing. In particular, WHO is grateful to the following people for their helpful comments in improving the accuracy and completeness of this publication:

– Carinne Allinson, World Health Communication Associates, Somerset, United Kingdom;
– Mark Bellis, Liverpool John Moores University, Liverpool, United Kingdom;
– Hedvig Bie, WHO Regional Office for Europe;
– Phil Edwards, London School of Hygiene and Tropical Medicine, London, United Kingdom;
– Manuela Gallitto, WHO Regional Office for Europe;
– Francesco Mitis, WHO Regional Office for Europe;
– Julia Nowacki, WHO Regional Office for Europe;
– Maria Segui-Gomez, University of Navarra, Pamplona, Spain; and
– Liz Towner, University of the West of England, Bristol, United Kingdom.

WHO expresses its gratitude for voluntary donations from the Governments of Sweden and the United Kingdom and to those made to the Secretariat of the European Environment and Health Committee that have enabled the production of this publication.

Foreword

The ultimate way to evaluate the effectiveness of any policy change or other public health intervention is by documenting improved health in the population. Policy-makers and advocates seeking to produce such results look to research to provide evidence to help shape and guide their choices. Unfortunately, public health research is often long on describing problems and short on analysing solutions. A further complication is the fact that contextual differences and other political and economic factors often create difficulty in generalizing and applying findings across national borders (and sometimes even between regions in the same country). Moreover, policy-makers are challenged to obtain an overarching view of such complex problems as violence and injuries, as research often focuses on cause-specific injuries (such as road traffic injuries of various kinds, domestic violence and self-directed violence), specific segments of the population or specific settings (such as domestic or transport environments).

This policy briefing takes on these challenges. It summarizes a major literature review of studies that examined the socioeconomic safety divide – socioeconomic differences in mortality and morbidity from violence and injuries – and the main directions for action. The review, which investigated more than 300 studies from Europe and beyond, comprehensively analysed available evidence. It paints a compelling picture of the importance of socioeconomic factors in differential health outcomes related to injuries and violence and identifies approaches that could strengthen policy interventions and research support. This policy briefing aims to package this information in a concise format. It extracts and presents key messages for policy-makers and researchers on the policy action and evidence needed to reduce the burden of disease from violence and injuries. It also serves as a communication model for public health advocates and safety planners, providing suggestions on the arguments and communication strategies that can catalyse and facilitate action by both policy-makers and researchers.

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Introduction

Wealth is a major determinant of health in all countries of the European Region of the World Health Organization (WHO) and beyond. Social processes often lead to poorer health in less affluent people. This inequality is associated with many avoidable deaths and suffering. It has been proposed that the size of the gap between the mortality and morbidity rates of the most and the least advantaged population groups indicates the potential for improvement in the health and safety of a country or smaller geographical unit (Blane, 1995). Such inequity is unfair to individuals, violates basic human rights and is a major threat to achieving health targets.

Although this understanding is not new and substantial evidence indicating steep social gradients in health has accumulated over the years, policy-makers and advocates continue to face major challenges in crafting effective policies oriented towards equity in health. Although much research has been conducted on socioeconomic inequality and injuries and violence[1], the information has not yet been synthesized into an overarching view of the problem. Further, cross-border comparison is difficult, as studies classify socioeconomic position and deprivation differently. Social stratification varies between countries, so material and social advantages and disadvantages differ and the relative types of social divide are not constant. Study data are therefore not representative of all types of countries, economies and governments or of all types of social stratification. All these factors create difficulty in arriving at a common understanding of the extent to which social factors influence the injury burden in countries and whether preventive measures that work in one country can be generalized to other settings. Policy-makers and advocates aiming to address socioeconomic inequality in health are thereby challenged to put forward effective evidence-based arguments for action.

This policy briefing addresses these challenges in one major public health concern – violence and injuries. Now one of the leading causes of premature death around the world – and with a steep social gradient – violence and injuries are an increasingly important contributor to the health divide (Hofman et al., 2005; Laflamme et al., 2009). This is especially true among younger people (children and adolescents in particular) and people in low- and middle-income countries, for whom injuries as a cause of death and disability are increasing (Krug et al., 2002; WHO, 2002, 2007), in sharp contrast to downward trends in fatal injuries in countries with higher income (Morrison et al.,

1 An injury is the physical damage that results when a human body is suddenly subjected to energy in amounts that exceed the threshold of physiological tolerance or from a lack of one or more vital elements (such as oxygen). The energy could be mechanical, thermal, chemical or radiant. Injuries are usually defined by intention. The main causes of unintentional injuries are road traffic, poisoning, drowning, falls and burns. Violence is the intentional threat or use of physical force against oneself, another person or a group or community that results in injury, death, mental harm, maldevelopment or deprivation.

2000a, b; UNICEF, 2001). In the WHO European Region, injuries account for 9% of all deaths and 14% of ill health or disease burden as measured by disability-adjusted life-years. This burden is substantially higher in countries in the eastern part of the European Region (Sethi et al., 2006a, b).

This policy briefing summarizes evidence gathered and analysed in a WHO report *Socioeconomic differences in injury risks: a review of findings and a discussion of potential countermeasures* (Laflamme et al., 2009) and is divided into four sections. First, it synthesizes evidence on which policy-makers and advocates can draw from more than 300 studies published since 1990, both inside and outside the WHO European Region, provides an overview of the current state of knowledge and makes a coherent and compelling case for action to address the safety divide. Violence and injury studies reviewed include data on road traffic injuries, falls, burns, poisoning, drowning, self-directed violence and interpersonal violence. Second, it delivers messages to policy-makers aiming to address the socioeconomic safety divide. These messages include a framework for dealing with this difficult policy area and highlights effective areas for action, based on an interpretation of the evidence reviewed. Third, it emphasizes to researchers the need to enhance the rigour of research on social equity for developing policy to enhance its usefulness. Fourth, the guide concludes with some reflective remarks addressed to public health advocates and safety planners on catalysing action in this important area of public health activity.

