

myCHOIS: Enabling Grid Technology for Supporting Health Education and Measuring its Impact

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ABSTRACT

Health education that encourages self-management of wellness program is a critical component of preventive care. The healthcare providers routinely offer health education to school age children and adults on a variety of topics ranging from obesity intervention to prevention of sexually transmitted diseases. However, the impact of such health education on an individual's health is difficult to measure due to lack of appropriate tools. With the application of mobile technology coupled with body sensors, it is now possible to measure such impact.

Earlier, we developed CHOIS, a CI-supported grid-based health-IT infrastructure [1] with a *vision* of offering it as a solution for supporting evidence-based clinical practice. This system, now termed myCHOIS (accessible at: <http://www.nucri.org/mychois>), has more than 600 fields in the web-based forms to collect data on maternal and child health. This is now deployed for our partner organizations, *Illinois Department of Public Health (IL)* and *Operation Samahan (CA)* to enable the measurement of the impact of providing health education on preventive care. A mobile application that has been developed based on the technology described earlier [2], has been deployed for collecting demographics and related data for educational and training events and saving the data in the myCHOIS database. Moreover, as these educational and training materials require relatively large digital storage space, we have developed C-Grid, a data grid, as a solution to store, manage and share large amounts of these instruction materials including videos and graphics [3]. A mobile application is under development for users to access these instruction materials using multiple computing devices including Smartphones and tablets.

HIPAA and FERPA compliant surveys will be conducted to evaluate knowledge level of the participants before and after providing the health education. The results will be assessed through both formative and summative methods to measure the impact of providing the instruction materials. To measure its impact on health outcome, we have developed mobile applications for collecting real-time streaming physiological data from various Bluetooth enabled medical devices. A PHR system (accessible at: <http://www.nucri.org/healthychoices>) has been developed to store these data for monitoring and generating reports that can be accessed by the healthcare providers through myCHOIS system with appropriate authentication (role-based accessibility). This infrastructure has now been deployed for our partner health organizations for a longitudinal study. The *intellectual merit* of this approach rests on the successful implementation of myCHOIS as a smart and connected health system and is now *explored*, the success of which has a *broader impact* on general population, particularly those who are prone to suffer from chronic diseases.

Keywords

Health education, mobile technology, IRODS, SRB, Cyberinfrastructure, Data grid, XSEDE, community health, Virtual Data, Portal

References

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