



## EFFICACY OF THE CAMH SOLUTION FOR THE RURAL INDIA: AN APPROACH TOWARDS EVIDENCE BASED MEDICINE

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### Abstract

Health and medical informatics is the application of principles of computer and information science to the effective organization, analysis, management, and use of information in health care. With evolving health care transformation, the development, implementation, evaluation, and management of information technology solutions are critical, and core technologies and standards must be addressed. Due to medical and technical progress as well as the on-going demographic shift, the healthcare sector has become an increasingly important part of our economy. As a consequence, the healthcare services' quality and efficiency receive broader attention. However, interfering objectives such as the patient's well-being and economic targets pose major challenges to a clear definition of as well as measuring service quality and productivity. This paper discusses the method for fast clinical assistance in hard to reach places & its applicability.

**Keywords** -- EHealth, Health and medical informatics, Analysis, Management of Healthcare, IT & HIS, Knowledge Management

### 1. INTRODUCTION

The existing clinical culture demonstrates a variety of attitudes regarding the role that IT can and should play in patient care. Many practitioners are encouraged by the progress in clinical computing and believe that the technology can and will increase both the efficiency with which they practice and the quality of the care they deliver. There is no shortage of ideas on how to use technology in ways that seemingly will improve practice, provide more information to patients, and improve the quality of information and guidance that is available. But our challenge is how to leverage the evolving technology and communications infrastructure in a way that is cost-effective; that supports health promotion, clinical care, and biomedical research; and that recognizes and encourages the development of standards and of the cultural change that will be required [1].

The Internet has emerged as a valuable tool to distribute knowledge and to communicate with worldwide audiences. It has been found that overall 78% of Indian Internet users have searched for health related topics and approximately 117 million adults look for healthcare information online. Clearly, as the number of



people looking for health information online increases rapidly, the demand for healthcare portals, which typically provide such information, surges. Ensuring credible and timely content is crucial for any website and/or portal. As such, the need for the effective information management and **Knowledge Management (KM)** arises to ensure that the contents are timely, credible and accurate is a responsibility of healthcare portals.

Today's healthcare processes are performed by a variety of different service providers, who generally act independently and with divergent objectives. These processes range from rescue service to acute and inpatient treatment, rehabilitation, outpatient treatment, and nursing care.

As number of patient monitoring systems are available with great facilities but most of them are in the metro cities and big towns. It is mostly difficult for the people to get treatment from the expert physicians who are busy in the hospitals with their hectic schedules. Thus they mostly choose to the local unprofessional people who cannot advice a correct medicine every time, and that create more serious health issues with the patients. For providing medical help to rural population more particularly to people from hard to reach areas computer assisted medical health system is developed (CAMH) for fast clinical assistance in Gynecology and Obstetrics [2].

## 2. NEED FOR THE SYSTEM

Healthcare is the right of every individual but lack of quality infrastructure, dearth of qualified medical functionaries, and non-access to basic medicines and medical facilities thwarts its reach to 60% of population in India. A majority of 700 million people lives in rural areas where the condition of medical facilities is deplorable. Considering the picture of grim facts there is a dire need of new practices and procedures to ensure that quality and timely healthcare reaches the deprived corners of the Indian villages.

The advances in medical science on one side and Information and Communication Technology (ICT) on the other are offering wide opportunities for improved health care.

With a predominantly rural population that are distributed over distant geographical locations, apart from the densely populated urban areas, providing even the basic and minimally acceptable healthcare has been and continues to be the priority of Indian health administrators [3][4].

Further this is compounded by the following factors like:

- Low paying capacity of the rural population
- Lack of investment in health care in rural areas.
- Inadequate medical facilities in rural & inaccessible areas.
- Problem of retaining doctors in rural areas where they are required to serve & propagate widespread health awareness.
- Specialist doctors cannot be retained at rural areas as they will be professionally isolated and become obsolete and even monetary incentives also cannot prevent it.

This calls for innovative methods of utilization of science and technology for the benefit, of our society. So, we had developed CAMH for fast clinical assistance in Gynecology and Obstetrics and the system is further extended for 70 general diseases of medical sciences.

These problems have become more serious as the rate of change in medical knowledge has accelerated. There are new scientific findings every day; at the moment the medical knowledge is estimated to increase fourfold during a professional lifetime, which inevitably means that doctors cannot practice high quality medicine without constantly updating their knowledge and finding information to help them with particular patients.[7,9] The historical arrangement, in which doctors individually held the responsibility for ensuring an adequate supply of knowledge to guide their practice, is now failing to meet the knowledge needs of modern healthcare. Therefore diverse organizations and health authorities spread a vast amount of information to doctors. It is not



only the basic and specialized medical knowledge a general practitioner is expected to know, but also the content of various governmental guidelines, circulars, warnings of adverse effects of drugs, the latest scientific findings in medicine etc.