This briefing aims to offer helpful advice for policy-makers, advocates and researchers as they work in crafting effective policies that can reduce deaths and suffering from violence and injuries, particularly for people with low socioeconomic status and people living in less affluent countries and areas. As outlined in detail below, the data show great scope for action, as social and income differences do not inevitably need to lead to such differences in injury and are neither unavoidable nor irreversible (Laflamme, 1998).

This briefing may be of special interest to policy-makers seeking to address ill health in those segments of the European population whose socioeconomic position may be threatened by the looming global financial crisis. An increase in socioeconomic disparity and increased poverty in turn threatens to further increase these people's vulnerability to ill health from injuries and violence.

Evidence on the socioeconomic safety divide

General findings

Peer-reviewed medical and public health journals have published many articles on the socioeconomic patterns of injuries during the past two decades. Of the 300 studies Laflamme et al. (2009) identified and reviewed, 41% focused on self-inflicted injuries (suicide and attempted suicide)[2]. Violence- and road-traffic-related injuries (16% each) were the next most commonly studied. Other injuries reviewed related to falls, burns, drowning and poisoning. The studies, although numerous, focus on a limited number of mostly higher-income countries, both inside and outside the WHO European Region.

Overall, the evidence strongly indicates that people with low socioeconomic status and people who live in less affluent areas die more often by injury and violence than do people who live in other areas. Depending on the specific cause and definition of deprivation (see below), mortality rates among the children of unemployed parents are reported to be 38 times higher than among the children of the most affluent parents (Edwards et al., 2006a). Evidence shows a strong association between injury-related mortality and individual- and area-based material deprivation. This has been observed for most causes of injury (such as road traffic, self-directed violence, interpersonal violence, poisoning and burns) and for several settings (such as home, work and transport). Although morbidity studies are less consistent, numerous studies show considerable differences between socioeconomic groups.

Studies that evaluate links between personal behaviour, interventions and injury outcomes strongly suggest that both individual and contextual factors influence the socioeconomic patterns of causes of injuries. These are related to the age and sex of the victim and the setting in which the injuries occur. Importantly, many of these factors can be modified through a variety of public health interventions addressing differences in susceptibility, exposure and consequences.

Results for specific injuries

Specific injuries are divided into five categories: road traffic; falls, burns, poisoning, drowning or mixed; self-directed violence; interpersonal violence; and all causes or specific sites or body parts. These categories reflect the studies reviewed.

Road traffic injuries

Evidence from studies conducted in Europe and elsewhere on children and young people shows that low socioeconomic status increases the risk of being injured in road traffic for both fatal and non-fatal injuries. Even in areas where child injury deaths have generally

[2] For ease of reading, and in accordance with research in the area, the more common terms "suicide" and "attempted suicide" are used instead of "self-directed violence", distinguishing between self-inflicted injuries that result in death (suicide mortality) and those that do not (suicide morbidity).

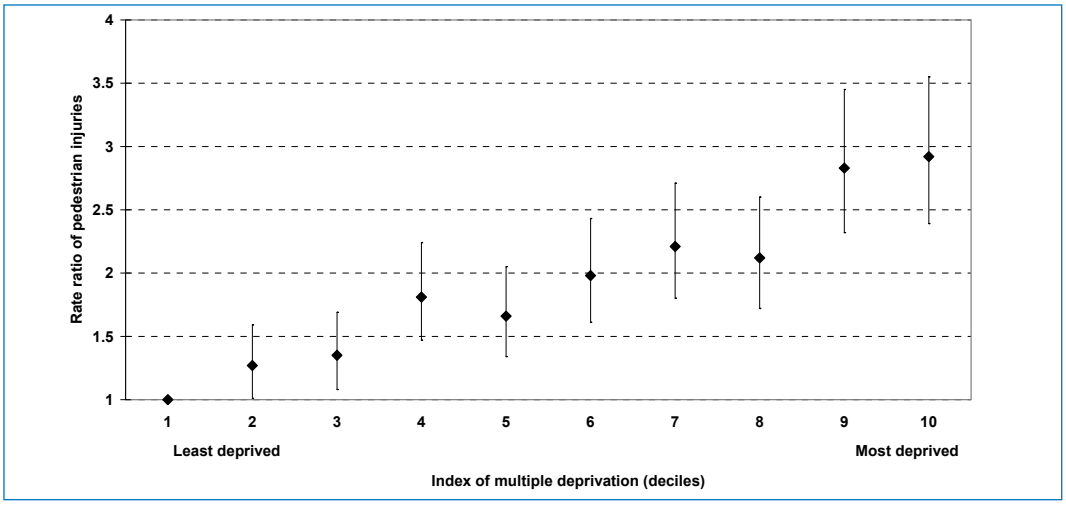
decreased in recent years, the differential experience of deprived children persists regardless of the type of road user (pedestrians, cyclists and car passengers). A study in the United Kingdom (Edwards et al., 2006a) reported that pedestrians and cyclists among deprived children have a much higher risk, with mortality rates more than 20 times higher among children of unemployed parents versus children of parents with the highest occupational status. Depending on the measure of socioeconomic level or deprivation used[3], the risk of non-fatal road traffic injury is reported to be up to four times higher among the most deprived people. In Spain, people with no schooling had a fourfold higher rate of road traffic deaths than people with higher education (Borrell et al., 2002). An analysis from London (Edwards et al., 2006b) showed that the risk of pedestrian injuries increases with a composite measure of area deprivation and has been linked to exposure to cars speeding and a high volume of motor vehicle traffic (Fig. 1).

