



# Understanding and defining implementation fidelity to facilitate better understanding of intervention implementation outcomes

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# Overview

1. Background
2. Aims
3. Methods
4. Findings
5. Bringing in other literature
6. Definition of implementation fidelity in health care intervention studies
7. Practical application





# Background



## Implementation fidelity – why?

Ultimately:

To know whether it was the intervention that was effective



# Aims

## To identify how to define implementation fidelity

- Undertook a scoping review of the literature
- We sought to answer the following questions:
  - *How is fidelity defined in healthcare intervention implementation studies?*
  - *How are degrees of fidelity determined, i.e. what is high/desired fidelity?*
  - *What are the core fidelity components that have been evaluated?*

# Methods of scoping review

## Inclusion/ exclusion Criteria

- **Study Design:** All study designs
- **Study Criteria:** The study is or includes a process evaluation of a health implementation study/project or a health research implementation/KT study that has a primary purpose of translating research into action/practice
- **Outcomes:** The implementation fidelity evaluation component is distinct from the primary outcomes

## Search strategy

- **Search Terms:** The main search term used was “fidelity” (or derivations of this such as authentic or adherence), “implementation”, “innovation” (or derivations of this, such as change or practice or intervention) and “evaluation” or “outcomes” or “outcome measures”.
- **Databases searched:** Databases of peer reviewed journal articles: Ovid MEDLINE and PubMed databases were searched for in-process and other non-indexed publications, Ovid EMBASE, Ovid PsycINFO, EBSCOhost CINAHL, ISI Web of Science, Scopus and sub databases

## Screening and eligibility

- **Removed:** duplicates, irrelevant titles, and articles without fidelity in the title or abstract
- **Screening phase I:** Double screened against inclusion/exclusion criteria
- **Screening phase II:** Full papers were obtained and assessed for eligibility by two reviewers against the inclusion and exclusion criteria

## Data extraction, synthesis & analysis

- **Extraction:** Form developed including authors, publication date, a brief description of interventions and outcomes, whether fidelity was defined and if so, how, whether intervention fidelity was evaluated and each study’s research method – 2 researchers extracted.
- **Synthesis:** The papers were compared, evaluated and summarised narratively in relation to the research questions.

# Results

Identification

Screening

Eligibility

Included

Records identified through database searching  
(n = 961)

Records after duplicates removed  
(n = 876)

Records screened  
(n = 876)

Records excluded  
(n = 673)

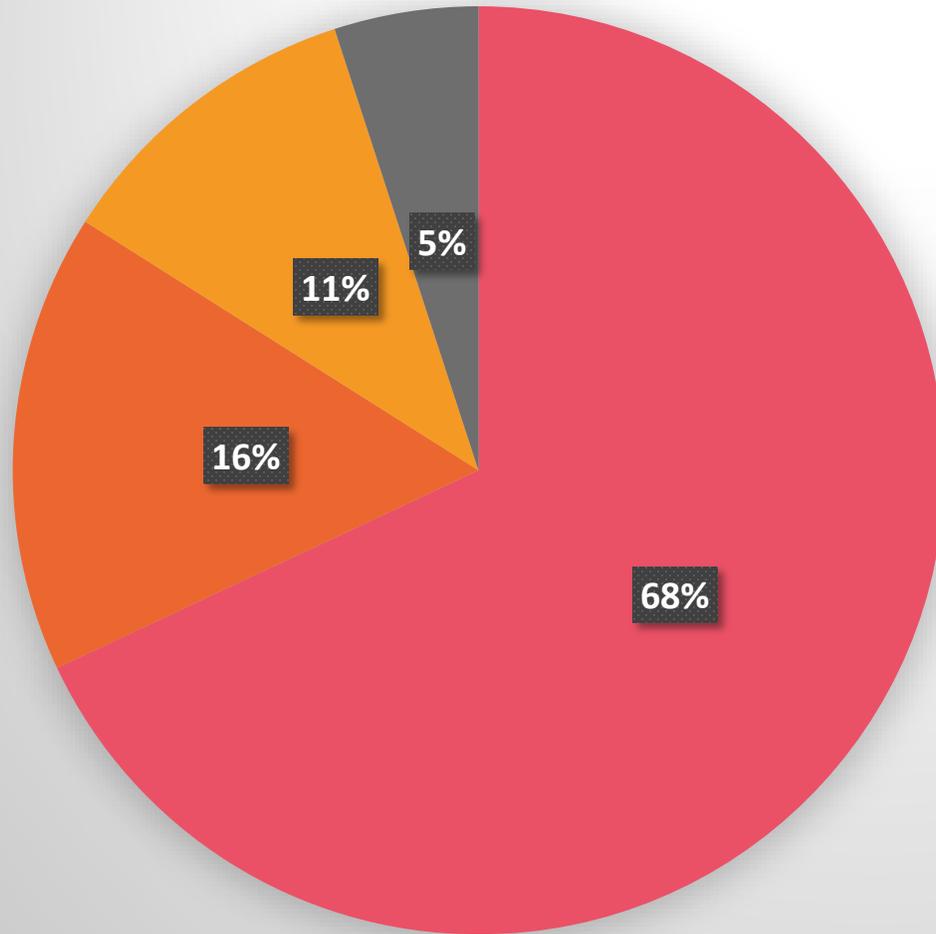
Full-text articles assessed for eligibility  
(n = 203)

