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Health professionals' and patients' perceived barriers and facilitators to collaborating when communicating through the use of information and communication technologies

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ABSTRACT

The rapid development and access to mobile technologies has created exciting possibilities in telemedicine, which refers to healthcare delivered from a distance through information and communication technologies (ICTs). Research is needed to advance our understanding of the factors that affect how interprofessional teams, including patients, collaborate when communicating through the use of ICTs.

The purpose of this research study was to explore health professionals' and patients' perceptions on the *anticipated* barriers and facilitators to effectively collaborating when communicating through the use of ICTs. An exploratory qualitative case study design was used. Individual interviews were conducted with health professionals and patients prior to the implementation of a telemedicine post-rehabilitation intervention. Data was analyzed using inductive thematic analysis.

Exchanging information between health professionals, exchanging information with patients, and technical skills and user attributes were three themes perceived by health professionals to affect interprofessional collaboration when communicating through the use of ICTs. Themes around patients' perceived barriers and facilitators to collaboration included building a therapeutic relationship, operating ICTs, and understanding and valuing the use of ICTs. Health professionals and patients also perceived system supports as having the potential to enhance collaboration when communicating through ICTs, including: online patient records, schedule sharing, initial face-to-face meetings, transfer notes, communication expectations, visual media, technology tutorials, technician availability, and lastly, mHealth education.

Implementing system supports into mHealth interventions would potentially address many of the perceived barriers. The findings therefore have implications on how to promote collaboration amongst healthcare teams when communicating through the use of ICTs.

1. Introduction

The rapid development of and access to information and communication technologies (ICTs), such as smartphones and tablets, has created exciting possibilities in health care. Interprofessional teams are increasingly communicating through the use of ICTs, such as mobile health services (mHealth), as an innovative opportunity to improve patient access to more convenient and coordinated care. Effective collaboration and communication is a vital component to any team to achieve interprofessional, patient-centred care, but it is especially important for those who are not co-located and communicating primarily through ICTs; particularly, due to concerns around patient safety and the increasingly complex needs of patients. Despite the opportunities in this area, there is virtually no research that has explored how teams collaborate when communicating through the use of ICTs. Research is urgently needed to advance our understanding of interprofessional practice related to telemedicine service delivery programs, given the opportunities to improve access to health care services for vulnerable populations who live in remote, rural, and underserviced areas.

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2. Purpose and objectives

The purpose of this research study was to explore health professionals' and patients' perceptions of the anticipated barriers and facilitators to effectively collaborating when providing interprofessional patient-centred care through the use of information and communication technologies. We were interested in *anticipated* factors as we wished to develop an understanding of the perceived needs of health professionals and patients pre-implementation so that interventions could be developed to optimize the implementation of telemedicine programs in the pre-planning stage. Therefore, two questions that this research addressed were:

1. What are health professionals' and patients' perceived barriers and facilitators to collaborating when communicating through the use of information and communication technologies?
2. What training or supports do health professionals and patients feel that they need to work collaboratively with patients when not co-located?

3. Methods

3.1. Design

This is an exploratory qualitative study using a case study design.[9] The case in this study is an interprofessional team of health professionals (pharmacist, dietician, smoking cessation counselor, kinesiologist, occupational therapist, and social worker) and patients involved in a 12 week telemedicine post-rehabilitation intervention (referred to hereafter as the mobile health or mHealth intervention).

3.2. Setting and sample

A community-based interprofessional mHealth support strategy is presently being piloted in a rural Canadian community as a 12 week post-rehabilitation supplement to a traditional 12 week face-to-face cardiopulmonary rehabilitation and smoking cessation program. The 12 week mHealth post-rehabilitation intervention takes place through the use of ICTs, such as iPads, telephone, and e-mail, whereby the patient is in their home and the interprofessional team is in the community. The post-rehabilitation intervention involves ongoing counseling and observation to maintain the healthy lifestyle changes promoted in the rehabilitation phase. The mHealth intervention allows for short interactions with an interprofessional team via secure mobile technologies to offer more accessible, collaborative, coordinated, and patient-centred care in the post-rehabilitation period.

3.3. Data collection

Invitations to participate in an interview were sent out in the fall of 2014 to the team of health professionals and in the winter of 2015 to patients involved in the program. Individual semi-structured interviews took place before implementation of the mHealth intervention, and were conducted between September of 2014 and May of 2015. The interview guide included questions on the health professionals' and patients' perceptions on collaborating with the interprofessional team and communicating through ICTs; the perceived barriers to collaboration in this setting; and perceived facilitators to collaboration along with supports or training they felt were necessary to ensure successful collaboration. Individual interviews were audio-recorded and transcribed verbatim. Demographic data of health professionals and patients was also collected and summarized.

3.4. Data analysis

The qualitative data were analyzed using inductive thematic analysis, guided by Braun and Clarke[1] thematic analysis, which involves six phases: 1) familiarizing researchers with the data; 2) generation of initial codes; 3) searching for themes; 4) reviewing themes; 5) defining and naming themes; and 6) final analysis and producing a report.

Transcripts were analyzed, reviewed, and preliminary codes and working definitions were generated. The first author then applied the generated codes to subsequent transcripts using colour-coding in a word processing program. Codes were then applied to subsequent transcripts. Coding uncertainties were discussed between investigators to arrive at a consensus, and extra codes were developed as required. Key themes were identified by reading the entire transcripts repeatedly and by reviewing and comparing the coded text.

4. Results

Of the 6 interprofessional healthcare team members available, 4 agreed to participate in this study and were interviewed before they began the mHealth phase. All were experienced working in interprofessional teams and overall felt prepared to be working in interprofessional teams when communicating primarily through ICTs. Additionally, 4 patients were also interviewed before they began the mHealth phase.

4.1. Health professionals' perceptions

Three themes perceived by health professionals to affect interprofessional collaboration when communicating through the use of ICTs were identified, and these included: 1) exchange of information between professionals, 2) exchange of information with patients, and 3) technical skills and user attributes. Barriers and facilitators within themes were further identified, which are summarized in Table 1.

4.1.1. Exchange of information between professionals

Effective interprofessional communication is of utmost importance for all teams, but is seen as especially critical when teams are not co-located. For this reason, participants often stated that professional information exchange via ICTs area could potentially have an impact on the effectiveness of interprofessional patient-centred care and collaboration.

4.1.1.1. Barriers. Health professionals perceived barriers to collaboration when interacting through ICTs included concerns around exchanging information with other health professionals through the ICTs, such as a time lag in e-mail or telephone message responses, incomplete responses, fewer questions asked, and patient record accessibility. Participants felt that communicating face-to-face allowed for faster interactions that are more easily accessible than through ICT interactions. Most participants felt that communicating primarily through e-mail or phone calls would result in a large time lag between questions being asked and answered. This is concerning as health professionals stated they require up-to-date patient information, frequent monitoring of data, and follow-up notes from colleagues in order to provide coordinated interprofessional care. As one health professional illustrated:

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