Ten Years of Implementation Outcomes Research: Progress & Future Directions

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October 17, 2023
Reflection.....Implementation
Outcomes 2012-2023

• How it started
• Key points of 2012 paper
• What happened?
• Where are we, ten years later?
• What’s ahead?
IMPLEMENTATION OUTCOMES: HOW IT STARTED
HOW TO EVALUATE IMPLEMENTATION SUCCESS?
The Usual

The Core of Implementation Science

Implementation Research Methods

Proctor et al. (2009). Administration and Policy in Mental Health and Mental Health Services Research, 36, 24-34.
Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda

Enola Proctor · Hiie Silmere · Ramesh Raghavan · Peter Hofmard · Greg Aarons · Alicia Bunker · Richard Griffey · Melissa Hensley

“We define implementation outcomes as the effects of deliberate and purposive actions to implement new treatments, practices, and services.”

1. Indicators of implementation success
2. Proximal indicators of implementation processes.
3. Intermediate outcomes

Implementation Outcomes

- Acceptability
- Adoption
- Appropriateness
- Costs
- Feasibility
- Fidelity
- Penetration
- Sustainability
Implementation Outcomes
- Acceptability
- Adoption
- Appropriateness
- Costs
- Feasibility
- Fidelity
- Penetration
- Sustainability

Service Outcomes*
- Efficiency
- Safety
- Effectiveness
- Equity
- Patient-Centeredness
- Timeliness

Patient Outcomes
- Morbidity
- Mortality
- Health Status
- Quality of Life

*IOM Standards of Care

Adapted from Proctor et al., 2011
IMPLEMENTATION OUTCOMES
OUR KEY POINTS
Implementation outcomes are indicators of implementation success.
Implementation outcomes need to be measured distinct from intervention outcomes

Could have an effective intervention:

– Information never reaches potential users
– Information poorly understood
– Poor delivery
– Poor reach in relevant health systems
– Implemented but with poor fidelity
– Not sustained
What we proposed.....

• Use consistent terminology (TAXONOMY)
• Build theory
  – What mechanisms & processes of change captured in outcomes?
• More robust measurement
• Rigorous testing to build evidence
  – How are implementation outcomes interrelated?
  – What is the effect of implementation outcomes on other outcomes?
  – How do we achieve them?
IMPLEMENTATION OUTCOMES
SO WHAT HAPPENED?
THE FIELD RESPONDED

• ADVANCES IN CONCEPTUALIZATION
  • Linked to CFIR
  • Distinctions sharpened-anticipated/ achieved, perceptual, behavioral

• MEASUREMENT ADVANCES
  • Review papers (psychometric properties)
  • SIRC Instrument Review Project

• FUNDING PROGRAM ANNOUNCEMENTS
  – NIH-Dissemination and Implementation Research in Health
    PAR # 22-105
Measurement resources for dissemination and implementation research in health


Martinez et al. Implementation Science 2014, 9:118
http://www.implementationscience.com/content/9/1/118

Instrumentation issues in implementation science

Ruben G Martinez, Cara C Lewis and Bryan J Weiner

Open Access
Quantitative measures of health policy implementation determinants and outcomes: a systematic review

Peg Allen, Meagan Pilar, Callie Walsh-Bailey, Cole Hooley, Stephanie Mazzucca, Cara C. Lewis, Kayne D. Mettler, Caitlin N. Dorsey, Jonathan Purtle, Maura M. Kepper, Ana A. Baumann and Ross C. Brownson

Outcomes for implementation science: an enhanced systematic review of instruments using evidence-based rating criteria

Cara C. Lewis, Sarah Fischer, Bryan J. Weiner, Cameo Stanick, Mimi Kim and Ruben G. Martinez
Instrument Review Project

The SIRC Instrument Review Project: A Systematic Review of Dissemination and Implementation Science Instruments

Video of Instrument Review Taskforce at SIRC 2011
Power Point Presentation from ABCT
SIRC IRP Update 2013 (video of full presentation coming soon).