Falls, burns, poisoning, drowning and mixed injuries

Studies, mainly carried out in Europe among children and youth, show strong links between low socioeconomic position and falls, burns, drowning and poisoning, for both mortality and morbidity. Among adults, the evidence shows contextual effects of deprivation, especially for falls. Similar to other injuries, the links with deprivation are stronger for more severe injuries.

Key socioeconomic neighbourhood and individual factors – including income, neighbourhood unemployment levels, educational attainment and job status – are associated with the risk of burns, poisoning and drowning.

Fig. 1. Relationship between injury rate ratios among adult pedestrians and deprivation in London



Note: the horizontal axis shows deciles of an index of multiple deprivation in small areas with a population of 1500.
Source: Edwards et al. (2006b).

3 Different studies used different socioeconomic measures, including children from deprived areas, population with no education or a low level, children in families with no adult employed or of lower socioeconomic status.

Burn studies, mostly from outside Europe, show a strong association between material deprivation (both individual and neighbourhood) and burn injuries of various severity levels. A study in the United Kingdom showed death rates from house fires (from smoke, fire and flames) up to 38 times higher for children with parents who are unemployed compared to the highest occupational status (Edwards et al., 2006a). In the United States of America, studies found a risk up to 19 times greater among children whose mothers had education of less than high school level (Scholer et al., 1998). The results for falls (in both children and adults) are less clear, with neighbourhood factors either protecting or aggravating falls among children.

Self-directed violence

Self-directed violence may be fatal (suicide) or non-fatal (attempted suicide). For suicide as a whole, the evidence indicates that males and younger age groups are more negatively affected by socioeconomic disadvantage. The studies use a wide range of measures of socioeconomic status, including education, income, wealth, occupation, housing tenure, car access and overcrowding. For children and adolescents, the parents' (family) socioeconomic status is used. Social fragmentation and mental illness, when taken into account, significantly affect the relationship between socioeconomic status and suicide. Where area-based attempted suicide studies have been conducted, these all show increasing risk with social deprivation. Importantly, European studies showed that the divide between the least and most deprived areas has increased over time (Boyle et al., 2005).

Interpersonal violence

Very few of the non-age-specific studies on socioeconomic status and violence focus on countries in the WHO European Region, and all these were from the United Kingdom. These studies found a very strong relationship between material deprivation and the risk of assault (Howe & Crilly, 2001). Further, the increases in the murder rates between 1981 and 2000 were concentrated in the poorest areas (Shaw et al., 2005), and people living in deprived areas were nearly six times more likely to be admitted to emergency hospitals (Bellis et al., 2008).

Studies from the United States showed that intentional non-fatal weapon-related injuries correlated with economic deprivation, with very steep gradients (Krieger et al., 2003). Gang-related homicide is strongly associated with lower community income levels (Kyriacou et al., 1999) and low socioeconomic status correlated significantly with violent death (Wallace & Wallace, 1998).

Studies on violence towards children and adolescents mainly focus on the home environment and variously show correlations between child abuse and parental education level, differences between families with differences in parental educational levels, low income, family structure (such as single parent or large family size), deprived areas, high urbanization, alcohol use and antisocial behaviour.

For intimate partner violence, most of the studies focus on countries outside Europe and include physical, psychological and sexual violence over varying time periods. Most studies focused on male-to-female violence, but a few studies also looked at female-to-

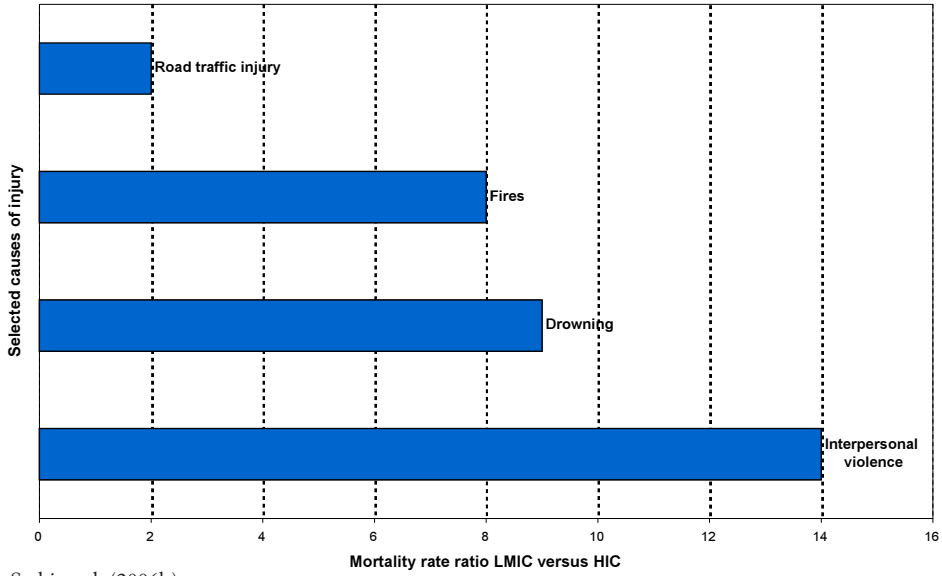
male violence. Associations were found with low education (of the victim and the perpetrator), occupational or employment status, low family income, low socioeconomic status, race (in the United States), limited access to health care or impoverished neighbourhoods for various groups in different contexts or countries. In India, the husband's alcohol consumption was a contributory factor, along with low caste, households with lower income, women's economic autonomy and low education. Social conditioning, such as attitudes towards male-to-female violence, also plays a part in some countries. Some evidence also indicates greater risk levels among women in urban settings.

