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Review article

A modified stakeholder participation assessment framework for design thinking in health innovation

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ABSTRACT

Increasing pressure to improve health outcomes of populations with limited resources has prompted an emphasis on innovation. Design thinking has been proposed as a systematic approach to innovation in health, owing to its human-centred methodology that prioritises deep empathy for the end-users' desires, needs and challenges, which results in a better understanding of the problem in order to develop more comprehensive and effective solutions. A key feature of design thinking is stakeholder participation. If design thinking is going to be used as an approach to design and implement effective, equitable and sustainable health solutions, assessing stakeholder participation should be integrated into the process. Therefore, the purpose of this review is to i) provide an analysis of the literature on assessing stakeholder participation in health and ii) propose a framework based on the literature analysis that can be used to assess stakeholder participation during the design thinking process in health innovation. Drawing from participatory research in health, where stakeholder participation is recognised as a core principle that facilitates the implementation of solutions, we integrate stakeholder evaluation tools into the design thinking approach. We draw on an assessment framework that describes levels of stakeholder participation by their involvement in making decisions about their health. Using a 5-point continuum where the lower end represents the medical approach (professionals make all the decisions) and the upper end represents the community development approach (all stakeholders are key decision makers), we propose a modified assessment framework to evaluate stakeholder participation during the design thinking process. The modified framework provides a simple and practical tool to evaluate stakeholder participation. Stakeholders can rate their perceived level of participation, as well as that of the other stakeholders. Evaluation of participation in a design thinking project may be used to improve participation, and therefore the uptake and sustainability of innovations. The framework may also be used in design thinking beyond health applications.

1. Introduction

Innovation is a broad concept and can be defined as the successful implementation of a novel idea that creates value for some or all its stakeholders.[44] In the health field, increasing pressure to improve health outcomes of populations with limited resources has prompted an emphasis on innovation. The design thinking process has been proposed as a systematic approach to innovation in health, owing to its human-centred design methodology that prioritises deep empathy for the end-users' desires, needs and challenges, resulting in a better understanding of the problem in order to develop more comprehensive and effective solutions.[36]

1.1. Overview of the design thinking process

Design thinking revolves around three related phases (Fig. 1), which are intended to be non-sequential and iterative, but generally follows a step-wise approach, at least during the first iteration.[6] The first phase is the most important and focuses on empathising with the end-user and stakeholders through interviews and observation in order to understand and define their needs, as well as identify potential challenges and opportunities.[6,7,45] The first phase is considered the 'inspiration' phase.[6,7] The second phase of the design thinking process is 'ideation'. During ideation, the knowledge and insight gained during the inspiration phase is used to brainstorm ideas and synthesise concepts with the highest potential for an effective solution.[6,7,45] To reach concepts with the highest potential, a multitude of ideas across the spectrum need to

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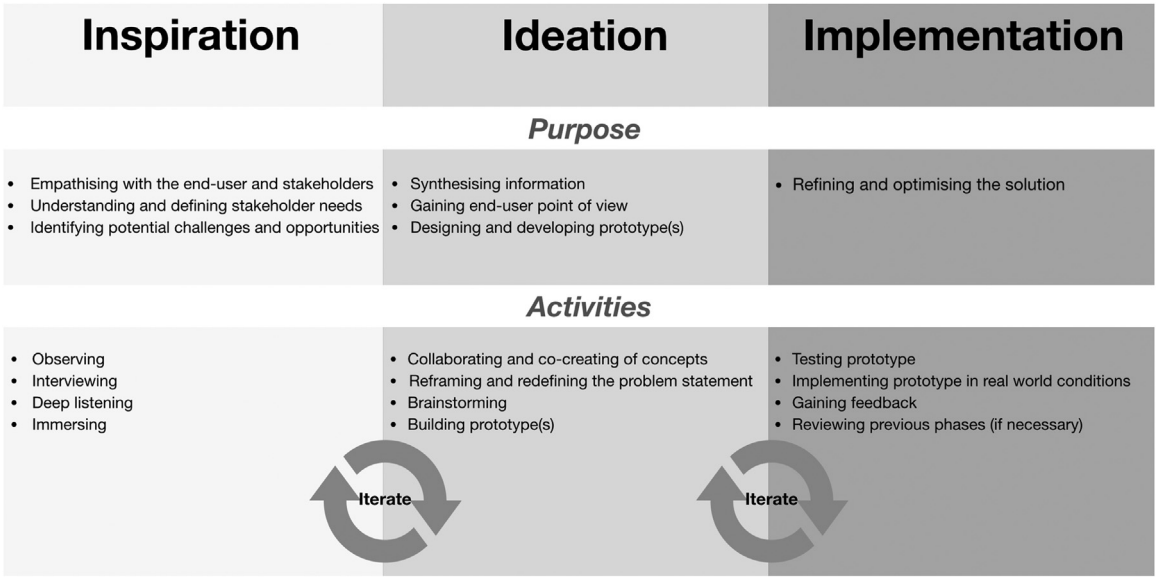

