

SPECIAL FEATURE

UNICEF's child injury league table. An analysis of legislation: more mixed messages

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This paper presents a summary table and discussion of legislation related to child injury prevention in member countries of the Organisation for Economic Cooperation and Development. The table is an expanded version of the one which appeared in the UNICEF Report Card "Child Deaths by Injury in Rich Countries" (2001). A commentary is provided on the variations in legislation between countries in terms of range and form of measures and an estimate of degree of enforcement. As legislation is generally considered a powerful tool in injury prevention, the paper examines whether those countries with the widest range of legislation and the strongest enforcement have made the most progress in reducing child injury deaths since the 1970s. It also considers whether a commitment to extensive legislation is reflected in a country's position in the UNICEF league table of injury death. The initial conclusion to these two basic issues is that no clear picture can be seen and we thus need to know far more about the relationship between legislation and societies and cultures as they vary from place to place. This paper hopes to stimulate more widespread debate about the role of legislation in different countries.

A recent editorial in *Injury Prevention*¹ drew attention to the UNICEF Report Card "Child Deaths by Injury in Rich Countries".² This report includes a table on legislation in member countries of the Organisation for Economic Cooperation and Development (OECD) related to child injury prevention (fig 9 in the UNICEF report). As the original compilers of these data, we would like to provide a more detailed illustration (fig 1) than was produced in the UNICEF report, together with a commentary on its main features. We collected information on more legislative measures than the UNICEF report shows, as well as an indication of how well this legislation was enforced. We also obtained information on which OECD countries had a national society or group involved in child injury prevention. Legislation is generally regarded as one of the most powerful tools in injury prevention and it can also be seen as an indicator of the will of the state to intervene in this area. Yet we know very little about the range and effectiveness of this basic tool in different countries.

The purpose of this paper is to present information on the variations in injury related legislation between OECD countries. At this initial stage we do not feel that it is possible to attempt a detailed analysis of the complex political, economic, social, and cultural reasons that underlie these variations but hope that the paper will be a starting point for such work. It is a call for a detailed and specific international comparative analysis of injury related legislation.

Together with our comments on the range of legislation, we pose an apparently straightforward question: Do countries with the widest range of legislation in the field and the strongest enforcement fare better in the UNICEF league table of child injury death? The uncertain answer to this question underlines how far we have to go in understanding variations in injury death patterns between countries and the most effective responses we can adopt to reduce injury.

DEVELOPMENT OF THE RESEARCH INSTRUMENT

For our list of effective measures in reducing childhood injury deaths and serious injuries, we selected those which incorporated two basic elements: (1) the magnitude of the health problem and (2) the existence of evidence of effectiveness.

(1) Magnitude of the problem

An examination of the WHO report of the 15 leading causes of death and 15 leading causes of the burden of disease in high income countries indicated that we should be particularly interested in measures which prevent road traffic accident injuries (pedestrian, bicycle, car occupant), drowning, falls, and fires.³

(2) Effectiveness of measures

Here we drew on systematic reviews of effective interventions in the prevention of injury in children and young adolescents.⁴

This produced a list of the following measures:

- (A) Bicycle helmets.
- (B) Child safety seats/restraints.
- (C) Seat belt wearing by children.
- (D) Speed limit in urban areas.
- (E) Child resistant packaging/pharmaceuticals.
- (F) Smoke detectors in homes.
- (G) Barrier fencing in domestic swimming pools.
- (H) Child banned from riding/driving tractors.
- (I) Adoption of playground standards.

We also wished to see whether countries had established child injury prevention groups or societies. Although this measure is not directly related to legislation, we felt that it was an additional indicator that would help reveal commitment within a country to the cause of reducing child injuries.