Area, injury type and economic studies

Most area-based studies in Europe show a link between deprived areas and injury risk, with stronger associations for more severe injuries.

Countries with lower gross national product have more childhood deaths from unintentional injuries (Plitponkarnpim et al., 1999), and lower gross national product per capita is associated with higher mortality from unintentional injury (Ahmed & Andersson, 2000). The *European report on child injury prevention* (Sethi et al., 2008) recently confirmed this, estimating a threefold difference in unintentional injury deaths among children between high-income countries and low- and middle-income countries in the WHO European Region. Similar findings are reported for all ages, with greatly increased injury mortality among people living in low- and middle-income countries, with rate ratios ranging from 1.5 for road traffic injury to 13.4 for interpersonal violence (Fig. 2) (Sethi et al., 2006b).

Fig. 2. Mortality rate ratios for selected causes of injury among low- and middle-income countries (LMIC) versus high-income countries (HIC) in the WHO European Region



Source: Sethi et al. (2006b).

Addressing the socioeconomic safety divide – messages for policy-makers

Most studies evaluating interventions aimed at reducing the differential impact on population groups and areas with lower socioeconomic status have focused on preventing injury among young children in home and road traffic settings. These studies primarily examine the adoption of safe practices and the use of safety equipment (reducing differential susceptibility). Less attention has been paid to evaluating interventions aimed at reducing differential exposure to hazards or the differential consequences of injuries.

Message 1: socioeconomic inequality in violence and injuries is a great problem that can be reduced through action

Socioeconomic inequality in violence and injuries is a major cause of inequity in health and suffering in all countries. Trends show that the safety divide is becoming larger and that this is cause for alarm. Inequity in health is unfair to individuals, violates human rights (Dahlgren & Whitehead, 2006; Kawachi et al., 2002; Whitehead & Dahlgren, 2006), negatively affects population health status and represents a major threat to achieving health improvement targets. Importantly, evidence indicates that injury differentials do not inevitably reflect differences in wealth (Laflamme et al., 2009). These injuries are avoidable and trends are reversible. For example, environmental changes have been shown to successfully level up safety differentials in the home by improving housing conditions (Berfenstam, 1979, 1995), at work by isolating hazards (Menckel & Kullinger, 1996), or in road traffic by modifying the infrastructure in various ways (Berfenstam, 1979; Jones et al., 2005; Tester et al., 2004).

Message 2: crafting solutions requires knowing the scale and location of the problem

Although, only 48 of the 53 Member States in the WHO European Region have reasonable injury mortality data available, only a handful have this disaggregated by socioeconomic status. Sustained investment into developing information systems is needed to identify the groups and areas in which people are at greatest risk and to monitor the effectiveness of interventions in overcoming the safety divide (Kawachi et al., 2002). Public health action to reduce safety differentials, however, cannot wait until all countries have developed their own databases. The burden of injury-related ill health requires action now. Much can be learned from existing studies examining equity-oriented policies and interventions, whether these are universal or targeted, and adapting these as necessary as socially specific data emerge.

Message 3: develop and implement equity–oriented policies and interventions

Many policies that focus on health that are oriented towards equity will address other types of inequity in health and not just injuries, thus reducing other forms of inequity in health (Commission on Social Determinants of Health, 2008). Addressing socioeconomic

inequality and evaluating potential countermeasures (Table 1) requires considering the social determinants that influence the health of the overall population (such as universal access to emergency trauma care) and the determinants of inequality in health (such as occupational safety standards for manual labourers) (Dahlgren & Whitehead, 2006). This is especially important with injuries, as the differentials are often quite steep. Whereas it is generally accepted that passive universally targeted interventions (such as area-wide speed and road traffic management) are most effective in reducing the injury burden, it is not known whether such interventions differentially favour disadvantaged people and would reduce the safety divide.

Message 4: make sure safety-for-all strategies are in place

Safety-for-all strategies (including legislation, regulation, enforcement, community-based programmes and home education and visitation programmes) have been shown to be effective in reducing injuries (Krug et al., 2002; Peden et al., 2004; WHO, 2007) in all social groups.

Legislation, regulation and enforcement

Legislation, regulation and enforcement reduce the injury burden generally and can also reduce the safety divide (Ministry of Health and Social Affairs 2002, 2003), by setting minimum conditions and standards and imposing safe behaviour and practices (such as wearing seat-belts in cars or using motorcycle helmets). They also limit exposure to dangerous products or substances, which may be linked to both intentional injuries (such as which reduce exposure to risk and the consequences of injury, respectively.

Table 1. Preventing socioeconomic inequality in violence and injury – intervention points

Socioeconomic inequality in violence and injury occurrence and consequences arises because people are variously disadvantaged according to socioeconomic group due to one or several of the following, each referring to one type of prevention.

Primary prevention	Differing opportunities for safety: for example, some people face higher structural risks and have fewer chances of avoiding injuries, such as children living near areas with high road traffic speeds.
Secondary prevention	Differing opportunities to avoid risk: for example, being at greater circumstantial risk due to limited chances to compensate for or cope with danger and avoid injury, such as not being able to afford child car restraints.
Tertiary prevention	Differing access to or use of health care, including emergency trauma care and rehabilitation, such as worse access in deprived rural areas.

Source: Laflamme et al. (2009).

