

# e-Health readiness assessment: Promoting ‘hope’ in the health-care institutions of Pakistan

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## Abstract

e-Health readiness refers to the preparedness of health-care institutions to implement programmes that involve use of Information and Communication Technology (ICT) in provision and management of health services. Level of readiness depends on a number of factors that lead to success or failure of e-health programmes, and thus increase or decrease hope of achieving the desired results. This report presents results from in-depth interviews conducted during a larger study and presents views of managers and health-care providers from various institutions in Pakistan about the usefulness of e-health readiness assessment tools. Participants emphasized the need for implementing e-health programmes in the country, while appreciating the need for readiness assessment tools, and the way these tools could avoid failures related to implementation of e-health programmes. Participants also linked e-health readiness with the process of change management, essential for sustainable implementation of e-health programmes in the health-care institutions of developing countries.

Use of Information and Communication Technology (ICT) in health care, referred to as “e-health”, has been defined by the European Union as “the use of modern ICTs to meet the needs of citizens, patients, health-care professionals, health-care providers, as well as policy-makers”<sup>1</sup>. e-Health has been used to address the long-standing issues of lack of access to and quality of health care among different populations.<sup>2</sup> But the literature suggests that simply the introduction of e-health technology is not enough to ensure successful implementation.<sup>3</sup>

“e-Health readiness” refers to “the degree to which users, health-care institutions, and the health-care system itself, are prepared to participate and succeed with e-health implementation”.<sup>4</sup> Assessment of e-health readiness can facilitate the process of change for individuals and organizations to adopt e-health programmes, and avoid disappointment. This article reports one part of a larger study designed to develop e-health readiness assessment tools for health-care institutions in developing countries. The actual tools, the conceptual framework, and the results of validation are reported in separate articles.<sup>5,6,7</sup> Such tools are expected to minimize the chances of failure, and maximize the “hope” among health-care professionals of achieving the desired goals.

Current literature describes how the dynamics of hope

profoundly connect with the essence of life, well-being and health, and suffering and illness.<sup>9,10</sup> These dynamics of hope depend on the balance between its sub-processes, which are hope, despair and hopelessness. Any change in these sub-processes depends on folding (closing down of) and unfolding (opening up of) possibilities to achieve the desired outcomes.

## Methods

In the larger study, the investigators used a mixed methods approach by employing sequential exploratory design<sup>5,11,12</sup> to develop and validate e-health readiness assessment tools.<sup>6,7</sup> As part of this study, in-depth interviews were conducted with health-care providers and managers of four health-care institutions in Pakistan. Two of these institutions were located in the province of Punjab, whereas one institution each was located in the capital city of Islamabad and the North West Frontier Province. In order to enhance the impact of this study, the institutions were chosen from both public and private sectors, and from primary and tertiary care levels. Only health-care institutions involved in some type of e-health activity were chosen for this study, and the interviews were also conducted with the health-care providers and managers who were involved in either planning or implementation of such programmes. The

objectives of in-depth interviews were to acquire the perspectives of health-care providers and managers, regarding the importance of e-health readiness assessment, and the usefulness of properly developed and validated tools for this purpose. The same interviews were also used to test the face and content validity of the tools.<sup>6</sup>

The e-health readiness assessment tools were first presented to both managers and health-care providers, and the interviews were conducted 2-7 days later. The interviews were recorded, with interviewees' consent, for transcription at a later time. The analysis was conducted in three steps, using NUD\*IST-6 (N6) 13 software:

- identification of pertinent themes;
- grouping of themes;
- pattern recognition among the themes. Ethics approval was obtained from the 'Conjoint Health Research Ethics Board' at the University of Calgary.

### Results

In total, eight interviews were conducted using semi-structured interview guides. Table 1 shows characteristics of the managers and health-care providers who participated in the in-depth interviews. At the beginning of the interviews, participants were asked about their opinions on the need for e-health in health-care institutions of Pakistan, and how e-health readiness assessment tools could facilitate the planning of e-health programmes. The views expressed are described below under these same headings, with quotes from participants in italics:

#### *Need for e-health in healthcare institutions*

Participants from both primary and tertiary health-care institutions described the need of ICT use for improving performance of their institutions and increasing their ability to provide better services to the population. Participants from tertiary care institutions emphasized the need for better networking between departments in order to share information and improve decision making around patient-care. Participants from primary healthcare centres described the lack of communication and support from specialists in major centres as a barrier to providing quality services to citizens and patients (collectively referred as clients) in the peripheral areas. They also described professional isolation of remote health-care providers as a barrier to providing efficient services.

