Sustainability Research: A review of conceptualizations, methods, and findings

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Some of the analyses reported in this presentation are preliminary

Overview

- Background and considerations
- What methods have been used to study sustainability?
- What factors have been found to be associated with sustainability?
- How do the research findings overlap with existing conceptualizations?
- What do existing conceptualizations tell us about critical elements for sustainability?

Sustainability as a distinct outcome

- There has been relatively little emphasis on sustainability in the implementation literature
- Policymakers who invest in implementation expect that effective practices will be sustained
- Successful implementation doesn't guarantee sustainment
- The study of sustainability presents numerous challenges (conceptual and methodological)
- To date, we know very little about how to promote sustainability

Challenges in Research on Sustainability

- Definitions: Multiple ways of conceptualizing sustainability
- Funding: Without planning, funding ends with implementation
- Timing: Retrospective studies often lack appropriate prospective measures
- Variability of innovations: A study on electronic medical records may look different from the study of a mental health treatment
- Measurement: How do we assess sustainability? No measures of key constructs

Purpose of the Review

- To understand the “state of the science”
- To describe:
  - The methods used to examine sustainability thus far
  - The way authors have defined sustainability
  - The types of outcomes reported
  - The factors found to be associated with sustainability
- To develop recommendations for future research

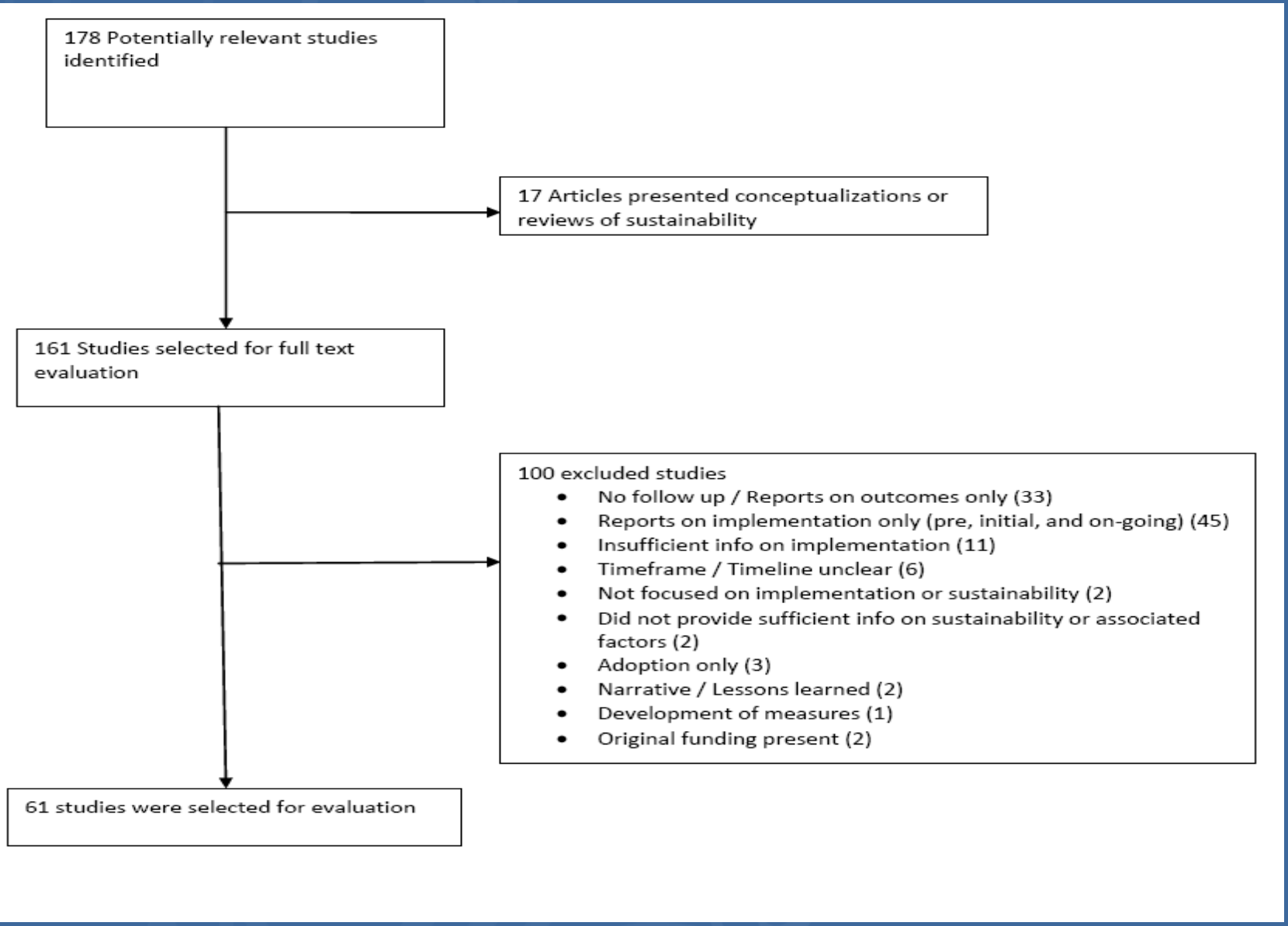
Method

- Searched databases, employed a snowballing strategy to search the literature in healthcare, mental health, prevention and health promotion, education, and business
- One coder identified potentially relevant papers and searched full text
- 70% were independently screened by two coders; 96% agreement on inclusion

Method

- Inclusion criteria:
  - Identified a post-implementation outcome or examined factors associated with sustainability