Equity-oriented policies and interventions aim to narrow the safety divide through action targeted at reducing the exposure to, risk of and consequences of injury for less affluent people or neighbourhoods. Examples of these include policies to institute traffic-calming measures and universal access to emergency health care,

firearms) and unintentional injuries (such as chemicals) (Krug et al., 2002; Laflamme et al. 2009; Peden et al., 2004; Sethi et al., 2008; WHO, 2007). Given the significant role of alcohol consumption in many injury outcomes, changing and enforcing legislation would bring benefits (Sethi et al., 2006b).

Community-based programmes

Community-based programmes aim to rectify the safety level of communities through behavioural and environmental change, which may also be accompanied by legislation and subsidies. Evidence indicates that such programmes may help increase the uptake of some types of safe behaviour (such as wearing seat-belts and safety helmets) but not all (such as drinking and driving among youth). The success of such programmes depends somewhat on the participation and ownership of the stakeholders concerned, successful adaptation to the community's needs and the use of a mixture of strategies grounded in a theory of behavioural change (Farley, 2003; Klassen et al., 2000).

Home safety education and home visitation programmes

Home safety education and home visitation programmes work to prevent intentional and unintentional injuries by promoting safe practices in the home. Several evaluations and meta-analyses of such interventions have shown that home safety education programmes are effective in influencing the uptake of a range of safety practices (Box 1).

Box 1. A meta-analysis review study on home safety education programmes for preventing childhood injuries

The study found that, compared with controls, families receiving the education programmes were:

- more likely to have a safe hot tap water temperature (11 studies included), with some evidence indicating that programmes tended to be more effective among non-owner-occupier families;
- more likely to have a functioning smoke alarm (13 studies included), with programmes functioning better when they provided smoke alarms and slightly better when delivered in clinical settings rather than in the home or community and effect sizes not differing between socioeconomic groups (such as housing tenure, parental unemployment, family type and ethnic group);
- more likely to own a smoke alarm (12 studies included), with effect sizes not differing between socioeconomic groups (such as housing tenure, parental unemployment, family type and ethnic group);
- somewhat more likely to use fire guards (provided in all four studies included);
- not significantly more or less likely to report thermal injuries (four studies);
- more likely to store medicine safely (eight studies);
- more likely to store cleaning products safely (11 studies included), with the programmes functioning better when they provided locks together with education rather than education only and when delivered in the community rather than in a clinical setting;
- more likely to have the poison control centre number accessible (seven studies), with families with at least one parent not in paid employment significantly more likely to have the number accessible than those with employed parents; and
- not significantly more or less likely to report poisoning (three studies).

Source: Kendrick et al. (2007).

Message 5: target the population groups most at risk

Effective approaches tend to focus on the distinct pathways and mechanisms by which safety differentials arise (Dahlgren & Whitehead, 2006; Diderichsen et al., 1999; Evans et al., 2001; Mackenbach & Bakker 2002; Towner et al., 2005). These approaches include action aimed at reducing differential susceptibility, consequences and exposure and influencing social stratification.

Decreasing differential susceptibility

Differential susceptibility links people's health and safety to their social background and is characterized as either inherited (the result of genetic disposition) or influenced by class attributes (educational, material and influential) (Braverman et al., 2005; Kawachi et al., 2002; Laflamme 1998, 2001). One popular strategy aimed at decreasing differential susceptibility is to target the people who are at risk with information to change behaviour, usually educational campaigns that may be accompanied by the distribution of free equipment (sometimes with instructions and installation also included). The rationale for this approach is to give more disadvantaged people the behavioural and technical means to protect themselves and their children. Some of these programmes, especially those that supply safety devices, have been shown to be successful in reducing childhood injuries, especially among younger children, such as programmes distributing free toddler car seats (Louis & Lewis, 1997) and booster seats (Apsler et al., 2003). Another example is a home visitation scheme by nurses to low-income or unmarried first-time mothers that provided training in health-related behavioural and practical support prenatally and during infancy. This has been effective in reducing both child maltreatment and violence perpetration long term (Olds et al., 1997).

However, several studies have shown that focusing solely on educational campaigns is insufficient to tackle the safety divide, as childhood injuries in the home among deprived people, for example, do not exclusively result from poor knowledge or safety practices (Jan et al., 2000; Ribas et al., 2006). Differences in susceptibility to injury are also due to barriers that hinder safe practice, such as lack of money to spend on child safety equipment and risks identified in the neighbourhood, such as being unable to afford and maintain functioning smoke alarms in council properties in deprived areas at high risk of residential fires and associated injuries (DiGuiseppi et al., 1999a, b, 2002).

Many studies have identified the high cost of safety devices as a major barrier to safe practices (Colver et al., 1982; Evans & Kohli, 1997; Hsu & Scott, 1991; Sparks et al., 1994; Wortel & de Geus, 1993). One multi-country study (Hendrie et al., 2004) has shown that safety equipment is more expensive (and sometimes unaffordable) in low-income countries: for example, a child's bicycle helmet that costs the equivalent of less than 1 hour of factory work in a high-income country may cost the equivalent of 10 hours of factory work in a low-income country. Advocacy, social marketing, local device production, lowering of tax tariffs and mandatory use legislation may help to address this problem (Laflamme et al., 2009).

The readability of safety and installation instructions (such as for fitting child car seats)

has also been highlighted as a barrier, as the instructions are often pitched at an education level that is too high (Wegner & Girasek, 2003). Simpler instructions and providing opportunities to acquire or improve other safety-related skills (such as swimming and driving) will help to reduce susceptibility (Stone et al., 2007; Van Niekerk, 2007).