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Country	Bicycle helmets for children	Child safety seats/restraints in cars	Seat belt wearing by children	Speed limits: roads in urban areas	Child resistant packaging/pharmaceuticals	Smoke detectors in homes	Barrier fencing: Domestic swimming pools	Children banned from riding/driving farm tractors	Adoption of playground standards	Child accident injury/prevention group/society
Australia†	⊕ (1990)	⊕ (1976)	⊕ (1970)	●	⊕ (1979)	⊕ (1991)	⊕ (1991)			✓
Austria†		⊕ (1994)	⊕ (1994)	●	⊕					✓
Belgium*		⊕ (1996)	⊕ (1975)	●				⊕		
Canada†	⊕	⊕	●	●	●	⊕	⊕			✓
Czech Republic*			●	⊕					● (1999)	✓
Denmark*		■	■	■				■	●	✓
Finland*	No data supplied									
France*		⊕ (1992)	●	⊕ (1972)					■ (1994)	
Germany†		● (1992)	● (1993)	● (1952)	● (1976)				■ (1999)	✓
Greece*		○ (1999)	⊕ (1977)	● (1962)						
Hungary*		○ (2000)	● (2000)	●						
Iceland*	○ (1997)	⊕ (1990)	⊕ (1981)	⊕ (1988)			○ (1993)	⊕	■ (1998)	✓
Ireland*		○	⊕ (1993)	●		● (1994)		⊕		
Italy*		⊕	⊕	⊕	● (1984)					
Japan*		⊕ (2000)	● (1985)	●				●	⊕	✓
Korea*		○ (1997)	○ (1990)	○ (1999)						✓
Luxembourg*		⊕	⊕ (2000)	⊕				⊕	⊕	
Mexico†	No data supplied									
Netherlands*		○	○	⊕	○				●	
New Zealand*	⊕ (1993)	⊕ (1994)	⊕ (1994)	⊕ (1962)	⊕ (1984)		⊕ (1987)	○ (1995)		✓
Norway*		●	● (1979)	⊕		○ (1990)	■ (1997)		⊕ (1996)	
Poland*	No data supplied									
Portugal*		⊕ (1995)	⊕ (1994)	⊕ (1994)				○ (1994)	○ (1997)	✓
Spain*	○		● (1976)	○				■	⊕	
Sweden*		⊕ (1988)	⊕ (1988)	■	● (1995)	■ (1999)	■ (1973)	■	■	✓
Switzerland†		○ (1981)	○ (1981)	⊕ (1959)				○ (1976)		
Turkey*			● (1985)	⊕ (1983)				○ (1983)		
UK*		⊕ (1987)	⊕ (1983)	● (1934)	■ (1976)			■ (1998)		✓
USA†	⊕ (1986)	⊕	⊕	⊕	●	○	○			✓
		Date			Legislation			Enforcement		
* = Unitary state † = Federal state		(...) When legislation first enacted (if known)			■ Applies nationally ⊕ Applies subnationally			● Strongly applied ⊕ Variably applied ○ Weakly applied		

Figure 1 Effective measures in reducing childhood deaths and serious injuries in 29 OECD countries. (This figure has been compiled from the responses to a questionnaire completed by expert advisers from the countries listed.)

In developing the table of legislation and enforcement, we used two sources of information:

(A) published sources of legislation³ and (B) questionnaires sent to country representatives. The questionnaire was sent to a key expert with interests in childhood injury prevention within each OECD country—selected through personal contact, membership lists of the International Society of Child and Adolescent Injury Prevention (ISCAIP), and delegate lists of international conferences on injury prevention and control. The questions covered the 10 measures found at the top of fig 1 and asked whether legislation for each theme existed, the date of enactment and an opinion from the expert on the degree of enforcement, for each measure within their country.

The seemingly straightforward issue of whether legislation exists for each selected measure hides a complex situation. The questionnaire did not attempt to tease out the process of legislation development, such as the length of time taken to reach enactment or the range of institutions involved in getting the measures adopted. Furthermore, the political sys-

tem of the country, whether unitary or federal, will affect whether legislation is enacted nationally or at a state/province/regional level. Responses to the questionnaire, however, showed that even this clear political division does not fully explain variations in legislation within countries (see discussion below). Even determining the date when legislation was first enacted (useful to identify innovators and laggards in the adoption of measures) revealed inconsistent answers and can serve only as a rough guide at this stage. We also asked respondents to indicate whether legislation was enforced strongly, variably, or weakly. This is clearly a subjective opinion but we believe it provides some indication of the degree of enforcement from someone within the country with interests in injury prevention and control.

RESULTS

We received completed questionnaires from 26 out of the 29 OECD countries contacted, a response rate of 90%. Figure 1 summarises the results. For each of the 10 measures selected,

the figure indicates which OECD country has adopted that measure and whether legislation for it applies nationally or subnationally. Each country could potentially adopt from 0–10 measures. The political system, unitary or federal, is indicated. Dates for the introduction of legislation are shown where supplied, as well as an indication of the strength of enforcement. Although it is a very broad snapshot of the year 2000, we believe the figure enables useful international comparisons to be made.