Exciting advances have been made in the field of dissemination and implementation (D&I). However, much like the science-practice gap that motivates our field, a communication gap exists among stakeholders at the forefront of this work. Measurement issues have slowed the progression of the field of D&I given the laborious process of systematically developing psychometrically sound yet feasible and cost-effective ways to assess our efforts. The lag that occurs between initial development, implementation, and then publication delays the process further, resulting in instances in which independent research teams are devoting considerable resources to unnecessarily redundant work. As a consequence, progress toward the development of commonly used instruments has been very slow, limiting the extent to which researchers have access to and are able to

www.seattleimplementation.org/sirc-projects/sirc-instrument-project/
IMPLEMENTATION OUTCOMES
WHERE ARE WE NOW?
Ten years of implementation outcomes research: a scoping review

Enola K. Proctor, Alicia C. Bunger, Rebecca Lengnick-Hall, Donald R. Gerke, Jared K. Martin, Rebecca J. Phillips, and Julia C. Swanson
**Methods**

- Forward citing tracing (cited Proctor et al 2011) in WOS and in citation alerts

- Inclusion
  - Empirical
  - Peer-Reviewed
  - Assessed/Measured at least 1 IO

Reports excluded
- Did not assess outcomes (n = 54)
- Not available in English (n = 7)
- Outcomes not reported (n = 7)
- Not an empirical paper (n = 1)
- Insufficient detail in methods (n = 4)
- Book or protocol (n = 4)
- Does not cite Proctor (2011) (n = 2)
SNAPSHOT OF STUDIES

- GLOBAL
- VARIED FUNDERS
- HEALTHCARE (45.8%)
- ONE INTERVENTION/ EBP (40%)
- OBSERVATIONAL DESIGNS (66.5%)
What outcomes are investigated?
Implementation Outcomes
Variation by Stage/Phase

- Exploration phase:
  - Appropriateness, feasibility, acceptability, and adoption
- Preparation phase:
  - Adoption, cost, and feasibility
- Sustainment phase:
  - Sustainability
WHAT WAS THE OUTCOME'S ROLE IN ANALYSIS?

Descriptive  Correlation  Independent Variable  Dependent Variable

Acceptability  Adoption  Appropriateness  Cost  Feasibility  Fidelity  Penetration  Sustainability
Harmony of language

• Terms not in original taxonomy: 8% (n = 32) of manuscripts

• Free text coding captured 24 unique alternative implementation outcome constructs
  – evidence of delivery, usefulness, client efficacy & competence, scale up, and timely initiation
BUILDING EVIDENCE & THEORY

Relationships among implementation outcomes

5.3% of studies (n = 21)
Sustainability was examined most often, particularly in relation to fidelity penetration, and adoption

No studies looked at cost and other implementation outcomes.
Tests of relationship of implementation outcomes on service outcomes

• How does attaining implementation outcomes improve service delivery?

• Hypotheses:
  – Equity = f of service acceptability + feasibility + appropriateness
  – Effectiveness = f of feasibility + fidelity + penetration
  – Equitable access = f of fidelity + penetration + sustainment of evidence-based care
BUILDING EVIDENCE: Implementation Outcomes and Service Outcomes

4.8% of studies

Which Implementation outcomes?

Cost: 16.1%
Sustainability: 6.3%
Feasibility, Fidelity Penetration: 4.5~%
Adoption: 3.8%
Acceptability: 1.9%
BUILDING EVIDENCE
Implementation Outcomes and Service Outcomes

Which Service Outcomes?

- Cost: 16.1%
- Sustainability: 6.3%
- Feasibility, Fidelity Penetration: 4.5~%
- Adoption: 3.8%
- Acceptability: 1.9%
No studies of implementation outcomes in our sample addressed service outcomes of safety or equity.
Which Implementation outcomes?

- Fidelity 10.2%
- Penetration: 7.8%
- Acceptability: 3%
- Appropriateness and Feasibility: ~2%
- Adoption & Sustainability: 1%
- Cost: 0%
BUILDING EVIDENCE
Strategies to Attain Implementation Outcomes
14% (n = 56)

Which Implementation outcomes?
Fidelity: 7%
Acceptability: 5%
Adoption & Feasibility: 4%
Penetration & Sustainability: `3%
Appropriateness & Cost: 1-2%
IMPLEMENTATION OUTCOMES
WHERE DO WE GO FROM HERE?
Unfinished business: Original 2011 Research Agenda

Advance the **conceptualization and measurement of implementation outcomes**:

- Employing consistent terminology when describing implementation outcomes
- Report the referent for all implementation outcomes measured
- Specify level and methods of measurement

**Theory building** research using outcomes:

- Explore the salience of implementation outcomes to different stakeholders
- Identify importance of various implementation outcomes by phase in implementation processes
Six practical recommendations for improved implementation outcomes reporting

Rebecca Lengnick-Hall, Donald R. Gerke, Enca K. Proctor, Alicia C. Bunger, Rebecca J. Phillips, Jared K. Martin, and Julia C. Swanson

Abstract
Background: Implementation outcomes research spurs an exciting mix of fields, disciplines, and geographical space. Although the number of studies that cite the 2011 taxonomy has expanded considerably, the problem of harmony in describing outcomes persists. This paper revisits that problem by focusing on the clarity of reporting outcomes in studies that examine them. Published recommendations for improved reporting and specification have proven to be an important step in enhancing the rigor of implementation research. We articulate reporting problems in the current implementation outcomes literature and describe six practical recommendations that address them.

