



Effective Public Health Practice Project Summary Statement

October 2006

This is a summary statement written to condense the work of the authors of a systematic review. The reference for the full review is below. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Reference for Review: Ehiri, J.E., Ejere, H.O.D., Magnussen, L., Emusu, D., King, W., Osberg, J.S. (2006). **Interventions for promoting booster seat use in four to eight year olds traveling in motor vehicles.** *The Cochrane Database of Systematic Reviews 2006, Issue 1.* Art. No.: CD004334.pub2. DOI:10.1002/14651858.CD004334.pub2.

Issue

The rate of death and injury in motor vehicles among children under 5 years old and between the ages of 10 and 14 has been falling since the 1980s, but has remained largely unchanged among children between 5 and 9 years old (Safe Kids Canada, 2004). Every year, motor vehicle crashes claim the lives of more than 35 Canadian children aged 4 to 9 years and seriously injure another 360. Many of these deaths and injuries could be prevented by the use of belt-positioning booster seats (Safe Kids Canada, 2004).

The most recent national observational study indicates appropriate vehicle restraint usage was lowest for children 5-9 years old—only 4.5% of children in this age group used a booster seat and 78.9% used a seat belt (Transport Canada, 1997). National telephone surveys conducted in 2003 and 2004 by Decima Research Inc. on behalf of Safe Kids Canada (2004) found that just 28% of Canadian families reported using booster seats for their 4-9 year old children. The surveys further revealed that 53% of parents believe that children are big enough by the age of 6 to use only a seat belt. Research demonstrates that the risk of injury for children 4-7 years of age involved in a motor vehicle crash is 59% lower when they are in booster seats than when they are using a seat belt by itself (Durbin et al., 2003).

By 2010, the Ministry of Health and Long-Term Care wishes to reduce the rate of crash-related injuries that lead to hospitalization or death by 20% (Ontario Ministry of Health and Long-Term Care, 1997), while Canada's Road Safety Vision 2010 aims to have 95% of children using appropriate restraints (Transport Canada, 2001). As of September 1, 2005, children under 8 years of age who have outgrown a child car seat but are too small to properly use a seat belt are required by Ontario law to use belt-positioning booster seats when traveling in a motor vehicle. Quebec is the only other province that has created legislation making booster seats mandatory. Effective tactics for increasing the appropriate use of booster seats need to be identified and implemented.

Review Content Summary

This systematic review with meta-analysis summarized evidence from five controlled studies with a total of 3070 participants. Each of the studies measured the change in booster seat use by children 4-8 years of age after promotional campaigns. The interventions included education for parents, children and/or health care providers, either alone or in combination with distribution of booster seats or incentives to purchase booster seats, and reminders of legal requirements for booster seat use. Control groups received no intervention. The studies were conducted in the United States, with the exception of one randomized trial that was conducted in Australia. Overall, booster seat use was higher in the intervention than control groups, but there was significant heterogeneity among study results even in subgroups of studies with similar interventions. No studies of the impact of booster seat use on crash-related death or injury rates were found.

Comments on this Review's Methodology

In addition to contacting experts to identify unpublished studies, the reviewers searched several health, educational, psychosocial and road-safety databases to locate comparative studies. Studies were selected using well-defined criteria. The methodological quality of the studies was assessed by two reviewers using concealment of allocation and baseline comparability as the quality indicators for randomized controlled trials (RCT) and baseline comparability and contemporaneous data collection as criteria for non-randomized controlled studies. Differences were resolved by consensus among all authors. Appropriate statistical methods were used to pool data across studies and to deal with heterogeneity.

Three of the five studies included in the review used random allocation to intervention and control groups, and, of these, two reported adequate allocation concealment. One of the two non-randomized studies matched intervention and control groups for some potentially confounding factors and used statistical methods to adjust for others. The length of follow-up ranged from 2 weeks to 15 months. Whether or not participants were using booster seats was determined by observation in three of the studies and by self-reporting in the other two. Actual height and weight were measured for participating children in one RCT. Two studies reported that outcome assessors were blind to treatment group. One RCT had a high drop-out rate (34%). The non-randomized studies measured booster seat use before and after the intervention; one used a community-level intervention and outcome measure, and the other analyzed only data from families that completed both baseline and follow-up assessments (82% in the intervention group and 93% in the control group).

Evidence and Implications for Practice & Policy

Evidence points ARE NOT weighted or ranked according to strength.

What's the evidence?	Implications for practice and policy:
<ul style="list-style-type: none"> > Education only interventions increase booster seat use. > Evidence is available from two RCTs: <ul style="list-style-type: none"> – one used an educational intervention aimed at modifying the behaviour of preschool children (relative risk [RR], 1.25; 95% confidence interval [CI], 1.10 to 1.41; N=499); 	<ul style="list-style-type: none"> > Booster seat education should be included in injury prevention and traffic safety programs.

<ul style="list-style-type: none"> – in the other, parents entering a toy store were given pamphlets warning about the consequences of not using a booster seat (RR, 1.32; 95% CI, 1.16 to 1.49; N=64). 	
<ul style="list-style-type: none"> > Interventions combining education with incentives or distribution of free booster seats are effective. > Overall results from two meta-analyses indicated a significant increase in booster seat use with distribution of free booster seats (RR, 2.34; 95% CI, 1.50 to 3.63; N= 380) and incentives (RR, 1.32; 95% CI, 1.12 to 1.55; N=1898), compared to control. > Although three studies compared different types of interventions with each other, results were not reported in the systematic review. 	<ul style="list-style-type: none"> > Research is needed to determine individual effects of different available interventions. > Private-public partnerships need to be fostered to fund and sustain effective strategies involving material resources
<ul style="list-style-type: none"> > Significant attrition rates and varied follow-up duration have an unknown effect on the evidence. 	<ul style="list-style-type: none"> > Larger studies with longer follow-up are required to determine long-term impact and effect size.
<ul style="list-style-type: none"> > Three studies relied on self-reports of booster seat use. 	<ul style="list-style-type: none"> > Rigorous observational research is required to ensure reliability of the data.
<ul style="list-style-type: none"> > Generalizability of the evidence is limited. 	<ul style="list-style-type: none"> > Canadian research is needed to determine behaviours of different groups within the population. This will inform proper targeting of interventions.
<p>General Implications: Interventions to increase booster seat use among 4 to 8 year olds traveling in motor vehicles are required. Various individual approaches show some level of benefit, but combined strategies appear to be most effective. Prospective, controlled research on sustainable community-based interventions in different populations is needed. Studies should also be of longer duration than the ones reviewed here.</p>	

Cost Benefit or Cost-Effectiveness Information: Not included in this review.

References Used to Outline Issue:

Durbin, D.R., Elliott, M.R., and Winston, F.K. (2003). Belt-positioning booster seats and reduction in risk of injury among children in vehicle crashes. *Journal of the American Medical Association*, 289, 2835-40.

Ontario Ministry of Health and Long-Term Care. (1997). Mandatory Health Programs and Services Guidelines. Retrieved October 24, 2006 from:
<http://www.health.gov.on.ca/english/providers/pub/pubhealth/manprog/mhp.pdf>

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<http://www.sickkids.ca/SKCFForMedia/section.asp?s=Media+Releases&slD=11445&ss=2004&ssID=11646&sss=Booster+Seats&sssID=11650>

Transport Canada (2001). Canada's road safety targets to 2010. Retrieved October 24, 2006 from: <http://www.tc.gc.ca/roadsafety/tp/tp13736/menu.htm>

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