(A) Grouping of countries

A number of broad patterns can be identified from the figure. While no OECD country has adopted all 10 measures chosen, a select number have adopted seven or more of them. These are Australia, New Zealand, Canada, USA, Iceland, Sweden, and Norway. In this particular context, they can be considered to be in the vanguard of commitment to child injury prevention.

At the other end of the scale are Greece, Hungary and Turkey, with only three measures adopted, and Belgium, Czech Republic, France, Italy, Korea, and Switzerland with only four measures adopted. Countries with five or six measures—the middling group—range from Spain and Portugal to Ireland, the UK, Austria, Denmark, the Netherlands, Luxembourg, and Japan.

(B) Measures implemented

A marked variation also occurs in terms of which measures are adopted by OECD countries. Legislative interventions that apply to the road environment (child safety seats/restraints, seat belt wearing, and urban speed limits) have been fairly uniformly adopted (22 countries) with bicycle helmets being an exception (six countries). Smoke detector legislation is patchy, as is child resistant packaging of pharmaceuticals. It has been over 20 years since the first countries introduced this last measure. Fourteen countries have a national child injury prevention group/society. They generally have above the mean number of legislative measures and those without a group generally have below this mean.

(C) Degree of enforcement

It is difficult to assess the degree of enforcement between countries as the subjective opinion of the key expert will colour the response. For instance, the persons in New Zealand and Iceland were sceptical about enforcement in their own countries, but their expectation of standards may have been very high. On the other hand, the expert in Korea, which only has a limited range of measures anyway, felt that even these were weakly enforced. In many countries, certain measures are seen as being fairly well enforced, such as urban speed limits, seat belts and child resistant packaging, while others, like riding/driving farm tractors and child bicycle helmets are only weakly enforced.

DISCUSSION

One of our first considerations when assessing countries in terms of the introduction of legislation on child injury prevention measures was to divide them according to their overall political system: federal or unitary. We felt that at a national level, this could affect the range of measures adopted. For instance, would a federal system result in progressive regions adopting measures and encouraging others to follow, or would a progressive unitary state be a better model for introducing new measures? In fact, no clear pattern emerges. Of the seven countries rated at the top for their range of legislative measures, three are federal and four unitary in structure. On the other hand, the political system may have some influence in adoption and enforcement patterns at an intranational level. Thus, in the federal USA only about 25 states have domestic swimming pool barrier legislation. And,

although the USA scores highly overall in terms of measures adopted, all but one are reported as being enforced either variably or weakly. In federal Canada, the expert felt that swimming pool legislation suffered from being enacted only at a municipal level, which was highly variable. Nevertheless, the basic federal/unitary division is too simplistic for teasing out variations in legislation. In federal Australia, not only is enforcement of bicycle helmet legislation thought to vary between states, it varies within states. In unitary Italy, however, child safety seat/restraint legislation enforcement is also reported to vary across the country. Legislation in some federal states can be enacted at a national level, for example Austria and Switzerland, but other initiatives may be enacted subnationally, for example the Austrian province of Styria's home safety programme. Federal Canada and the USA have enacted child resistant packaging at a national level, whereas their other measures depend on subnational decisions.

A number of key respondents indicated on their questionnaires the problems and frustrations of trying to get a range of child injury measures adopted in their country. In some cases there was the basic barrier of a lack of recognition of injury as a major problem. This meant that establishing a national injury prevention group was proving difficult to achieve in Greece, while in Norway, the national group (1981–96) had lapsed due to the withdrawal of government funding. The respondent from Korea, a country languishing at the foot of the UNICEF league table, commented on the general lack of concern for the problem of injury which extended through the government, police, and public in general. More specifically, he noted the lack of basic statistics for certain types of injuries and classification issues such as farm tractors being deemed agricultural tools rather than vehicles and thus could be used by any person of any age.

Finally, we return to our question posed at the beginning: whether a commitment to extensive legislation and its enforcement is reflected in a country's position in the UNICEF league table of injury death. Like so much else, it is a mixed message.

If we consider those countries with the widest range of legislation, we find that Sweden and Norway certainly fare well in the UNICEF table (1st and 5th respectively), but the other "high legislators" are all in the bottom half of the league table: Australia (16th), Canada (18th), New Zealand (22nd) and the USA (23rd). The middle rated countries for legislation, with the exception of Portugal, are found in the top half of the table, for instance: UK (2nd), Netherlands (4th), Spain (8th), Japan (12th), but the pattern is no stronger than that. Countries with only three or four legislated measures may fare well or badly in the league: Italy (3rd), Greece (6th), or France (13th), Belgium (14th), and Korea (26th).

