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This is the published version of a paper presented at *MedInfo 2021, 18th World Congress of Medical and Health Informatics, Virtual event, October 2-4, 2021*.

Citation for the original published paper:

An, Q., Kelley, M M., Yen, P-Y. (2022)

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In: Paula Otero; Philip Scott; Susan Z. Martin; Elaine Huesing (ed.), *Medinfo 2021: One World, One Health – Global Partnership for Digital Innovation* (pp. 1106-1107).

IOS Press

<https://doi.org/10.3233/SHTI220290>

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-198421>

Stakeholder Mapping on the Development of Digital Health Interventions for Self-Management Among Patients with Chronic Obstructive Pulmonary Disease in China

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Abstract

Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disease consisting of chronic bronchitis and emphysema. Digital Health Interventions (DHIs) can improve COPD patients' self-management. However, the market penetration of DHIs is lower than expected. Using stakeholder mapping, healthcare providers identified opportunities for design and development of sustainable DHIs. Two different stakeholder maps were identified. These maps demonstrated the importance of utilizing structured mapping techniques to understand roles of different stakeholders, and addressing regulatory and practice needs to ultimately support patient self-management.

Keywords:

Chronic Obstructive Pulmonary Disease, Mobile Health, Stakeholder Participation

Introduction

Chronic Obstructive Pulmonary Disease (COPD) is an incurable progressive lung disease [1] and the third leading cause of death worldwide [2]. Mortality rates are predicted to increase in the coming years [1]. Digital Health Interventions (DHIs) have the potential to improve patients' self-management of COPD by motivating, engaging and supporting patients' healthy lifestyle behaviour [3]. However, the market penetration of DHIs is currently lower than investors' expectation [4]. DHI developers face two challenges: unclear patient needs of using DHIs and the lack of understanding of the relationships among stakeholders [5]. Failure to consider all stakeholder concerns, fears, hopes, and desires related to the problem can be a barrier to problem resolution [6]. Mapping stakeholder relationships can systematically identify, evaluate, and compare their interest, role, and power [7]. The result of stakeholder mapping can be used to recommend future actions [7]. Thus, the goal of this study was to identify needs important to stakeholders to inform DHI design and development.

Methods

A qualitative methodology, using focus groups to enable stakeholder mapping was used to identify and generate concerns among different stakeholders while taking advantage of their consistency to co-create a future vision [6]. Physicians and nurses working with COPD patients in the respiratory department of a large metropolitan medical center in northeast China were recruited as they were primary healthcare providers with the ability to analyse the benefit structure inside the development of DHI and suggest ideas grandly.

The participants were divided into two focus groups randomly. Each focus group participated in 2 stakeholder mapping sessions. In session 1, we focused on patient-centred mapping. In session 2, we focused on DHI-centred mapping. To conduct the patient-centred mapping, participants were asked to identify all potential stakeholders and discuss potential fears/concerns, hopes/desires of stakeholders [8]. Secondly, the participants categorized and prioritized the key stakeholders based on functionality and benefits [8]. Next the participants defined the degree of interaction between each stakeholder and COPD patients. Finally, the results of the two patient-centred stakeholder mapping sessions were combined into one map. The same process was repeated for the DHI-centred stakeholder mapping sessions.

Results

In total 11 healthcare providers participated in the two focus groups. COPD patient-centred stakeholder map and DHI-centred stakeholder map were generated from the results of the two focus groups. A power/interest matrix was developed to visualize stakeholders' prioritizations (Figure 1).

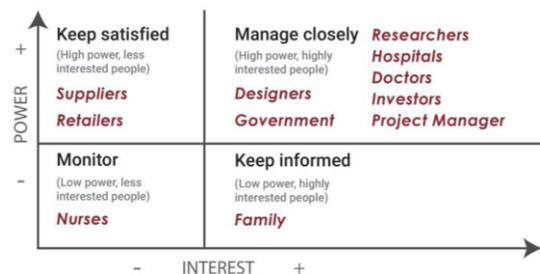


Figure 1- power/ interest matrix

Patient-centred stakeholder mapping

Figure 2 was developed following the degree of interaction between COPD patients and other stakeholders. The analyzing center was COPD patients. Here, the stakeholders can be classified into three different functions for the COPD patients. Three concepts of different functions emerged from our patient-centred stakeholder mapping: 1) Direct Patient Care, 2) Regulatory and Policy Compliance, and 3) DHI Research and Design.

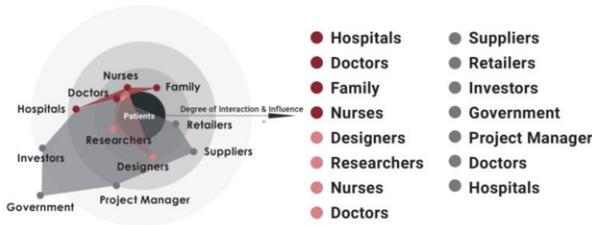


Figure 2- COPD patients-centred stakeholder map

Direct Patient Care

Stakeholders involved in this function include healthcare providers, patients, family members, and hospitals. For patients, the key component they need from ‘Direct Patient Care’ is to receive authoritative guidance and additional learning opportunities and interaction with healthcare providers.

Regulatory and Policy Compliance

Government agencies and investors have the greatest impact on objective conditions. There is often an absence of proof for DHI to be permitted by the government. A sustainable DHI requires not only a sound and legal mechanism around secure use and data sharing, but also compliance with regulations and policies that can be supported by the stakeholders in their roles. The DHI development should be a collaborative work among the stakeholders, and to guide DHI policies that could ultimately gain support from healthcare providers and trust from patients.

Digital Health Intervention Research and Design

Stakeholders in this group include designers, researchers, healthcare providers, and patients. Following good design processes and practices, designers must work with patients and healthcare providers to understand user needs using qualitative and quantitative research methods. The data collected can be used to examine DHI efficacy and cost-effectiveness.

DHI-centred stakeholder mapping

DHI-centred stakeholder mapping (Figure 3) identified internal (right side) and external (left side) stakeholders associated with patient care and the use of a DHI for patients. As stakeholders possess mutual interests in common data elements that could be made available via a DHI, including all potential stakeholders in the development process is the key to a novel and comprehensive model of health information exchange for patient care.

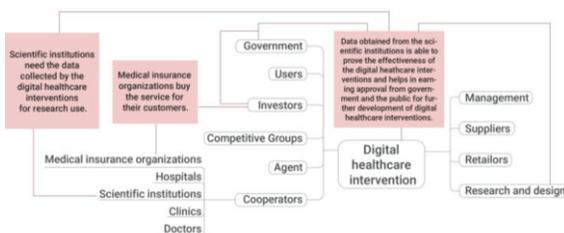


Figure 3- DHI- centred stakeholder map

Conclusions

We identified two stakeholder maps, a patients-centred stakeholder map and a DHI-centred stakeholder map and demonstrated the importance of investigating the roles of various stakeholders involved in the care. The resulting findings help

informing the design and development of a sustainable DHI beyond the app use. Future studies should address regulatory and practice needs to support patient self-management.

Acknowledgements

We would like to acknowledge the healthcare providers who participated in the study and thank them for their support.

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