Full-text articles excluded (n = 159). Reasons for exclusion:  
6 were duplicates  
33 did not describe fidelity evaluation of a healthcare intervention  
4 had no intervention  
9 were protocols for studies  
51 were not relevant (not health service interventions)  
15 concerned methodological/model/theory/tool development, not implementation fidelity  
38 were reviews or monographs  
4 were editorials or commentaries  
1 did not include sufficient information to identify fidelity evaluation

Studies included in synthesis  
(n = 42)



# Fidelity definitions



- Degree to which an intervention is implemented as intended or adheres to the original model
- Broader definitions
- Multi-components
- 'methodological strategies'

# Fidelity measures

Sub-category	Measurement
Content of intervention(s)	Clinical documentation; Direct observation; Review audio recordings; surveys/follow up forms; Facilitated semi-structured questionnaires; Checklist/tool; Validated scales; Encounter logs; Interviews; Data extracted from web-based decision support system; Equation; Multiple methods
Coverage of intervention(s)/ 'Reach'/ penetration	# surveys completed; checklist/survey; Focus groups/interviews; Monitoring sessions using rating scale; Document analysis/review; Administrative data; Record audits; Telephone call follow up; structured forms; Reminders in database; National survey
Frequency of intervention(s)	Surveys; Focus group/interview; Fidelity tool/checklist; Monitoring sessions using rating scale; Document analysis/review; Data extracted from web-based decision support system; Encounter logs; Multiple methods; Equation
Duration of intervention(s)	Surveys; Fidelity tool/checklist; Monitoring sessions using rating scale; Document analysis; Data extracted from web-based decision support system; Encounter logs; Interviews; Multiple methods; Equation



# Implementation fidelity definition – from studies:



1. The conformity with the prescribed components and absence of non-prescribed components (adherence to the original planned intervention);
2. How adequately the planned intervention is being implemented (quality of the intervention delivery); and
3. How the intervention is reaching the end users (the intervention being delivered to the target population group or region).



# Definition of fidelity in studies incomplete



## Fidelity is more than operational

Two implementation fidelity categories; theoretical and operational fidelity (Ibrahim & Sidani, 2015)

### **Theoretical:**

The process of developing and designing an intervention, referring to congruence between the interventions' core active elements, and its components and activities.

### **Operational:**

The degree to which the intervention is delivered according to the original design and plan



# Adaptation to local context



## Not addressed by the included studies

- Context is an important moderator impacting on implementation fidelity (Carroll et al., 2007).
- By incorporating adaptation, implementation fidelity evaluation can also be used to inform researchers of changes that have been made in response to context.



# Need to strengthen implementation fidelity definition:



1. To decide the permissible level of innovation adaptability at the outset to assess how adequately the program was implemented (theoretical fidelity), and
2. The intervention is being implemented as intended (operational fidelity)