If we turn to enforcement of legislation rather than number of measures as a guide to UNICEF league position, we again cannot detect any clear picture. Australia appears to enforce strongly (four out of its seven measures) but ranks 16th in the death league. Italy, by contrast, enforces only one of its few measures strongly, but lies third in the league. Furthermore, Italy has no national grouping on injury prevention. We acknowledged earlier that our perspective on enforcement relied on this subjective view of the national expert. This is clearly a drawback but we are not convinced that there is clear, consistent, and objective data from countries on their degree of enforcement of legislation and so the view of an expert within the country is valid at this initial stage of comparison. In time, a wider group of experts could provide a firmer basis for future analysis.

Finally, does our legislation table show any relationship with relative progress in reducing child injury deaths 1971–75 and 1991–95 (table 1)? Germany has made the most progress in death reduction, but it is a middle grouping country in terms of legislation and it has no national child injury group. Canada ranking 4th in terms of improvement and Norway 5th

Table 1 Rate of improvement in child injury deaths, 1971–75 to 1991–95, by country (this is adapted from table 1 from p81 of Chalmers D and Pless B, *Inj Prev* 2001;7:81–2)

Country	1971–75	1991–95	% Improvement	Rank
Germany	28.4	8.3	70.8	1
Netherlands	20.1	6.6	67.2	2
Finland	24.7	8.2	66.8	3
Canada	27.8	9.7	65.1	4
Norway	21.6	7.6	64.8	5
Italy	16.3	6.1	62.6	6
Japan	22.4	8.4	62.5	7
Austria	23.7	9.3	60.8	8
Sweden	13.0	5.2	60.0	9
Denmark	19.9	8.1	59.3	10
Australia	22.3	9.5	57.4	11
UK	14.3	6.1	57.3	12
Switzerland	22.5	9.6	57.3	13
Belgium	20.0	9.2	54.0	14
France	19.4	9.1	53.0	15
Ireland	17.2	8.3	51.7	16
Greece	13.5	7.6	43.7	17
USA	24.8	14.1	43.2	18
Portugal	31.1	17.8	42.8	19
New Zealand	23.7	13.7	42.2	20
Spain	13.7	8.1	40.9	21
Poland	22.5	13.4	40.4	22
Czech Republic	19.6	12.0	38.8	23
Hungary	16.1	10.8	32.9	24
Mexico	29.3	19.8	32.4	25

NB: This table does not include Iceland, Korea, Luxembourg, and Turkey referred to in figure 1.

are the only “high legislators” in the top 10 of the progress table, apart from Sweden. The other “high legislators” do not fare so well for progress: Australia (11th), USA (18th), and New Zealand (20th). Some “low legislators” have not made much progress either (Greece 17th, Hungary 24th) but again, Italy (6th) seems unrelated to the legislation factor and Belgium and France have certainly made more progress than the USA or New Zealand.

CONCLUSION

At one level, it is not surprising that our work for UNICEF on legislation should convey such mixed and unclear messages. Which measures are selected, when legislation was introduced, how it is enforced, are difficult subjects for international comparison. Even an apparently simple issue of when legislation was enacted is not, at this stage, entirely clear in many countries. Further research in the whole development process of injury related legislation in different countries followed by a detailed comparative analysis would be a very helpful advance on our present state of uncertainty. Another issue revolves around the UNICEF league table itself. The data it is based upon cannot be seen as flawless and it would be enlightening to have a robust critique of its strengths and weaknesses.

The main message we receive from our work here is that introducing measures to reduce child injury deaths requires researchers to engage far more with societies and cultures as they vary from place to place. To cite just one example from this paper: Do we have an adequate explanation for how Italy, with a modest legislation record in the field and no national group in injury prevention, lies third in the UNICEF league table and in the 20 years from the mid-70s to the mid-90s ranked sixth in overall improvement of its position? The fact that we probably are not in a position to produce a reasonable answer shows how much we have to learn about variations in injury prevention and control in different societies.

The issue of learning brings us to our final point. A recent review of the world literature of evaluated intervention studies in the field of childhood injury prevention, emphasised the dominance of publications by certain countries.⁴ It so happens that these countries have only poor or very modest success in controlling injury as demonstrated by UNICEF's work. Perhaps we should be encouraging more research and publication from those countries who appear to have achieved rather more within their societies in minimising the burden of childhood injuries.

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