
Using Themes from Qualitative Interviews as Lens to Analyse Survey Data

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Abstract

Human-Computer Interaction (HCI) is a melting pot of different theories and methods. The combination of qualitative and quantitative methods in studies is still quite rare, but has become more and more common. In this paper we present our experiences from doing a combination of quantitative and qualitative analysis to shed some light on patient accessible electronic health records. We conducted a national survey to patients to learn about their experiences of accessing their electronic health records. The questionnaire was informed by previous interviews with physicians related to effects on their work environment, and we made use of identified themes from that study as a lens to analyse survey data.

Author Keywords

Qualitative Analysis; Survey; Quantitative Analysis; HCI

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]:
Miscellaneous.

Introduction

Human-Computer Interaction (HCI) is seen by some as a melting pot when it comes to methods, theories, and problems addressed. You find researchers with many different backgrounds doing HCI research, and there is a constant

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flow of papers addressing the question, what HCI is, such as [6]. However, when looking at the papers accepted to conferences and journals the majority are still very traditional when it comes to method and the most common methods used are different usability studies, interviews, and surveys. In recent years, the use of both qualitative and quantitative methods in studies has become more common. This can be motivated for instance by learning about the domain (e.g., by conducting interviews as a pre-study) in order to inform the main investigation (e.g., a survey). Another aim for doing mixed methods research relates to triangulation in different forms, for example to corroborate and confirm results or to include complementary or contradictory results [2].

In this workshop paper we share our experiences from using a combination of qualitative and quantitative analysis. We used themes from qualitative interviews as a lens to analyse survey data. The background of the study is the launch of Patient Accessible Electronic Health Records (PAEHR) in Region Uppsala (Sweden) in 2012, about which physicians and other health care professionals were very concerned. In the analysis of interviews five themes were identified that are related to the physicians' work environment and their concerns for patients (hence referred to as Study 1). In 2016, a survey was sent out to patients in all of Sweden who have access to the PAEHR system. In order to shed some more light on the concerns of the physicians we chose to do an analysis of the patient survey data using the same themes that were found in Study 1.

In the following we share our experiences related to the use of this method for analysis, and we discuss the advantages, challenges, and limitations of this approach.

The Qualitative and Quantitative Method Used

The two studies were not planned together, and this approach for analysis emerged from an interest in learning how patients responded to questions that are related to the areas of concern identified from the interviews with the physicians. The first study was planned and conducted shortly after the launch of the PAEHR system, whereas the second study was planned about 3 years later. Thus, the combination of methods was not planned in advance, but emerged a) in the process of designing the questionnaire for Study 2, and b) as an idea when analysing a subset of the survey data for the second paper (see overview in Figure 1).

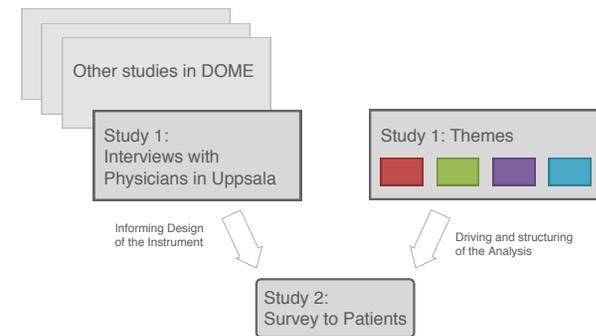


Figure 1: Overview of studies and methods

Study 1 took place in 2013, about six months after the launch of PAEHR. Semi-structured interviews were conducted with 12 physicians of different specialities in Region Uppsala to learn about their expectations and experiences when patients access their electronic health records (EHR). We conducted a thematic analysis [1] on these interviews and identified four main themes that were of concern for

the physicians. The analysis of the transcribed data started almost 2 years after the collection and the results were published in a journal in June 2016.

