Data Analytics: Improvising Health and Economy

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Abstract-   Data Analysis in eHealth is an emerging area for only few years. There needs to identify the state of the art and pinpoint challenges and possible directions for researchers and applications developers. Based on this need, we have conducted a systematic review of data analysis as well as cloud computing in eHealth. According to a study, very few applications of data analyses give results accurately. However, the focus is on analyzing the basic health, i.e., body temperature, sleeping habits, heart rate and calories burnt, for which application will be integrated with the wearable devices and existing health based applications. Also, data would be channelized to the cloud storage once complete data analyses are performed. The main objective is to develop a citizen centered home-based healthcare application.

Keywords – Cloud Computing, Data analysis, Data integration, eHealth.

I. INTRODUCTION

This review examines existing researches on eHealth solutions. Analysis of data is a process of inspecting, cleaning, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making. It is a messy, vague, time consuming but creative and captivating process.

We have seen that qualitative research methodologies can generate information about health care including, but not limited only to patient preferences, medical decision making, and culturally determined values. It also generates information about health beliefs, consumer satisfaction, health-seeking behaviors and disparities. Such methodologies can help us give a clear understanding about the field adoption and integrating qualitative approaches when they are appropriate [1].

According to reviewed papers which offer practical strategies for the analysis of qualitative data. The data may be generated in different manners like in-depth interviewing or focusing groups. Also, field observations, primary or secondary qualitative data (e.g., meeting minutes, diaries, annual reports), or a combination of these data collection approaches [1].

The rest of the paper is organized as follows. Proposed work and serve are explained in section II. Concluding remarks are given in section III.
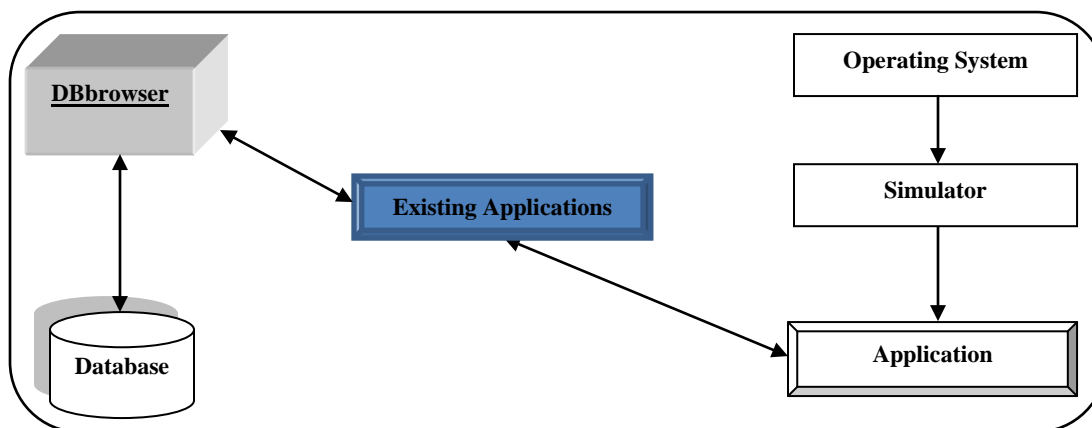
Figure 1. Block Diagram of eHealth Application

II. PROPOSED APPROACH

Smart Health has to be designed keeping in mind to improve the health and wellness of our citizens. Smart Health should be able to provide comprehensive medical coverage including medical screenings, providing health care assistance and monitor various vital parameters of patients like subtle changes in pulse, respiration, heart condition, temperature, analyses sleeping habits of an individual and preventive warning on early onset of diseases especially in small children, inside hospitals and at remote patient location including old people's home and ambulance.
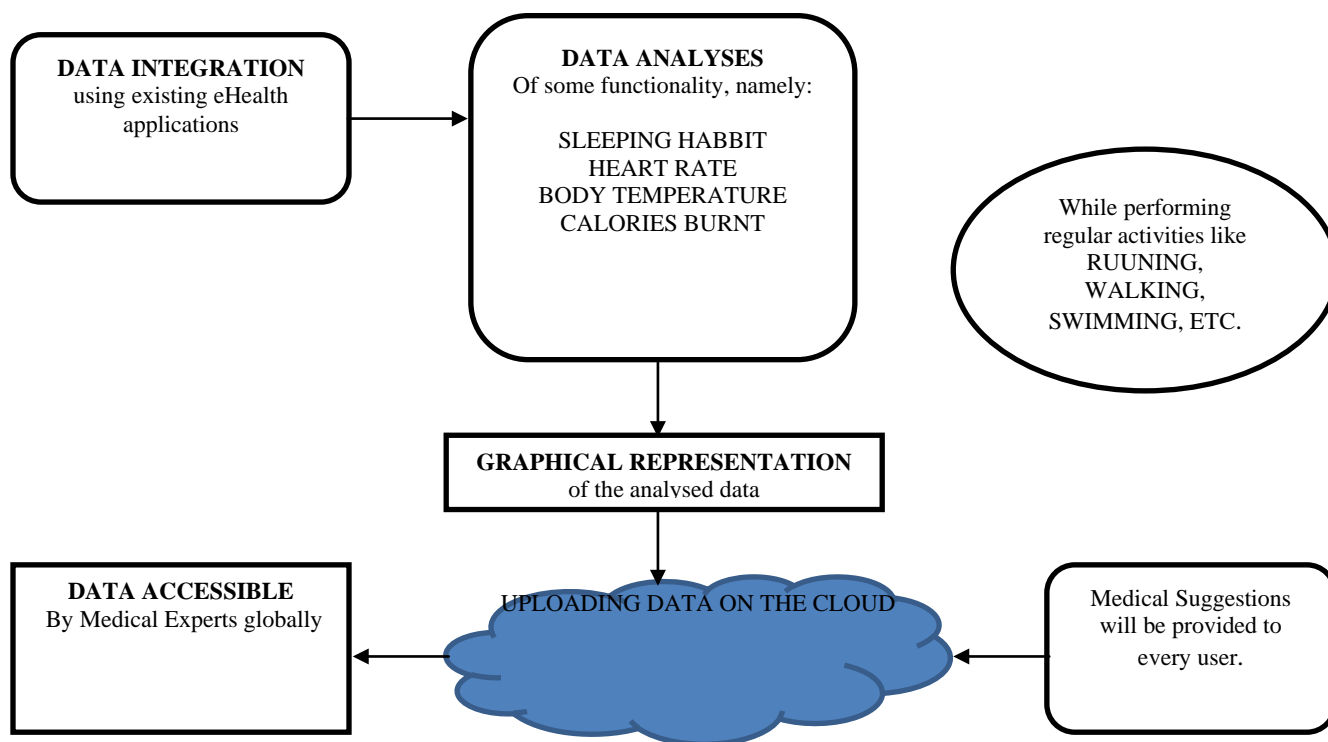