Decreasing the differential consequences of injuries

The aim here is to minimize the consequences of injuries – physical, psychological and social, at both the individual and societal level – and thereby prevent the inequity of differential consequences. Effective policies and actions aimed at decreasing differential consequences include strengthening the availability of and accessibility to post-trauma care, making safer products more readily available and promoting vision-zero approaches.

Studies have shown that most deaths from injuries occur in a pre-hospital setting (Mock et al., 1998); improving access to emergency trauma care in low- and middle-income countries (Husum et al., 2003; Razzak & Kellermann, 2002) and improving response and delivery times in emergency trauma care are therefore essential. Universal access to prompt and efficient pre-hospital and emergency room care will ensure that better trauma outcomes are accessible to everyone irrespective of class (WHO, 2007). In addition, post-hospital follow-up care may also be a factor (Dunn et al., 2003; Hawley et al., 2004). Co-payments and under-the-table payments will impede universal access to emergency trauma care and rehabilitation and discriminate against disadvantaged people.

Safer products may not prevent injuries from occurring but can minimize the consequences (Towner et al., 2005). One example of this is flameproof nightdresses.

In road safety, the vision-zero approach takes the view that no one should be killed or seriously injured in a road crash. This involves a systematic approach throughout society that reduces injuries for everyone, regardless of socioeconomic status. Successful interventions improved road design, with infrastructure safety and traffic-calming, and better car design, with passive safety features such as air-bags, along with enforcing laws and regulations (such as those governing speed limits and drink-driving).

Decreasing differential exposure

Differential exposure means unequal exposure to hazards and dangers that are found in the home, work and commuting environments. These approaches can be population-specific and/or safety-for-all strategies (see message 5) – such as traffic-calming, improved public transport, better street lighting, improved recreation areas or improved social support – and will help to reduce injuries among people with low income and other population groups. They can also serve to reduce access to hazards (such as child-proof closures on medicines).

The Harlem Hospital Injury Prevention Program succeeded in reducing road traffic injuries among schoolchildren by 45% through a multifaceted community-based programme that included road safety education, distributing bicycle helmets, constructing and improving parks and playgrounds

and supervised recreational activities for children (Durkin et al., 1999).

A cohesive social environment can help to combat differential exposure to risk (such as walking school buses as an example of collectively controlling injury risk). Several studies, for example, have found social cohesion to be strongly associated with suicide levels (Evans et al., 2004; Middleton et al., 2004; Smith et al., 2001; Whitley et al., 1999) and levels of interpersonal violence (both child abuse and intimate partner violence) (Kawachi & Kennedy, 1997; Kennedy et al., 1998; Krug et al., 2002).

Influencing social stratification

If the higher injury levels among people living in deprived neighbourhoods are a function of the neighbourhoods, then educational and environmental interventions targeting the deprived areas would be an effective policy response. However, if the higher injury levels are the consequence of social stratification, then the only really effective policies will be those that reduce the social divisions and increase social mobility (Dahlgren & Whitehead, 2006; Diderichsen et al., 1999, 2001; Erskine, 1996). This can be addressed through broad economic, social and education policies at the societal level.

An intervention in South Africa that provided microfinance loans to women from the poorest households and included a participatory learning and action curriculum aiming to reinforce gender equity, promote safe sex and decrease HIV transmission reduced intimate partner violence (in the past 12 months) by 55% after 3 years (Pronyk et al., 2006).

A residential mobility intervention in Yonkers in the United States randomly assigned low-income ethnic minority families residing in public and private housing in high-poverty neighbourhoods via lottery to relocate to middle-class neighbourhoods. Demographically similar families remained in the original high-poverty neighbourhoods. About two years later, the adults who moved to low-poverty neighbourhoods were less likely to be exposed to violence and disorder, experience health problems, abuse alcohol and receive social cash benefits and were more likely to report satisfaction with neighbourhood resources, experience higher housing quality and be employed compared with adults who remained in the original high-poverty neighbourhoods (Fauth et al., 2004).

Addressing the socioeconomic safety divide – messages for researchers

Message 1: enhance the rigour of study design

Careful analysis and understanding of the current situation (Box 2) requires that data be specified by social group and cause (Braverman et al., 2005; Dahlgren & Whitehead, 2006) to reflect the different factors involved and preferably examine injuries in different settings (home, workplace, etc.). Studies need to be undertaken that allow multilevel analysis to better understand the risks according to individual factors such as sex, age, relationship factors, the influence of the physical environment and societal factors such as ethnicity and socioeconomic class (Dahlgren & Whitehead, 2006).

Message 2: studies are needed in low- and middle-income countries

Current studies come from a few countries. This is a problem, as the currently available data are geographically biased and not representative of all countries, governments and economies. The evidence does not encompass many forms of social stratification, and studies in a wider range of settings and in countries with different social and economic structures would be beneficial.

Box 2. Essential elements in determining the existence of and following up social inequality in safety

1. Both absolute and relative differences should be used to express inequality in health.
2. To measure individual social position, income, occupation or education should be used. If possible, use several measures rather than one.
3. If data are not available at the individual level for comparison, use area-based data (such as privileged versus less-privileged neighbourhoods).
4. Whenever possible, social position should be looked at in sex-, age- and ethnicity-specific groups and adjustments made for potential confounding.
5. The differential effects of risk factors across socioeconomic strata need to be better understood.
6. More studies need to be conducted to determine whether passive interventions targeting whole populations have a differential effect in reducing the social divide.
7. Better understanding is needed for the risk factors and thus the interventions that need to be given priority to reduce the safety divide in each country.
8. In doing so, multi-level analysis is needed that adjusts for the levels at which socioeconomic determinants act in causing types of injuries and violence.

