Evaluation Through Systematic Reviews. The Case of Social Welfare and Child Abuse Protection

Howard White
CEO, Campbell Collaboration
Eating seven or more portions of fruit and vegetables a day is healthier than the minimum five currently recommended and would prolong lives, experts say.
But these are observational data, which don’t control for selection bias (people who eat more than five portions a day are wealthy, educated, health fanatics)

This is a systematic review, using data from 16 high-quality studies (observational data but analysis controls for confounders)
Why systematic reviews matter: one

- Correlation is not causation
- Systematic reviews only include high qualify evidence of effects (experimental and non-experimental designs which take account of selection bias)

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What is a systematic review?

- Systematic reviews
  - A systematic approach to summarizing the results from all existing studies on a specific question
- Meta-analysis
  - A statistical technique for combining effect sizes (impact estimates) into a single average treatment effect and examining sources of variation in effect sizes
- Primary studies
  - The individual studies which are included in a systematic review
- Impact evaluation
  - Studies include counterfactual analysis of effects. Randomized controlled trials (RCTs) are the most common impact evaluation design, but reviews can include valid non-experimental designs
Steps in the review process

- Setting the question (the PICO)
  **Systematic**
  - Search strategy
  **Systematic**
  - Screening
  **Systematic**
  - Coding
  **Systematic**
  - Synthesis
  **Systematic**
  - Reporting

- Engagement with policy and practice
There’s more to a systematic review than meta-analysis

- Systematic search: comprehensive
- Systematic screening: title & abstract/full paper – two people
- Systematic coding: study, effect sizes, moderators: two people
- Systematic synthesis: meta-analysis or qualitative
- Systematic presentation of results: full reporting of all outcomes
Non-systematic reviews are more likely to have sources of bias than systematic reviews
What the evidence synthesis process should look like

Source: Julia Littell: Campbell Systematic Reviews: Evidence for Implementation and Impact, GIC Dublin 2015
What the evidence synthesis process actually looks like

- Selective presentation of results
- Studies with significant findings are 2-3 times more likely to be published
- Over-emphasis on significant findings

Source: Julia Littell: Campbell Systematic Reviews: Evidence for Implementation and Impact, GIC Dublin 2015
An example: the treatment of results from a single study of parent training (PT) versus multi-systemic training (MST) (a branded programme)

- Parent training: group sessions discussing parenting techniques
- Multi-systemic therapy: individual family treatment tackling multiple issues, e.g. expectation re. child behaviour, child management, emotional support, parental behaviour change

Study looked at 30 outcomes on individual and child functioning, stress etc.

Comparison of Multisystemic Therapy and Parent Training in the Brief Treatment of Child Abuse and Neglect

Molly Brunk
College of William and Mary

Scott W. Henggeler and James P. Whelan
Memphis State University

This study evaluated the relative efficacy of two promising treatments of child abuse and child neglect: parent training and multisystemic therapy. Subjects included 18 abusive families and 15 neglectful families who were randomly assigned to the treatment conditions. Self-report and observational measures were used to evaluate the effects of treatment at three levels that have been associated with child maltreatment: individual functioning, family relations, and stress/social support. Statistical analyses revealed that families who received either treatment showed decreased parental psychiatric symptomology, reduced overall stress, and a reduction in the severity of identified problems. Analyses of sequential observational measures revealed that multisystemic therapy was more effective than parent training at restructuring parent-child relations. Parent training was more effective than multisystemic therapy at reducing identified social problems. The differential influences of the two treatments were probably associated with differences in their respective treatment contexts and epistemologies.
9 out of 14 reviews report just one outcome from the paper, favouring MST.
And how reviewers summarized the Brunk et al. paper...

- “MST is effective” (Ryan et al., 2015, p. 310)
- MST is “superior to group-based parent training” (Schaeffer et al., 2013, p. 600)
- MST families showed “greater improvements in family problems and parent-child interactions” (Carr, 2014, p. 112)
- MST “improved parent-child interactions” (Henggeler, 2011, p. 358)

Source: Julia Littell: Campbell Systematic Reviews: Evidence for Implementation and Impact, GIC Dublin 2015
Out of home placement: no difference

Delinquency: no difference

Family cohesion: no difference
Systematic reviews rebalance the evidence pyramid

MST is not consistently better or worse than alternatives

Narrative reviews
So drop narrative reviews in favour of systematic reviews to rebalance the evidence pyramid.

MST is not consistently better or worse than alternatives.

More than 100 narrative reviews most stating MST is more effective than alternatives.
Use high quality reviews, NOT narrative, vote counting reviews

Corticosteroid for women about to deliver prematurely

30-50% reduction in mortality

Meta-analysis overcomes underpowered studies
Vote counting is wrong: don’t do it
Why systematic reviews matter: two

• Non systematic approaches are more likely to yield biased findings

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Mandatory arrest for domestic violence

1984 trial in Minneapolis showed re-abuse rate of 13% compared to 26% for simple removal from home.

Widely cited and 20 years later over ¾ police forces across US had mandatory arrest policies.

But five large scale replications showed mixed results. Authors of Minneapolis study called for repeal of mandatory arrest policies.

Don’t rely on single studies.
Evidence of Program Effectiveness

The ANFPP is based on the Nurse-Family Partnership home visiting program developed by Professor David Olds in the United States. Informed by rigorous research, the program has developed over more than three decades.

