Loughborough, UK

Participatory Design for Behaviour Change: an integrative approach to healthcare quality improvement

Fernando Carvalho, Gyuchan Thomas Jun, and Val Mitchell

Loughborough Design School
Loughborough University
Introduction –

BEHAVIOUR CHANGE IN HEALTHCARE

> Approach mostly applied to Public Policy, and Public Health [1]

> ‘Behaviour Change’ explored in Design for about a decade [2], little focus on health

> Staff behaviour change is critical to improving practice [3]

> The problematic difference between the ‘Knowledge gap’ and the ‘Know-do gap’

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Hand hygiene (Dixon 2016)

150 years

Single-family rooms (White & Whitman 1992)

25 years

Stop urine dip in older adults (Scottish Government 2012)

05 years

**Introduction –**

**RESEARCH AIM & OBJECTIVES**

> To **develop** an integrative **Participatory Design for Behaviour Change framework** for healthcare quality improvement
> To **assess** the **applicability** and (relative) **effectiveness** of the proposed framework

**RESEARCH APPROACH**

> **Literature review**
> **Qualitative, mixed-methods empirical studies**
> **Participatory Action Research** – iterative, contextualised investigation in naturalistic setting (a British National Health Service, NHS, hospital)
## Summary of Literature Review –

<table>
<thead>
<tr>
<th>QUALITY IMPROVEMENT (QI)</th>
<th>BEHAVIOUR CHANGE (BC)</th>
<th>PARTICIPATORY DESIGN (PD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Most healthcare QI methods are <strong>adapted</strong> from other areas [4]</td>
<td>&gt; Behaviour change approaches have <strong>proven to be effective</strong> in QI: e.g. hand hygiene [5], appointment attendance, and antibiotics prescription [6]</td>
<td>&gt; PD has developed <strong>methods and tools</strong> that assist engagement in problem-definition, solution-development, and intervention-implementation [9]</td>
</tr>
<tr>
<td>&gt; <strong>No one method</strong> is proven to be <strong>more effective than any other</strong> (e.g. Six Sigma, Lean, PDSA, SPC) [4]</td>
<td>&gt; Some existing frameworks follow a stepwise rationale similar to the design process</td>
<td>&gt; PD processes contribute to democratisation, <strong>empowerment</strong>, and lead to active, <strong>ethical participation</strong> [10]</td>
</tr>
<tr>
<td>&gt; Existing QI methods <strong>do not employ behavior change</strong> approaches and methods</td>
<td>&gt; <strong>Stakeholder involvement</strong> is poorly addressed; process can be disempowering [7], and too focused on agency [8]</td>
<td>&gt; <strong>Decision-making</strong> in PD is often not grounded on pure ‘<strong>scientific evidence</strong>’, which can be <strong>problematic</strong> in the healthcare context</td>
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</tbody>
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Case Study: Research Design –

**AIM**

> To **test the applicability and appropriateness** of the framework in supporting staff to **develop interventions to change practice** in the Emergency Department

**PARTICIPANTS**

<table>
<thead>
<tr>
<th>CORE GROUP</th>
<th>DOCTORS (8) + Med Std. (2); NURSES (3) + Nurse Std. (1); PHARMACISTS (4); MICROBIOLOGISTS (3); HEALTHCARE RESEARCHERS (2).</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=24</td>
<td></td>
</tr>
<tr>
<td>M=11, F=13</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ED GROUP</th>
<th>DOCTORS (15); NURSES (9); MANAGERS (4).</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=28</td>
<td></td>
</tr>
<tr>
<td>M=12, F=16</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>n=52</td>
<td></td>
</tr>
<tr>
<td>M=23, F=29</td>
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</tr>
</tbody>
</table>

> **Purposive sample:** engagement characterised by a **diverse and irregular** attendance to face-to-face activities
Case Study: UTI in Older Adults –

THE NEED FOR CHANGES IN BEHAVIOUR

> Changes in guidelines (non-compliance) DO NOT DIP

> Diagnose should be made on assessment of symptoms [11]
  - Lack of professional knowledge about this cohort in ED [12]
  - Population is frequently mistreated with antibiotics [12]

CONTEXT

> Environmental and cultural factors; social and system pressures:
  - Ready access to dip sticks
  - Dip test perceived as ‘cheap, quick fix’
  - Cultural/social dynamics of the Emergency Department
  - 4-hour target

Case Study: Methods –

**FRAMEWORK DEVELOPMENT: STAGES AND ACTIVITIES**

<table>
<thead>
<tr>
<th>STAGES OF THE BEHAVIOUR CHANGE WHEEL FRAMEWORK</th>
<th>CO-DEFINITION</th>
<th>CO-DEVELOPMENT</th>
<th>CO-IMPLEMENTATION</th>
<th>CO-EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHASES OF THE PARTICIPATORY DESIGN PROCESS</td>
<td>UNDERSTAND THE BEHAVIOUR</td>
<td>IDENTIFY INTERVENTION OPTIONS</td>
<td>IDENTIFY CONTENT AND IMPLEMENTATION OPTIONS</td>
<td></td>
</tr>
<tr>
<td>03 WORKSHOPS</td>
<td>03 WORKSHOPS</td>
<td>01-02 WORKSHOPS</td>
<td>PROCESS EVALUATION (quali)</td>
<td></td>
</tr>
<tr>
<td>01 MEETING w/ ED STAFF</td>
<td>01 MEETING w/ ED STAFF</td>
<td>INTERVENTION TRIALS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02 PRIORITISING EXERCISES</td>
<td>02 FOCUS GROUPS w/ ED DOCS</td>
<td>IN-DEPTH INTERVIEWS</td>
<td></td>
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</table>