Sources: adapted from Dahlgren & Whitehead (2006) and Laflamme et al. (2009).

To address these problems, country-specific intervention studies are needed, as each country has a unique cultural and historical background. Cross-country studies to analyse the social contextual differences using measures that are valid and reliable are also needed (Lu et al., 2005).

Message 3: more attention needs to be paid to intervention research and how it can reduce the safety divide

Researchers and policy-makers need deeper understanding of the mechanisms producing socioeconomic differentials in violence and injury so they can develop appropriate countermeasures.

To date, much intervention research has focused on adopting safe practices and using safety equipment. This is important but only represents one of several approaches, and more comprehensive approaches would also include environmental and societal interventions. More attention needs to be paid to identifying interventions that can reduce the safety divide in the longer term.

Further, although evidence is growing that prevention works, it is not known whether it works where it is most needed (Towner et al., 2005).

Addressing the socioeconomic safety divide – messages for public health advocates and safety planners

Message 1: frame equity in safety as a major public health problem amenable to policy action – injuries are no accident

Knowledge related to injury prevention and control has much to offer in achieving and maintaining living, commuting and working conditions favourable to health and safety for all. Violence and injuries are currently often perceived as unavoidable accidents and/or unapproachably complex problems occurring in susceptible strata of society. Public health advocates can use the evidence base in this guide and accompanying review to reframe these perceptions and assist policy-makers and safety planners in taking an array of actions to reduce social differences in injury risk and thereby improve population health generally (Box 3). Such reframing can usefully inform all advocacy efforts. There is a limited evidence base on the nature of the mechanisms underlying socioeconomic differences in injury mortality and morbidity and on how to avoid or reduce social differences in injury risks.

Message 2: build intervention strategies on public health principles

The conceptualization of new interventions can benefit from a set of 10 strategies (Box 4) that are very well known among public health practitioners and help to define what a given intervention specifically tries to tackle in the injury process. Developed by Haddon (1980), they are based on three distinct stages in the injury process: pre-crash or -event, crash or event and post-crash or -event (Box 4).

Although no evaluation has assessed whether each strategy is equally beneficial for all socioeconomic groups and neighbourhoods, it could be presumed that the closer a given

Box 3. Advocating for equity in safety

Achieving enhanced equity in injury risk distribution and in the benefits of prevention may require the following:

1. increase awareness of the existence – and preventability – of such forms of inequality at the relevant decision-making level;
2. set equity as a prerequisite for policy-making;
3. integrate exposure and risk distribution as part of the evaluation process;
4. pay attention to risk distribution by socioeconomic group both generally and specifically; and
5. keep the equity issue on the agenda for all social and fiscal policy.

Source: Laflamme et al. (2009).

Box 4. Haddon's 10 strategies for preventing and controlling injury

1. Eliminate the hazard
2. Separate the hazard
3. Isolate the hazard
4. Modify the hazard
5. Equip the person
6. Train and instruct the person or carer
7. Warn the person or carer
8. Supervise the person
9. Rescue the person
10. Treat and rehabilitate the person

Source: Haddon (1980).

intervention is to targeting the source of the danger or hazard, by modifying, eliminating, separating or isolating it (passive safety), the greater its potential for levelling up in reducing inequity. Conversely, the more an intervention relies on adopting safe behaviour (active safety) in otherwise difficult living, working or road environments, the less effective it is likely to be among deprived individuals and communities (Bishai et al., 2003; Stone et al., 2007; Van Niekerk, 2007). As such, it is less likely to contribute to narrowing the safety gap.

Message 3: customize your advocacy and action to the needs of the environments

This policy briefing has identified social inequity in injuries between socioeconomic groups. This inequity can be modified, and a way forward would be by promoting equity in all health policies, as advocated by the Commission on Social Determinants of Health (WHO Regional Office for Europe, 2008). Debates about fairness and the principle of the universal human right to health will come to the fore when socioeconomic policies are modified to ensure greater equity. Inequality in injury risk and in the benefits of prevention will not be reduced without facing these major ethical issues. Undeniably, this will have to be orchestrated while respecting historical, political, geographical and cultural differences, the implication being that no strategy for intervention or means of prevention will be applicable to all settings.

Message 4: give a voice to vulnerable people

The most marginalized segments of society, such as unemployed people and ethnic minority groups, need to be heard. Among these, children are most vulnerable to inequity in injury. Their safety needs and concerns need to be met.

Message 5: catalyse links between researchers and policy-makers

The review summarized here can serve public health advocates who want to facilitate and catalyse better communication between policy-makers and researchers. The study authors have provided a state-of-the-art, overarching view of the available data and their strengths and weaknesses. They have identified promising areas for development and proposed approaches that can be adopted by policy-makers and practitioners and that can make a difference.

Conclusion

This policy briefing and the review on which it is based (Laflamme et al., 2009) have shown that inequality in health from injuries and violence is striking. It points to social determinants that are influencing a widening gap in inequity in health. Action needs to be taken to reduce this inequity and its causes (Marmot, 2005). The evidence points to a major public health challenge that health systems and societies need to face. This calls for a new way of thinking about social policy and emphasizes that equity in health from injury and violence is an important outcome that needs to be monitored.

The WHO Regional Committee for Europe resolution (WHO Regional Office for Europe, 2005) and the European Council recommendation on the prevention of injuries (European Commission, 2007) emphasize that national policy needs to be developed to reduce this leading cause of premature death and disability. Targets to reduce injuries and violence in national health policy will only be achieved if equity is also incorporated into such plans. Action needs to be taken both to reduce injuries and violence universally in the population using passive interventions to make the social and physical environment inherently safer and to target disadvantaged populations. This policy briefing has highlighted some measures that need to be taken to achieve this goal. The challenge is more urgent in view of the current economic challenge and the threat of a widening social divide. The political and socioeconomic transition experienced by central and eastern European countries and the central Asian republics in the 1990s and the surge in mortality from injuries and violence provide lessons that stakeholders need to heed today (Sethi et al., 2006a, b).

