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Using Participatory Action Research to Evaluate and Improve Change: Pilot Implementation of an Electronic Health Record in Rural Tanzania

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Abstract

The purpose of this study is to use a Participatory Action Research (PAR) approach to facilitate the implementation of a new electronic Health Information System (HIS) in rural Tanzania. Health care funding to Africa has increased the electronic tracking of patients. There is a gap, however in HIS implementation and evaluation research in Sub-Saharan Africa. The implementation process can be considered a mutual transformation between the organization and the technology, best served by iterative feedback from users. Hence, we will use a PAR approach to build local capacity to evaluate the impact of the new HIS within a local context. Stakeholders will be empowered to participate in the identification, collection, and analysis of issues related to the implementation and to build and evaluate shared plans for change. This will be an iterative process. This collaborative study will contribute to knowledge of the PAR approach in health informatics and will fill a gap in the knowledge of HIS implementation and evaluation research in Sub-Saharan Africa.

Keywords:

Sub-Saharan Africa, technology, healthcare, evaluation, action research

Introduction

Health Information Systems (HIS) have increasingly become part of healthcare management and delivery in low- and high-income countries. The implementation of HIS involves the set-up and adoption of electronic systems in varied care settings. The implementation process can be considered a mutual transformation of the organization and the technology in tandem, best served by utilization of users' perspectives being fed back into a constantly evolving system. Evaluation of the HIS is considered imperative to provide information that could enable ongoing adjustments to be made to the implementation process [1]. There is a gap, however, in HIS implementation and evaluation research in Sub-Saharan Africa [2].

Theoretical approach

In designing this study we recognized that summative assessment does not build capacity within the research environment. As most theoretical frameworks are summative and based on Western (or high-income) countries [2] they are usually not transferable to low-income countries. Likewise, adapting evaluation studies from high-income countries can be problematic. Integrating HIS into clinical environments has context specific conditions and limitations in low-income countries particularly in rural areas [3]. It is therefore important to take the local context and culture into consideration.

PAR is a way of "knowing" about a phenomena that is driven by stakeholders "living" the phenomena. Our approach will thus be both formative and summative in nature which will enable us to continuously refine and adapt as we explore emerging trends and use iterative data collection and analysis to guide future steps. PAR involves three basic actions: data collection ("look"), data analysis and theorization ("think"), and planning, implementation, and evaluation ("act"). These actions are guided by a facilitator [4]. PAR builds capacity by empowering local stakeholders to participate in the identification, collection, and analysis of issues directly related to the implementation process. This can help drive the sustainability of the study and identify cost-effective solutions to iterative quality improvement [5].

The research question is: "How can Participatory Action Research be used to facilitate the implementation of a new electronic Health Information System within a rural Tanzanian clinical environment?

Research methodology

Research Locus

Field research began in April 2007 and will occur over a 12 – 18 month period at Haydom Lutheran Hospital (HLH), Mbulu, Manyara, Tanzania. HLH is located approximately 300km southwest of Arusha in the Mbulu District, and borders 4 other districts which it also serves, a population of approximately 580,000. HLH has roughly 12,000 inpatients and 60,000 outpatients each year. The hospital currently works over capacity with an average of 370 inpatients/day assigned to 350 beds. HLH is a pilot site for the implementation of the Care2X HIS, an open-source software application introduced to collect and store administrative and clinical data.

Participatory action research

We will engage local stakeholders to work through the iterative Participatory Action Research approach to evaluate the implementation of the Care2X system, and build and implement shared plans for change. It is anticipated that one full cycle of the action research stages (look, think, act) will take approximately 8 weeks. There will be 6 cycles over the course of a year. Stakeholders are identified as those who are or will be using and/or making decisions about the new electronic Health Information System and include employees and administrators.

Data collection will consist of interviews, meetings, observation and document review, and will occur on site at HLH in Haydom and ELCT Health in Arusha. Data analysis is also an iterative process in which findings are summarized into reports for participant review and feedback. The research results will be widely disseminated in a manner that is accessible to local stakeholders, as well as national and international audiences.

Results

Progress to date

Grimm visited Haydom Lutheran Hospital and ELCT Health in January 2006, at which time the research project was identified. Ethical approval, and ethical and research clearance have been obtained from the University of Alberta, the National Institute of Medical Research Tanzania, and the Tanzania Commission for Science and Technology respectively. Grimm moved to Haydom, Tanzania in March 2007 in order to conduct the field research.

Discussion

Unlike hypothesis-driven orthodox research, or researcher-driven social science research, PAR is stakeholder-driven and drives social change. Local stakeholders will provide essential and ongoing input to the iterative evaluation and improvement of the Care2X HIS implementation. The use of a PAR approach will build capacity at HLH and the Evangelical Lutheran Church of Tanzania Health to identify issues related to the implementation of the Care2X system, and to build and evaluate shared plans for change. The PAR approach is scalable and can be used by our study partners to build capacity for HIS implementation initiatives at other sites. This, in turn, contributes to the sustainability of the initiative.

Conclusions

This collaborative study has the potential for the advancement of excellent research by filling a gap in the knowledge about HIS implementation and evaluation in Sub-Saharan Africa. This research contributes to knowledge of the PAR approach in health informatics and of HIS implementation in a low-income country. It also provides insights into the modification and use of the Care2X system for administrative and clinical management in Sub-Saharan Africa. Our research is exceptionally timely as the need for knowledge about evaluating the impact of HIS is increasing exponentially as electronic HIS implementation rates increase internationally. The case study within a resource-poor country will be used to inform HIS studies in resource-rich countries, specifically rural and remote health care environments.

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