- Behaviour Change and Participatory Design as **three-staged processes with similar aims**
- Complementary nature of the approaches and methods
Results –

DEVELOPING A SHARED UNDERSTANDING

> Started a coalition among participants

> Developed a shared understanding of the challenges

> Produced visual maps of relationships among the many contributors to ‘bad’ practice

> Thematic networks map served as reference for most subsequent activities
### Results –

**IDENTIFYING/PRIORITISING BEHAVIOURAL CHALLENGES**

- List of 12 main behavioural challenges to best practice
- Two separate prioritising exercises with Core Group (n=10), and with Emergency Department group (n=12)
- Prioritising exercises led to a dual approach with complementary objectives:
  - short-term focus for ‘shop floor’ changes
  - long-term focus for system changes

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**List of Behavioural Challenges**

<table>
<thead>
<tr>
<th>Challenge</th>
<th>All Votes</th>
<th>%</th>
<th>Rank</th>
<th>All Votes</th>
<th>%</th>
<th>Rank</th>
<th>All Votes</th>
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<th>Rank</th>
<th>All Votes</th>
<th>%</th>
<th>Rank</th>
<th>Scores</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Poor understanding of diagnostic testing: Are we putting tests ahead of clinical judgement and individual patient care?</td>
<td>37</td>
<td>10.3</td>
<td>5</td>
<td>43</td>
<td>10.9</td>
<td>2</td>
<td>36</td>
<td>9.2</td>
<td>4</td>
<td>195</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Rushing to use test to get a diagnosis (time pressures - patient flow): Pressures to make a decision or do adequate assessment</td>
<td>38</td>
<td>10.5</td>
<td>2</td>
<td>41</td>
<td>10.4</td>
<td>3</td>
<td>40</td>
<td>10.3</td>
<td>2</td>
<td>180</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Over-reliance on dipstick test: Are we ignoring/missing the bigger clinical picture? Tests are done automatically</td>
<td>26</td>
<td>7.1</td>
<td>10</td>
<td>38</td>
<td>9.9</td>
<td>7</td>
<td>32</td>
<td>8.6</td>
<td>10</td>
<td>96</td>
<td>10</td>
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<td>11.5</td>
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<td>45</td>
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<td>5</td>
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<td>4</td>
<td>2</td>
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Prioritising exercises – Core Group (top), ED Group (bottom)
Results –

**PLANNING INTERVENTIONS**

> Established a multiprofessional UTI Joint Committee in the Emergency Department

> Support to two doctors conducting quality improvement projects (as part of medical training)

> Strategy and action plan for moving into Co-Development and Co-Implementation stages

Refined thematic networks map (top); list of main behavioural challenges (bottom)
Results –

RECENT DEVELOPMENTS

> 5th WORKSHOP: 50+ intervention ideas proposed by stakeholders through the process

> 6th WORKSHOP: two intervention solutions developed (beginning trial phase now)

NEXT STEPS

> Evaluation of pilot interventions:
  - Impact/outcome evaluation (quanti – quick PDSA cycles lead by ED staff)
  - Process/practice evaluation (quali – in-depth interviews w/ stakeholders)

> Co-production session for intervention refinement (7th WORKSHOP)
Findings –

> It is feasible to employ a **behavioural approach to healthcare quality improvement in participatory ways**

> **Stakeholder engagement has a definite role** in changing clinical practice (*enhanced knowledge of systems, integration of change into every-day practice, choices created by users, empowerment*) [14]

> Unlike ‘patient and public involvement’ (PPI), **staff participation in healthcare is assumed**. However, participation needs support and a systematic approach to be feasible, effective and sustainable

> **Staff’s possibilities** for active engagement need to be **considered** when choosing methods and employing tools to **co-develop behaviour change interventions**

> For healthcare staff, **early-involvement** and **choice-creation** may be more indicative of ‘ideal’ participation than **decision-making**

Discussion –

> The proposed framework is applicable to quality improvement in healthcare. However, its effectiveness in relation to other approaches has not been assessed in this study.

> Whether Participatory Design is the best approach to enact staff engagement is still unclear – though there are firm grounds to support that assumption, poor report on participation in the literature makes it hard to analyse and compare different approaches.

> Behaviour change can support participatory intervention design. The COM-B model seems to be the most universally accepted tool, whereas other tools require adaptation and expert guidance, contrary to claims from the literature [15].

> In participatory settings, some behaviour change tools work better as reference/consultation material than as prescriptive design guidelines. To what extent this use of the tools can be more effective than their original use is yet to be evaluated.

Thank you very much –

Fernando Carvalho
f.carvalho@lboro.ac.uk

Dr Gyuchan Thomas Jun
g.jun@lboro.ac.uk

Dr Val Mitchell
v.a.mitchell@lboro.ac.uk

Loughborough Design School, UK
http://www.lboro.ac.uk/departments/design-school/