  - Peer reviewed research (no “lessons learned” reports)
  - No longer receiving funding/support from original source
  - Sufficient information to determine timeframe, funding status
- 61 papers were included; 62% had an explicit focus on sustainability

Search Results



Coding procedure

- Initial coding scheme based on conceptualizations of implementation and sustainability
- Additional codes generated deductively
- Related constructs were identified and collapsed into general categories
- 65% of papers coded by two raters
- Cohen's kappa .85-1 for broad categories, .61-1 for more specific categories
- Disagreements resolved by consensus, consultation with other authors where necessary

Results-Definitions and terms

Focused on Sustainability	**Percentage**
Yes	62
No	38

Defined Sustainability	**Percentage**
Yes	41
No	57
Didn't Clarify	2
Term Used:	
Sustainability	57
Long Term / Follow-Up Implementation	20
Institutionalization	10
Durability	5
Discontinuation	2
De-Adoption	2
Routinization	0

Definition Cited	**Percentage**
Other*	13
Created Definitions	11
Shierer	8
Shediac-Rizkallah & Bone	5
Glascow	3
Pluye	3
Goodman & Steckler	3
Greenhalgh	2

*Cited in one paper (2%): Bartholomew; Rohrbach; Claquin; Rabin; Botvin; Bossert; Stetler; Sibthoipe

Results-Timeframe

Coded for last time period reported:

- 8% less than 12 months
- 15% at 12 months
- 15% at 12-24 months
- 62% two or more years

Results-Area of Study

32% medical interventions
25% public health or health promotion programs
16% mental health treatments
18% school based interventions
5% educational interventions

57% examined either programs or multi-component interventions

Results-Methods and Design

47% Quantitative

32% Qualitative

21% Mixed

12% Experiments (e.g., training conditions)

88% Naturalistic (generally post-hoc)

10% Followed up on implementation after clinical trials

54% Self-report

42% Interviews

32% Observation

32% Fidelity monitoring

Results-Unit of Analysis

66% Multiple implementation sites
15% Provider level
 7% Team-level
 4% Providers within site
 4% Within systems
 3% Single site

Results-Outcomes Reported

-Continuation/Discontinuation
-Presence/absence of indicators
(e.g., key positions staffed; space allocated)
-Fidelity or integrity
-Full implementation vs. components