Figure 2. Flow diagram of proposed work

The application will be compatible with the existing e-health applications. Fig. 2 shows the complete flow of our proposed work. The application will mainly focus on data analysis of the data fetched from the existing applications through data integration. After the data analysis, the results will be displayed through various graphical representations; suggestions would be shown for the user. All this data can be then connected to the cloud, which will analyzed the collected patient data in real time and set intelligent emergency notifications sent to a physician or family. Charts and diagram visualization based on data collected from health monitoring devices will be more beneficial.

A.   Data analysis and Data Integration –

The intention is to analyse the collected data of body temperature, heart rate, calories burnt and sleeping habits, and finally represent it in the form of bar charts, graphs, pie charts, histograms and similar other representations. Apart from sleeping habits, the data for rest of the functionalities will be collected while the person is involved in regular activities such as walking, running, cycling, swimming, various sports or simply sitting. After the complete analyses, certain suggestions will be provided based on the analyses which can be further reviewed by medical experts.

Once the data have been reviewed and there is a general understanding of the scope and contexts of the key experiences under study, coding provides the analyst with a formal system to organize the data, uncovering and documenting additional links within and between concepts and experiences described in the data. Codes are tags or labels, which are assigned to whole documents or segments of documents (i.e., paragraphs, sentences, or words) to help catalogue key concepts while preserving the context in which these concepts occur [1].

For the medical experts to review the analyses we wish to store the analysed data on the cloud storage. The goal of eHealth is to improve the cooperation and coordination of healthcare, in order to improve the quality of care and reduce the cost of care at the same time. Because of the obvious scalability, flexibility and availability at low cost of cloud services, there is a rapid trend of adopting cloud computing among various enterprises or health related applications in the last few years.

B. Improvising Health and Economy –

Electronic health records (EHRs) are expected to play a key role in improving the quality of U.S. health care (IOM 2001, 2003; Blumenthal 2010; Buntin, Jain, and Blumenthal 2010). EHRs can improve quality of care delivery in numerous ways such as providing accurate and up-to-date patient information and medical knowledge, rapid retrieval of health information, ability to exchange health information to all authorized participants within or across organizations, automated clinical reminders, improved adherence to treatment guidelines, and accumulation of data for quality monitoring and improvement [2].

The multilevel analysis suggests that the association is not a product of the ecological fallacy and that a contextual effect of income inequality is apparent even among individuals whose personal incomes are above the poverty line. Social and economic policies that affect income distribution may have important consequences for population health [3].

Investment in health is not only a desirable, but also an essential priority for most societies. However, our health systems face tough and complex challenges, in part derived from new pressures, such as ageing populations, growing prevalence of chronic illnesses, and intensive use of expensive yet vital health technologies. There is no more space for paperwork in this digital era and by analyzing each individual's health using this digital platform with such vast technologies, socio-economic level and personal health would also be improvised globally.

III.CONCLUSION

A vast body of methodological work conducted over decades has produced impressive innovation and advancement in qualitative research techniques. This paper has sought to translate qualitative data analysis strategies and approaches from this methodological literature to enhance their accessibility and use for improving health services research [1].

The purpose of analyzing data is to obtain usable and useful information. The analysis, irrespective of whether the data is qualitative or quantitative, may:
• describe and summaries the data
• identify relationships between variables
• compare variables
• identify the difference between variables
• forecast outcome

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