*"(Before introduction of e-health in) this hospital... the biggest problem I faced was to find a place where I could properly diagnose the problems of my patients. I needed consultation on X-rays, ultrasounds, ECGs, but I did not have any direct support. I am the only doctor who works full-time in this hospital and I needed help and support from another institution from where I could consult for the problem cases."*

Participants mentioned a number of benefits of e-health, such as effective sharing of information within and between health-care institutions, increased efficiency of staff, and cost-saving for different departments. Some of the

participants also mentioned potential benefits of e-health that they hoped to achieve for their institutions and clients. These included communication between institutions to support health-care providers working in remote areas, saving travel-time for clients, facilitating referral procedures, and reducing cultural barriers to healthcare access.

Participants also spoke about barriers for the speedy replication of e-health programmes in Pakistan. These barriers included a lack of homogenous ICT growth in different healthcare institutions, a lack of willingness to share information between institutions, a lack of computer and internet literacy among clients, and a lack of physical access to ICT.

*"I don't think that most of our people...have access to the Internet and the literacy level also comes into play. They are neither literate nor do they have access to the computers."*

#### *Role of e-health readiness assessment tools in the planning of e-health*

Participants talked about the importance of assessing e-health readiness during the planning of e-health programmes. They also spoke about some of the characteristics of the e-health readiness assessment tools developed during this study, and the benefits they hoped these tools would provide in the implementation of e-health in developing countries, especially Pakistan.

*"I think this kind of exercise is very useful and I wish we had done (e-readiness assessment) in the beginning, like the needs-assessment. It might have helped us achieve (our targets) in much lesser time."*

Generally, the participants agreed to the importance of e-health readiness assessment tools in the planning of e-health programmes for health-care institutions. They also confirmed the importance of the key areas identified in the tools, in the local context.

*"In order to reduce the chances of failures at a later stage, where the people might think that we missed all those things during the planning phase or we opted for a wrong technological option, it is better to use the e-readiness tools."*

Participants suggested that the three most important benefits of the developed tools were:

- Covering all aspects of planning e-health programs;
- Bringing clarity to objectives and processes;
- Capturing perspectives of both healthcare providers and managers.

### Discussion

The interview results support the view that assessment of e-health readiness and the availability of e-health readiness assessment tools should help in successful planning and implementation of e-health programmes in the health-care institutions of Pakistan. Results also suggest that the tools should increase awareness, confidence, and trust among the

Characteristics	Managers (n=4)	Healthcare providers (n=4)	Total (n=8)
Gender (Male / Female)	3 / 1	4 / 0	7 / 1
Type of institution	2-Public hospitals 1-Public PHC centre 1-Private PHC centre	2-Public hospitals 1-Public PHC centre 1-Private PHC centre	4-Public hospitals 2-Public PHC centre 2-Private PHC centre
Average experience at the current institution	6.5 years	5.5 years	6 years
Average experience at the current job position	4 years	4 years	4 years
Involvement in planning of e-health	4	4	4
Involvement in implementing e-health	4	4	4
Involvement in e-health programs in last 1 year	4	4	4

Table 1: Characteristics of people who participated in the in-depth interviews

staff and planners regarding e-health applications. The tools should also help better address technology and learning issues among staff, support improved communication between health-care institutions, clients, and providers of care, and also reduce barriers related to gender and socio-economic conditions. These characteristics may lead to a new hope among the planners, staff and clients of health-care system in addressing some long-standing issues, such as lack of access and quality of care in the health-care institutions.

Overall, these results demonstrate a connection to the concepts embedded in the “dynamics of hope”.<sup>9,10</sup> Current literature describes how the dynamics of hope profoundly connect with the essence of life, well-being and health, and suffering and illness.<sup>9,10</sup> These dynamics of hope depend on the balance between its sub-processes, which are hope, despair, and hopelessness. Any change in these sub-processes depends on folding (closing down of) and unfolding (opening up of) possibilities to achieve the desired outcomes. Results from this study suggest that e-health readiness assessment may trigger a positive balance between

these sub-processes by improving the quality of planning of e-health programmes in health-care institutions of Pakistan. Comments of participants suggest that the use of e-health readiness assessment tools is seen as an important step in the process of change. This step enhances efficient planning of e-health programmes in the health-care institutions, and thus reduces the chances of failure. This suggested linkage might elucidate valuable insights into the development of e-health programmes in the health-care institutions of Pakistan and similar developing countries as hope transitions to reality.

The biggest strength of this study was to include health-care providers and managers from both public and private sectors, and from primary as well as tertiary care institutions. One limitation to the results of this study was that despite best efforts, it was not possible to include participants from any private hospital for the in-depth interviews. Further research efforts should target inclusion of private sector institutions. The tools were also tested for validity and reliability, and the results are presented in separate articles in this series. □

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