Feasibility of Large Scale Implementation of Personalized Medicine in the Current Scenario

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ABSTRACT

Personalized Medicine (PM) is an emerging concept in the modern healthcare system and can play a vital role in modern healthcare management. If this concept can be adopted and implemented in a proper manner, the entire healthcare system will attain an elevated dimension. However, there exist many difficulties in adopting personalized healthcare system. An attempt has been made in this paper to present the data obtained through survey that has been conducted amongst a group of medical practitioners and a group of patients. The data collected have then been analysed by resorting to statistical techniques. The study shows that despite many personalized medicines have been discovered for use, it is difficult to adopt the personalized medicare system due to lack of adequate infrastructures, healthcare record system, communication among the medical doctors and genomic researchers, awareness and encouragement of common people, proper training of medical doctors, and confidentiality of the patients.

KEYWORDS

E-Health, Genomic Tests, Medicare Systems, Multiple Regression Analysis, Personalized Medicine, Quality

1. INTRODUCTION

The concept of ‘personalised medicine’ arises out of the realization of clinicians that all patients showing a particular symptom do not respond equally to a particular medicine. This has led to the search for a more effective type of medical treatment that should correspond to genetics of an individual patient. The medicine in that case will be more powerful and treatment will be more effective. The homeopathy mode of treatment propounded by the German physician Hahnemenn is closer to personalised medicare system, where the physician matches the most appropriate medicine to each patient. Most allopathic medicines are used to suppress symptom. But it is nearly impossible to find any allopathic medicine that does not harm body cells and tissues. These medicines also bring about harmful biochemical reactions in the body. The underlying philosophy of homeopathy is to create healing and to imbalances however the drawback of homeopathy is that some aspects of this medicine system is yet to be established scientifically. The philosophy with which conventional medicine works is to oppose the body, through the use of chemicals in order to force the body to respond. All these medicines give rise to side effects of varying degrees and induce interaction.

In view of the observations made above, it is strongly felt that personalised medicine is certainly a better choice, where it is possible to diagnose the actual health problem of a patient by considering his/her genetic background and constitution of the body and to prescribe the medicine more
accurately. Hence the medicine is expected to respond quickly and more effectively. It is in this way the personalised healthcare system, in particular, the personalised medicine system is a much better mode of treatment. Several topics associated with personalised medicine have been discovered systematically by Bolouri (2010). E-health can be of significant benefit to the personalised health care system, because former is supported by electronic process and communication as well as internet (Della Mea, PMC 1761900). Different aspects of e-health have been elaborately discussed by Eysenbach and Diepgen (2001); Ball and Lillis (2001). Of course e-health in personalised medicine has to be made very carefully, because there exist privacy issues concerning patient records, more particularly the Electronic Medical Record (EMR) (Hwang et al., 2012). Patients usually like to see that the data concerning their disease are kept confidential.

Internet based interventions and support for mental health condition use of information and communication technologies like use of landline and mobile phones as well as social media is often referred to as e-mental health (Cf. Bennett et al., 2010a). Treatment of mental illness of various types, like depression and anxiety, schizophrenia, dementia and A L Zheimer’s disease comes under the purview of e-mental health. As pointed out by Andrews and Titov (2010), low cost, easy accessibility and provision of maintaining anonymity to user are some of the advantages of e-mental health. It is however to be kept in mind that there exist some disadvantage too, concerning particularly to privacy and confidentiality. Authors have already modelled privacy of different systems (Misra et al., 2014). Bennett et al. (2010b) suggested that due care has to be taken to store the data and to protect the data in such a manner that unauthorised users do not have any access to the stored data.

As discussed earlier, although the implementation of personalized medicine/health care is highly desirable for improved health care management, it is to be kept in mind that some legal/ethical issues are inherently associated with personalised health care system. One of the major issues that need to be addressed is how to maintain secrecy and privacy of genetic profile of different individuals. We also need to decide who should have accessibility to the genetic data of a particular individual.

The discussion made above shows that the implementation of personalised medicine in the society on a large scale is seemingly difficult in the current scenario. But treatment of quite several diseases like breast cancer, colorectal cancer and blood clots etc., application of personalised medicine system has been found to be very beneficial. In the case of breast cancer, it has been possible to minimize the expenditure of treatment by taking resort to anti breast cancer therapies. While the conventional treatment procedure by trial-and-error method requires considerable time for the treatment, the time required in personalised medicare system is much less because in this system it is possible for the physician to ascertain which breast cancer therapy the disease aggravates, the clinician can promptly start the therapeutic procedure, which will respond very quickly for the particular patient.

In the present research, an attempt is made to assess the feasibility of large scale implementation of personalized medicine in the present scenario. The research methodology consists of the formulation and development of a hypothetical framework, based on intuition and information available in existing relevant scientific literatures, designing the survey instruments and collection of data through surveys. Reliability of the data has been assessed by using Cronbach’s alpha test. Results of one sample test correlation and multiple regression analysis are presented graphically. Analysis of survey results indicates that in the present scenario, it is difficult to adopt the personalized medicare system on a large scale, due to lack of adequate infrastructures, healthcare record system, communication among the medical doctors and genomic researchers, awareness and encouragement of common people, proper training of medical doctors, and confidentiality of the patients.

The rest of the paper is organized as follows:

In Section 2, a review of the background has been discussed. Motivation of this work has also been mentioned in this Section. Research methodology adopted in the present study has been presented in
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