# To add sustainability



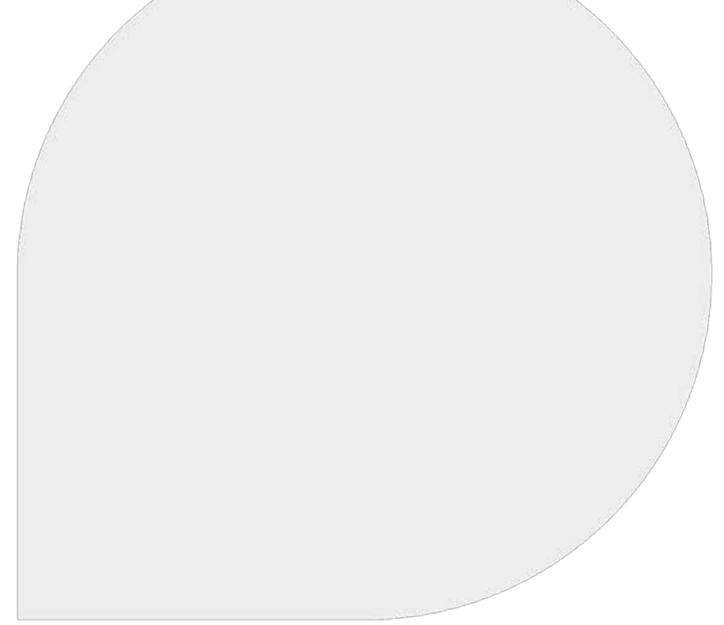
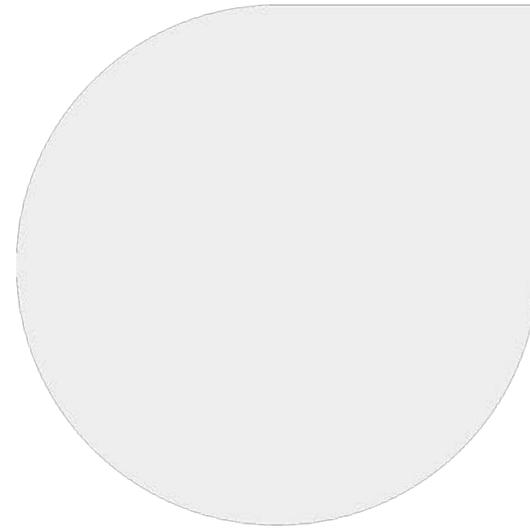
The ongoing use of innovations to produce long term impact but is more than just an outcome where health benefits, activities or workforce capacity are maintained (Lennox et al., 2018)

Lennox L, Maher L, Reed J: Navigating the sustainability landscape: a systematic review of sustainability approaches in healthcare. *Implementation Science* 2018, **13**(1):27



# Comprehensive fidelity definition

1. To decide the permissible level of innovation adaptability at the outset (theoretical fidelity);
2. The intervention is being implemented as intended (operational fidelity)
  - *Conforming with prescribed essential elements and absence of non-prescribed elements; and*
  - *At the planned quality*
3. That the intervention is reaching the end users (population/end user fidelity); and
4. That the intervention being implemented will be sustainable (sustained fidelity).





# Intergenerational Care Project



- Implementing an intergenerational care model
  - Working with RAC and childcare centres, residents/children, family and staff.
- Curriculum and key components with proven efficacy collated
- Decision by key stakeholders on core components made
  - Adaptation can occur to components outside of these



Domains	Subdomains	What to measure and how	When to measure
1. Process (and program) measures	1.1 Design	Define what the core components of the intervention are that are essential for the anticipated outcomes to be achieved – WHAT ARE THESE?? CAN WE GIVE EG.	
	1.2 Training		
	1.3 Monitoring intervention delivery		
	1.4 Monitoring intervention receipt		
2. Outcome	2.1 Psychological behaviours		
	2.2 Workforce		
	2.3 Socioeconomic		
	2.4 Educational		
3. Sustainability	3.1 Time		
	3.2 Continue delivery		
	3.3 Program may evolve		
	3.4 Continues to produce benefits to		

# Practical Application

Subdomains	Questions to be answered & measurements	When to measure	Outcomes	
<b>1.3</b> <b>Monitoring intervention delivery</b>	1. 3.1 Differentiation	Video observation – checklist: 1.3.1.1 Adherence to intended core elements 1.3.1.2 Adherence to proscribed interventionist behaviours 1.3.1.3 Exclude non-proscribed components/behaviours	After training delivery and at Six months	Yes/Partial/No
	1. 3.2 Intervention components	Video observation – checklist: 1.3.2.1 Core elements 1.3.2.2 Prohibited elements 1.3.2.3 Dose delivered	After training delivery and at Six months	Yes/Partial/No
	1. 3.3 Interventionist behaviours	Video observation – checklist: 1.3.3.1 Unique and core 1.3.3.2 Core but not unique 1.3.3.3 Compatible but not necessary or unique 1.3.3.4 Prohibited	After training delivery and at Six months	Yes/Partial/No



# Conclusion



- Definition of implementation fidelity is incomplete,
- New definition was recommended
  - emphasis on sustainability & inclusion of adaptation to context