-Few reported sustained impact/effectiveness

Results-Sustainability Outcomes

26 Studies reported outcomes were analyzed

- 9 studies included information about the quality or level of implementation

  -**Full sustainability/high fidelity (4): 7-44%**

  -Partial Sustainability/moderate fidelity (7):27-80%

  -Low sustainability/fidelity (1): 24%

- Forms of evaluation (n) / % sustaining

  -Single Self-report (6)/ 37-98%

  -Multiple Self-reports (7)/ 7-97%

  -Record Review (5)/11-80%

  -Independent observation (6) 42-86%

Results not finalized; partial dataset used

Results-Sustainability Outcomes

Intervention type/field	Unit of Analysis	Number of studies	% sustaining	Level of Fidelity or Implementation	Type of evidence
Medical	Site	5	71-80	Partial (1) Unspecified (4)	single self report (2) multiple self report (1) record review (2)
	provider	2	39 46/98*	Unspecified (2)	single self report (2)
	patients	1	11	Unspecified	Record review
Public Health	Site/program	4	7-82	Unspecified (3) Range from low-high (1)	Multiple Self Report (4)
Mental Health	Site/program	7	44-94	Unspecified (3) Range from Low-Partial (2) Partial (2)	Single self report (2) Record Review (2) Independent Observation (3)
	Provider	2	42,45	Full/High (2)	Independent Observation (2)
School-based	Site	4	44-47	Unspecified (2) Partial (1) Range from Partial-Full (1)	Multiple Self Reports (3) Single Self-Report(1)
	Provider	1	86	Partial	Independent Observation
	Student	1	66	Unspecified	Multiple Self Reports

Results-Associated Factors

- 40 studies (38 healthcare-related)
- Four broad categories of associated factors
  - Characteristics of the Innovation
  - Factors related to the Organization
  - Capacity (Internal and External)
  - Processes that facilitate sustainability
- Qualitative studies identified processes most commonly
- Quantitative studies identified capacity most commonly

Results-Associated Factors

	Quantitative Studies (n=15)	Qualitative Studi (n=25)
Innovation	**20%**	**32%**
Fit	20%	13%
Complexity	7%	4%
Ability to be modified	13%	25%
Effectiveness/Outcomes	13%	17%
Fidelity/Integrity	13%	0%
Organization/Context	**40%**	**56%**
Climate	0%	0%
Culture	13%	0%
Leadership	7%	36%
Organizational Characteristics	26%	8%
Capacity	**47%**	**68%**
Champions-internal/external	13%	28%
Funding	13%	24%
Internal		
Workforce (including staffing, attributes, attitudes)	27%	44%
Resources	13%	24%
External		
Community Support or Participation	7%	24%
System Change	7%	4%
Processes	**13%**	**76%**
Communication/discussion	0%	8%
Relationship Building/Engagement	0%	8%
Negotiation/shared decision making/planning	0%	16%
Adaptation or alignment	0%	20%
Integration of rules/policies/standards	7%	12%
Feedback	0%	4%
Training	7%	20%
Timing	0%	8%
Collaboration	0%	8%
Navigating competing demands	0%	4%

Limitations

- We cast a broad net
- May have missed studies due to variation in terms or reporting
- Although most innovations in our sample had an evidence base, sample was not limited to EBPs in healthcare
  - This allowed us to identify methods and strategies used in other fields and disciplines
- Variety of methods used precluded the use of meta-analytic strategies
- Conclusions about the level of sustainability that can be expected were not possible due to variation

Conceptualizations of sustainability: A consolidation and synthesis

Rationale

- Existing conceptualizations are designed for particular innovations or fields
- All contain some related, overlapping concepts, but none include all identified concepts
- Variations in terms and categorization of concepts
- A broad conceptualization can guide efforts to develop and study implementation efforts
- Consolidation and synthesis can promote a shared understanding

