How much science is there in injury prevention and control?

C A Smith, H S Shannon

Objective: To determine what proportion of research papers at an injury prevention conference reported an evaluation.

METHOD: A random sample of 250 abstracts from the 6th World Conference on Injury Prevention and Control were classified by methodological type. Those that described any evaluation were further subdivided by whether the evaluation was of process or if it used an intermediate or “true” outcome.

RESULTS: Of 250 abstracts, 20 (8%; 95% confidence interval 5.0% to 12.1%) showed evaluations with intermediate or true outcomes. Research designs were weak. Among the 20 reports, none was a randomized trial and only two conducted a before and after study with control group. The remaining 17 used before-after or “after only” designs.

Conclusion: The conference papers included few evaluations. To ensure that resources are best used, those in the injury prevention field must increase their use of rigorous evaluation.
Among those abstracts referring to a programme of intervention, 37% (27/73) conducted an evaluation of that programme and, of those, five assessed outcome measures. Fifteen abstracts described evaluations of an intermediate measure. A few of the abstracts made claims about the effectiveness of the programmes being described, but did not provide any data or methodology to support those claims. In sum, then, 20 out of 250 abstracts (8%; 95% confidence interval 5.0% to 12.1%) reported evaluations with intermediate or “true” outcomes.

Table 2 illustrates the variety of evaluation study designs. Before-after (pre-post) measurements were the most common (12/27), while eight did not describe any baseline measures (8/27). Only five abstracts mentioned use of control groups in their studies.

**DISCUSSION**

Results show few outcome and intermediate evaluations of safety interventions—there were only 20 out of 250 abstracts. Only 2% (5/250) were true outcome evaluations. Certainly it is reasonable to expect a range of study types, but we believe the mix should be different. The fact that nearly two thirds of the intervention programmes did not mention any sort of evaluative process is indeed worrisome. Principles of evaluation for interventions are well established and, hence, when a programme is set up an evaluation component should be built in. In fairness, it is often difficult to motivate the parties involved to take part in controlled evaluations, especially when they are convinced *a priori* that the intervention will be beneficial.¹

We acknowledge that by looking only at the abstracts, we could not tell just what was in the talk or paper presented. Many abstracts were quite vague, making it difficult to ascertain what sort of study or programme the authors were describing. The sampling frame was limited to abstracts submitted to and accepted by the conference. These may not necessarily be representative of the field—yet this was a large international conference and one expects that those doing solid scientific work in the field would present at it.

Most evaluations of interventions assessed an intermediate measure such as behaviour (15/27), as opposed to a true outcome—actual injuries. This is because the true outcome may be sufficiently rare that relying on it would lead to low statistical power unless a large and lengthy study is conducted. Yet for severe outcomes, evaluators wish to know if the programme has had any effect, so they quite reasonably use an intermediate outcome as an indicator of any change in risk. However, when evaluations, regardless of their type (that is, process, intermediate, or outcome), are conducted we would expect good quality study designs. The near total absence of controlled trials, randomized or otherwise, is indeed an issue of concern for the field of injury prevention research.

Arguably, the potential to waste resources unnecessarily or to cause more harm than good makes it unethical not to evaluate interventions properly. Yet, to judge from the abstracts at the conference, there is insufficient high quality evaluation in the field of injury prevention and control.

**REFERENCES**


---

**Table 2** Programmes of intervention: types of evaluations conducted

<table>
<thead>
<tr>
<th></th>
<th>Process</th>
<th>Intermediate</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>After*</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Before and after</td>
<td>1</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Before and after with control group(s)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Randomized controlled trials</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other/not classifiable</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Refers to study designs which do not include a baseline measurement.
†One study in this category included a control group (although there were no baseline measurements).