The positive impact of the program has been demonstrated through three separate well-designed and implemented randomised controlled trials. These occurred at:

- Elmira, New York in 1977 which targeted white low-income women located at semi-rural population
- Memphis, Tennessee in 1987 which involved low-income urban African-American mothers, and
- Denver, Colorado in 1994 which included large number of Hispanic families.
Effectiveness of a nurse-led intensive home-visitation programme for first-time teenage mothers (Building Blocks): a pragmatic randomised controlled trial

Michael Robling, Marie-Jet Bekkers, Kerry Bell, Christopher C Butler, Rebecca Cannings-John, Sue Channon, Belen Corbacho Martin, John W Gregory, Kerry Hood, Alison Kemp, Joyce Kenkre, Alan A Montgomery, Gwenllian Moody, Eleri Owen-Jones, Kate Pickett, Gerry Richardson, Zoe E S Roberts, Sarah Ronaldson, Julia Sanders, Eugena Stamuli, David Torgerson

Summary

Background Many countries now offer support to teenage mothers to help them to achieve long-term socioeconomic stability and to give a successful start to their children. The Family Nurse Partnership (FNP) is a licensed intensive home-visiting intervention developed in the USA and introduced into practice in England that involves up to 64 structured home visits from early pregnancy until the child’s second birthday by specially recruited and trained family nurses. We aimed to assess the effectiveness of giving the programme to teenage first-time mothers on infant and maternal outcomes up to 24 months after birth.

Methods We did a pragmatic, non-blinded, randomised controlled, parallel-group trial in community midwifery settings at 18 partnerships between local authorities and primary and secondary care organisations in England. Eligible participants were nulliparous and aged 19 years or younger, and were recruited at less than 25 weeks’ gestation. Field-based researchers randomly allocated mothers (1:1) via remote randomisation (telephone and web) to FNP plus usual care (publicly funded health and social care) or to usual care alone. Allocation was stratified by site and minimised by gestation (<16 weeks vs ≥16 weeks), smoking status (yes vs no), and preferred language of data collection (English vs non-English). Mothers and assessors (local researchers at baseline and 24 months’ follow-up) were not masked to group allocation, but telephone interviewers were blinded. Primary endpoints were biomarker-calibrated self-reported tobacco use by the mother at late pregnancy, birthweight of the baby, the proportion of women with a second pregnancy
Interpretation: Adding FNP to the usually provided health and social care provided no additional short-term benefit to our primary outcomes. Programme continuation is not justified on the basis of available evidence, but could be reconsidered should supportive longer-term evidence emerge.
Why systematic reviews matter: three

We cannot generalize from the findings of single studies to other contexts

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• The rise of evidence synthesis
The World Health Organization (WHO) follows a guideline development process, described in detail in the *WHO Handbook for Guideline Development (2nd edition)*, overseen by the Guidelines Review Committee (GRC) established by the Director-General in 2007. The WHO Guidelines Review Committee ensures that WHO guidelines are of a high methodological quality, developed using a transparent and explicit process, and are informed on high quality systematic reviews of the evidence using state-of-the-art systematic search strategies, synthesis, quality assessments and methods.
National Institutes Health Research (NIHR):

- Provides infrastructure support to 21 Cochrane Groups
- NIHR Cochrane Programme Grant Scheme funds reviews of relevance to NHS
- NIHR Cochrane Incentive Awards to accelerate reviews

National Institute for Clinical Excellence (NICE), Use systematic reviews for:

- Guideline production e.g. for teachers to detect children at risk of abuse
- Eligibility for NHS resources
UK: What Works Centres

- Funded by government and Big Lottery
- Commission reviews, largest also commission primary studies

Funding > 500 trials in > ¼ primary schools in UK

Evidence portal

E.g. Pupil premium: in 2015 64% used Teaching and Learning Toolkit compared to 36% in 2012. But 77% use funds on programmes for all pupils
The Nordic model

- Core funding to government research agencies to produce systematic reviews
- Priorities agreed through annual consultation exercise
- Evidence used for funding decisions and guidelines
- Knowledge Centre for Education (Norway) e.g. school dropouts
- SBU: scientific uncertainties
The US model

- History since early seventies (e.g. negative income tax)
- What Works Clearing in education, labour, child services and justice
- More recently ‘Moneyball for government’

- Moneyball for government programmes
- Eg, Head Start, Nurse Family Partnership

But
- Single studies
- Possible COI
Different models around the world

<table>
<thead>
<tr>
<th>Nordic model</th>
<th>UK model</th>
<th>US model</th>
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<tbody>
<tr>
<td>Govt. funded research centres e.g. SFI, SBU and FHI</td>
<td>What Works Centres</td>
<td>1. WWCHs 2. Moneyball for Government</td>
</tr>
<tr>
<td>Government funded</td>
<td>Mixed funding (e.g. Big Lottery)</td>
<td>1. Some govt. funding 2. Foundation funding</td>
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<td>Systematic reviews, some adherence to Cochrane and Campbell standards</td>
<td>Variety of evidence synthesis</td>
<td>Often single study based (note conflict of interest)</td>
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<td>Integrated into decision making (demand driven)</td>
<td>Each WWC has to find its ‘pathway to policy influence’</td>
<td>1. Portals 2. Advocacy model</td>
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But not in Germany... discuss
Thank you

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(and sign up for our newsletter)