Method

- Thirteen conceptualizations found through a literature review
- Each unique element was identified from each conceptualization
- Elements were sorted into groupings of similar concepts
- Concepts were grouped into broad categories

	Organization/System-Level								Community-Level					Total Representations			
Author	Yin	Shediac-Rizkallah	Greenhalgh	Silimperi	Glaser	Aarons	Racine	Feldstein	Sarriott	Johnson	Pluye	Goodman	Mancini	Org/sys	Community	Total	Review Findings
Purpose[1]	A/E	A/E	U	A/E	A/E	A/E	A/E	A/E	A/E	P	P	A/E	A/E				
Outer Context																	
Policy/environmental context		•		•	•	•	•	•	•					6	1	7	√
System supports policy						•	•	•						3	0	3	√
Facilitating Conditions																	
Collaboration between key stakeholders		•	•		•	•	•	•	•	•		•	•	6	4	10	√
Support/Commitment of key stakeholders	•				•		•	•						4	0	4	
Champions	•	•			•					•				3	1	4	√
Funding	•	•	•		•	•			•	•	•	•	•	5	5	10	√
Inner context																	
Need/Performance Gaps	•				•		•	•						4	0	4	
Readiness for change			•	•	•		•	•		•				5	1	6	
Lack of Opposition	•				•								•?	2	1	3	
Motivation					•	•	•			•			•	3	2	5	
Leadership		•	•	•	•	•	•	•	•	•			•	7	3	10	√
Climate/culture/social context				•	•	•	•	•	•	•	•			5	3	8	√
Role clarity	•		•	•		•	•	•	•			•		6	2	8	
Organization structure/procedures		•	•				•	•	•					4	1	5	√

	Organization/System-Level								Community-Level					Total Representations			
Author	Yin	Shediac-Rizkallah	Greenhalgh	Silimperi	Glaser	Aarons	Racine	Feldstein	Sarriott	Johnson	Pluye	Goodman	Mancini	Org/sys	Community	Total	Review Findings
Purpose[1]	A/E	A/E	U	A/E	A/E				A/E	P	P	A/E	A/E				
Internal capacity																	
Resources	•	•		•	•			•		•	•			5	2	7	√
Allocated Time		•		•	•									3	0	3	
Workforce – low turnover, stable	•			•		•		•			•	•		4	2	6	√
Workforce – qualified, competent		•	•	•	•	•	•			•			•	6	2	8	√
QA Processes																	
Training	•	•	•	•	•	•		•		•			•	7	2	9	√
Ongoing tech support		•		•		•		•						4	0	4	
QA/ monitoring/fidelity		•		•		•	•	•						5	0	5	√
Reinforcement				•	•									2	0	2	
Feedback (employees)			•	•			•	•						4	0	4	
Evaluation				•	•		•	•		•		•	•	4	3	7	√
Feedback/publicize results			•		•	•	•						•	4	1	5	
Innovation																	
Flexible	•				•		•	•			•		•	4	2	6	
Fit/Compatibility		•			•	•	•			•	•			4	2	6	√
Complexity/Added burden							•	•						2	0	2	
Intervention effective		•					•	•		•	•			3	2	5	√
Adds value/cost effective	•	•			•	•	•	•						6	0	6	
Capacity Building																	
Planning for sustainability		•					•	•	•	•	•		•	3	4	7	
Communication			•	•	•	•	•	•	•		•			6	2	8	√
Adaptation		•	•		•								•	3	1	4	√
Alignment/Integration	•	•			•	•	•	•		•	•	•		6	3	9	√

Conclusions

- Sustainability has been defined, assessed, and reported in a number of ways
- Some of this variety is due to the variety of innovations
- We need better measurement, *use of models*, and standardization of terms to guide research
- There is still an important role for qualitative research
- Efforts to develop a consolidated conceptualization can facilitate standardized measurement, interpretation of findings and shared understanding of concepts

- Questions?

Thank you!

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