In the beginning of 2016, several researchers of the DOME¹ consortium worked together on a survey and designed a questionnaire for patients that was informed by several studies, including the above mentioned interview Study 1. By then, the PAEHR system was running for about 3.5 years and the aim was to learn about how patients make use of the system and what experiences they had. The questionnaire included six different areas with 24 questions, some of which included sub-questions or a set of items to respond to. The response options for the questions varied between multiple choice, Likert scale (5-point: strongly agree, agree, neutral, disagree, strongly disagree), and free text form. The identified concerns of physicians from Study 1 informed many areas of the survey instrument, however, other areas of interest are based on other studies from the DOME consortium (Figure 1).

The data collection for the survey took place from June to October 2016 through the PAEHR system, thus only people who logged into the system could answer the survey. In total, 2587 people responded to the survey. The survey was conducted on the national level, however, the interviews in Study 1 were conducted in Region Uppsala only. For the analysis described here, we specifically extracted the survey results of patients who had received care in Region Uppsala and focused only on questions related to areas that were identified in Study 1. The questions relevant for our research question were spread throughout the questionnaire. In our analysis, we structured the questions based on the themes from Study 1 and analysed the data using descrip-

tive statistics, which we complemented with insights gained from the free text forms.

Discussion

In this section we will discuss the advantages, the challenges that we faced, and also the limitations of using this approach.

Advantages of Using Themes as a Lens: We are very passionate about our research and consider the different views of patients and physicians on the very same system as extremely interesting. As members of the DOME consortium, we knew about these different view points from seeing the results of the various studies in isolation. What we wanted to do here was to explicitly investigate, how valid the strong concerns from the physicians are in relation to how the patients actually use the system. This is extremely relevant considering that the health care professionals felt so strongly about the system, that the project, the county council, and individual persons engaged in the project were notified to official authorities on several occasions [5]. We did not want to just report the outcome of a survey, but instead, we specifically wanted to shed light on those main concerns from the patients' point of view. Using the themes from Study 1 to analyse Study 2 helped us to not only write up the *study*, but to write up "*a story that emerges from the results of a study*" [3]. We wanted to tell a good story, which "*needs a good study at its core, but it uses that study as a launching point to contribute to a conversation in the world about a shared problem*" [4].

Challenges Faced: During the analysis and writing, we faced some challenges. One problem was that the used themes were interconnected and thus some questions were related to more than one theme. Writing up the results in a non-repetitive but coherent way thus proved to be challeng-

¹ DOME - Deployment of Online Medical Records and E-Health Services <https://projectdome.wordpress.com/>.

ing. Moreover, we did not want to assume that the reader had read the paper from Study 1, so we needed to tell that story in our paper, too.

More difficult, however, was the question of structuring the paper. The common way of writing up a survey would be to separate results from the discussion. In qualitative research, it is however possible to have a combined results and discussion section, where not only the results are presented but also discussed in relation to the wider literature [1]. We aimed to have a combined results and discussion section, which meant that we presented the results of the patient survey (Study 2), but structured the results section by the themes from Study 1, and discussed them in relation to what the physicians were concerned about. This proved to be highly challenging, because in order to help the reader see the connection, we had to discuss many aspects from the physicians' perspective, which located in the results section of a *patient* survey is rather unexpected. Writing a paper with a non-traditional analysis and thus having to depart from the traditional genre of research writing in that discipline, might make it more difficult for the reader to follow.

Limitations of this Approach: It is possible, that certain aspects that are very relevant were overlooked by using a predefined lens based on Study 1. Moreover, this non-traditional way of writing could make the results less accessible. There is a risk that the paper of Study 1 has to be read in order to fully understand the outcome and relevance of Study 2.

Questions for the Workshop: As our way of analysing the survey is neither mixed-methods in a traditional sense, nor triangulation: Do we need a new concept for this kind of methods where experiences from one study are used to analyse another? Using a concept liked "mixed methods"

could be possible, if the authors write explicitly how the concept has been understood and used. However, using such an established concept potentially triggers certain associations and expectations, that the study then might not live up to. The result of our analysis of the survey is currently under review at CHI, so it remains to be seen how the HCI community responds to this kind of paper.

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