Fig. 1. Overview of the design thinking process. The process is intended to be non-sequential and iterative, but generally follows a step-wise approach, at least during the first iteration.

be generated. Here, collaboration between stakeholders and across disciplines, coupled with divergent thinking, is key.[7] After brainstorming, integrative thinking is required to synthesise the ideas into a concept that can be built for testing (prototyping).[6,7] Through testing and re-testing, the prototype is refined and optimised for real world implementation. 'Implementation' of the solution into the real world is the third phase of the design thinking process.[6,7] During this phase, even more prototyping and testing are engaged in to further refine and optimise the solution for real world conditions. Thereafter, the solution can be scaled, communicated and made sustainable.[6,7]

1.2. Design thinking in health

To date, health studies using the design thinking framework include improving interventions,[19,45] strengthening mobile health systems and device design,[14,16,18] teaching in health care,[8,43] clinical reporting and health communication,[39,40] improving the patient experience,[21] safety in clinical settings,[13] and developing community health programmes.[28,45] In community health for example, Vechakul et al.[45] conducted a 12-week design thinking process to address health inequities related to infant mortality in a low-income community. To explore both social and economic determinants of health, the project comprised of stakeholders from the community, government, and business. The 12-week design thinking process consisted of a 6-week 'inspiration' phase, a 4-week 'ideation' phase and a 2-week 'implementation' phase.[45] The outcome of the design thinking process was the implementation of a community market to stimulate the local economy.[45] In another community setting example, Ramos, Trinidad, Correa, & Rivera[28] report a 36-week design thinking process to create a community health education activity for a Latina immigrant community. The stakeholders of this project consisted of members from an academic institution, community organisations and community members. The 36-week design thinking process consisted of a 20-week 'inspiration' phase, a 12-week 'ideation' phase and a 4-week 'implementation' phase. The outcome of this 36-week design thinking project was a culturally and linguistically appropriate health education programme for the Latina immigrant community.[28]

The common and key feature of these design thinking health studies is stakeholder engagement. Whether trying to understand stakeholder desires and challenges during the 'inspiration' phase, collaborating on ideas to implement during the 'ideation' phase, or gaining feedback for optimisation during the 'implementation' phase, stakeholder participation is essential for each phase of the design thinking process in health.[6,7]

1.3. Review objective

The importance of stakeholder participation in equitable and sustainable health solutions has been officially recognised by the World Health Organisation (WHO) since 1978 in the Alma Ata Declaration.[47] In line with this recognition, evaluation frameworks to improve stakeholder participation have been developed.[15,34] If design thinking is to be used as an approach to design and implement effective, equitable and sustainable health solutions, assessing stakeholder participation should be integrated into the process. Therefore, the purpose of this review is to i) provide an analysis of the literature on assessing stakeholder participation in health and ii) propose a framework based on the literature that can be used to assess stakeholder participation during the design thinking process in health innovation.

1.4. Assessing stakeholder participation – literature analysis

To assess stakeholder participation, health participatory researchers have applied typologies to the level of engagement that stakeholders may have with health researchers.[2,15,29,32,33] The most famous and most cited typology in health was developed by Arnstein.[1] This model consists of eight levels, illustrated by a ladder, ranking different degrees of participation (Manipulation - Therapy - Informing - Consultation - Placation-Partnership - Delegated - Power - Citizen Control). Following Arnstein,[1] a number of similar models for health have been proposed. For example, Cornwall[12] modified the Participatory Rural Appraisal[10] to chart modes of participation (co-option, compliance, consultation, co-operation, co-learning, collective action) and describe the relationship of research and action to the beneficiaries (on, for, for/with, with, with/by, by, respectively).[12,34] In another model, Popay[26] relates the different modes of participation (informing, consultation, co-production, delegated power, community control) to a range of outcomes (service outcomes, intermediate social outcomes, health outcomes).[26,27]

These typologies describe the different levels of stakeholder involvement in making decisions about their health. According to Draper et al.[15] and Rifkin et al.,[34] the lower levels of participation represent the 'medical approach' to health care. The medical approach