The Tallinn Charter: Health Systems for Health and Wealth adopted by the 53 Member States of the European Region in 2008 promotes the values of solidarity, equity and participation (WHO Regional Office for Europe, 2008). This briefing emphasizes that injury and violence prevention are key areas in which such action should be taken. Social and economic policies affect families' susceptibility to injury by influencing social and physical environments. Action to prevent injury and violence needs to be intersectoral. If governments are to address the uneven distribution of injuries, then equity needs to be an aim across the whole of government policy, as emphasized by the Commission on Social Determinants of Health (2008). Health systems have a key role to play by promoting equity in all health policies and highlighting injuries as a consequence of social policy. Policies such as those that seek to protect disadvantaged people need to be promoted, such as universal health care, early child development and education, healthy places, fair employment and social protection. The health sector also needs to ensure that injury and violence prevention are incorporated in the provision of universal primary care and community-based action and pay particular attention to the social stratification of injuries. Addressing this important cause of inequity in health is a matter of social justice.

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Annex 1. Methods of the review

In the original report (Laflamme et al., 2009), original research articles were obtained through a literature search in SafetyLit™, the Cochrane Library and Medline, using specific keywords and phrases. Additional suitable material was identified from references in selected articles. The strength of individual study design was not taken into account, but direction of associations and trends were noted rather than magnitude to compensate for the weak design of many of the studies. Box 1 provides the list of criteria for being included in the review.

The studies included morbidity and mortality studies on the leading causes of injury, both intentional and unintentional – interpersonal violence (including child abuse and intimate partner violence), self-directed violence (suicide), road traffic injuries, falls, drowning, poisoning and burns – and came from both inside and outside the WHO European Region. The limited number of databases used meant that the search was not exhaustive, but an inclusive approach was taken to the databases searched.

Box 1. Inclusion criteria for studies in the review

1. Publication: in a peer-reviewed journal between January 1990 and June 2006.
2. Languages: Danish, English, French and Swedish.
3. Design and methods: for risk distribution studies, wide ranging but used tests for statistical significance or included confidence intervals. For intervention studies, randomized controlled trials or controlled before-and-after studies.
4. Focus: for risk distribution studies, examination of the relationship between socioeconomic status and injury at an individual or area level as the primary research question. Studies merely controlling for socioeconomic status were excluded. For intervention studies, those measuring the effects of interventions across socioeconomic groups.
5. Severity level: fatal and non-fatal injuries.
6. Cause: all injury types resulting from interpersonal violence, self-directed violence, road crashes, falls, drowning, poisoning and burns.
7. Analytical level: both area-based and individual-based studies.
8. Measures for individual-based studies: education, income and wealth, social class or occupational status, composite measures of these factors and proxy measures such as neighbourhood deprivation.
9. Measures for area-based studies: compositional aspects such as educational level, occupational status, income, wealth, poverty and deprivation of an area.

After the original literature search was undertaken, two meta-analyses of interventions to reduce childhood injuries in the home came to light that addressed differences in outcomes of targeted interventions versus population-based interventions. They were subsequently included.

differently. Further, social stratification differs between countries, so material and social advantages and disadvantages differ and the relative social divide is not constant. Finally, excluding studies available in languages other than those included in the selection criteria may limit the breadth of the findings.

Box 2. Originality, strengths, limitations and contribution of the review

Originality	All injury causes considered, attention paid to where the evidence comes from, WHO European Region as the focus
Strengths	Inclusiveness and coverage (study origin and type; injury cause; publication period 1990–2006)
Limitations	Literature search limited to selected databases; quality assessment of individual studies not provided; one reviewer by study (and injury cause)
Contribution	A demonstration of the geographical bias of the evidence accumulated thus far (e.g., most often from high-income countries from northern Europe and north America); a demonstration of the imbalance in studies across injury causes; a demonstration of the scarcity of interventions addressing the reduction of socioeconomic differentials in injuries

Limitations

Restrictions in the review process and publication or selection biases may overrepresent studies showing socioeconomic differences or positive effects of interventions (Box 2). Comparisons are difficult as studies classify socioeconomic position and deprivation

Reference

Laflamme L, Burrows S, Hasselberg M (2009). *Socioeconomic differences in injury risks: a review of findings and a discussion of potential countermeasures*. Copenhagen, WHO Regional Office for Europe.

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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ISBN: 978 92 890 4300 7
Original: English

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Injury and violence are a leading cause of death and disability in the WHO European Region. Wealth is a major determinant of health, and there is a steep social gradient of ill health due to injuries and violence. People in low- and middle-income countries and more deprived people in high-income countries are worse off. Social and economic policies affect families' susceptibility to injury by affecting social and physical environments. This policy briefing summarizes evidence on the socioeconomic safety divide from a large systematic review. It then provides messages for policy-makers, researchers and public health advocates and safety planners on what can be done to address this safety divide. Action for preventing injury and violence needs to be intersectoral. Governments need to aim for equity across all types of government policies to address the uneven distribution of injuries. Action needs to be taken both to reduce injuries and violence universally in the population using passive interventions to make the social and physical environment inherently safer and to target disadvantaged populations. Addressing this important cause of inequity in health is a matter of social justice.

ISBN 978 92 890 4300 7

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