Recommendations: Our first recommendation is to clearly state each implementation outcome and provide a definition that the study will consistently use. This includes providing an explanation if using the taxonomy in a new way or merging terms. Our second recommendation is to specify how each implementation outcome will be analyzed relative to other constructs. Our third recommendation is to specify “the thing” that each implementation outcome will be measured in relation to. This is especially important if you are concurrently studying interventions and strategies, or if you are studying interventions and strategies that have multiple components. Our fourth recommendation is to report who will provide data and the level at which data will be collected for each implementation outcome, and to report what kind of data will be collected and used to assess each implementation outcome. Our fifth recommendation is to state the number of time points and frequency at which each outcome will be measured. Our sixth recommendation is to state the unit of observation and the level of analysis for each implementation outcome.

Conclusion: This paper advances implementation outcomes research in two ways. First, we illustrate elements of the 2011 research agenda with concrete examples drawn from a wide swath of current literature. Second, we provide six pragmatic recommendations for improved reporting. These recommendations are accompanied by an audit worksheet and a list of exemplar articles that researchers can use when designing, conducting, and assessing implementation outcomes studies.

Keywords: Acceptability, Adoption, Appropriateness, Feasibility, Fidelity, Implementation cost, Penetration, Sustainability, Implementation outcome
## Improve measurement of implementation outcomes

### Increase data sources & improve rigor

<table>
<thead>
<tr>
<th>Implementation outcome</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptability</td>
<td>Surveys, Interviews, Observation</td>
</tr>
<tr>
<td>Adoption, scale up, sustainability</td>
<td>Records of use</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>Surveys, interviews, observation</td>
</tr>
<tr>
<td>Fidelity</td>
<td>Observation, Checklists</td>
</tr>
<tr>
<td>Implementation cost</td>
<td>Time logs, Budget data</td>
</tr>
<tr>
<td>Implementation outcome</td>
<td>Unit of analysis</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Acceptability</td>
<td>Individual provider</td>
</tr>
<tr>
<td></td>
<td>Individual health user (pt)</td>
</tr>
<tr>
<td>Adoption</td>
<td>Individual provider</td>
</tr>
<tr>
<td></td>
<td>Organization or health setting</td>
</tr>
<tr>
<td>Appropriateness</td>
<td>Individual provider</td>
</tr>
<tr>
<td></td>
<td>Individual health user</td>
</tr>
<tr>
<td></td>
<td>Organization or setting</td>
</tr>
<tr>
<td>Fidelity</td>
<td>Individual provider</td>
</tr>
<tr>
<td></td>
<td>Provider teams (aggregated)</td>
</tr>
<tr>
<td>Implementation cost</td>
<td>Provider</td>
</tr>
<tr>
<td></td>
<td>Organization or health setting</td>
</tr>
</tbody>
</table>
Test relationships

- How do implementation outcomes inter-relate?
  - Does acceptability enhance reach/penetration?
  - Does feasibility increase sustainability?
- What strategies are effective to attaining implementation outcomes?
  - Very few studies in our sample tested strategies
- What is the effect of achieving an implementation outcome?
  - On service outcomes
    - Equity
    - Safety
  - On clinical outcomes
Current analysis: Key take away points

Lots of:
- DESCRIPTION
- Qualitative/
- Mixed Assessments
- Settings

Little examining relationships with:
- Strategies
- Other Implementation Outcomes
- Service Delivery & Client Outcomes
Current analysis: Key take away points

Implementation outcomes need to be measured distinct from other outcomes

We need research to identify strategies for their attainment

We need to know how successful implementation matters
Current analysis:
Key take away points

The implementation outcomes taxonomy
should not serve merely as a checklist

Outcomes to be measured at one point in
time,

one and done
The next ten years of implementation outcomes research: strengths, opportunities, and priorities

• Greater testing how implementation outcomes can advance equity

• Prioritize testing interrelationships among outcomes and leverage recent design advances that enable this

• Prioritize testing strategies and mechanisms to attain
THANK YOU!

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Disclosure: Enola Proctor
Shanti K. Khinduka Distinguished Professor Emerita

Relevant Financial Relationships:
Salaried professor emeritus at Washington University in St. Louis
Research funded by the NIMH
Co-author of and receives royalties for a text, *Dissemination and Implementation Research in Health*, second edition, Oxford University Press based on sales
Occasional speaker fees from Universities and scientific/professional societies

Nonfinancial
Reviewer for several peer-reviewed journals