### 3. CHALLENGES AND RECOMMENDATIONS FOR IMPROVING HEALTH CARE IN RURAL AREAS USING ICT

#### THE PROBLEM FACED

Due to non-accessibility to public health care and low quality of health care services, a majority of people in India turn to the local private health sector as their first choice of care. If we look at the health landscape of India 92 percent of healthcare visits are to private providers of which 70 percent is urban population. However, private health care is expensive, often unregulated and variable in quality. Besides being unreliable for the illiterate, it is also unaffordable by low income rural folks .To control the spread of diseases and reduce the growing rates of mortality due to lack of adequate health facilities, special attention needs to be given to the health care in rural areas.

It is important to recognize that ICT-based solutions should be an integral part of a country's health policy rather than being limited to the ICT Ministry/Department. It is therefore recommended that the necessary capacity-building in the health sector be made at the policy, institutional and technical levels. Bearing in mind the trends and good practices described above, the following recommendations, addressed primarily to health-care policymakers, have been made with a view to integrating the ICT and health-care sectors.

#### WEB TECHNOLOGIES AND KNOWLEDGE MANAGEMENT

Study proves that web technology is playing important role for the integration of information and knowledge for many years. The recent development in web technologies and rapid use of methodologies and latest technological tools has allowed knowledge representation to integrate information. Different private and governmental organizations are using these technologies for their developments. Current web technologies such as Resource Description Framework (RDF) and Web Ontology Language (OWL) has change the concept of web and made it more intelligent than the old web systems. The current web developments in knowledge management are contributing significantly for the performance of KM like; knowledge integration which is involving human role for the integration of knowledge management while introducing the social networks to increase social activities.

#### PROPOSED SYSTEM

All the difficulties which are discussed above are considered and we develop a CAMH system which can reduce the cost of the system and implement in remote areas to help people who does not have medical facilities in their villages. Secondly, at local level generally on village side, the expert physicians can study the data at their clinic or their residence and suggest the proper diagnosis to the patients.

Thus both the doctor and the patient need not travel a long distance for this. The system includes 70 general symptoms diagnosis; whenever patient will come for medical help the expert will ask him some yes/no type questions; depending on the response to all of the questions we will get the patient report, the report will contain the predictive diagnosis and prescription. That report is forwarded to the city doctor for verification. The report which we will forward to the city doctor is in editable format so, if needed doctor will edit that report and forward to the expert. Screen shots show the patients data, symptomatic questionnaire, diagnosis



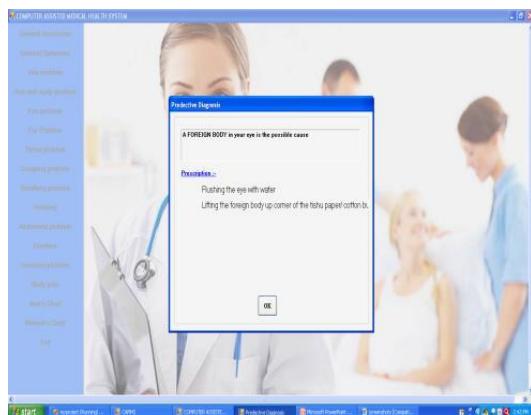
and report of the patient:



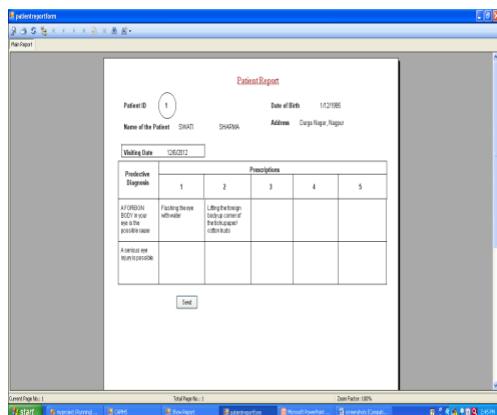
Screen Shot : Symptomatic Diagnosis



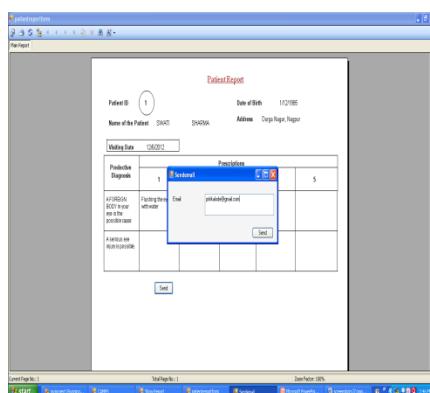
Screen Shot : Eye Problems Symptoms



Screen Shot: Eye Problem's Result



Screen Shot: Patient Report



Screen Shot: Patient Report Send via Mail to the City Doctor



#### 4. ADVANCE WORKING OF THE SYSTEM

A pre meditated computer programme in the discipline, a provision for collecting and recording some primary data on temperature, blood pressure, blood glucose, pulse rate etc of the patient has been made in future. These measurements are possible with some hardware attachments such as devices for recording temperature, blood pressure, blood glucose, pulse rate, etc.

Further, we are going to develop a CAMH web portal so that people can use that system. Also we are going to develop CAMH as the multilingual system so that more people can utilize that system.

#### 5. CONCLUSIONS

After this study we concluded that to acquire and amplify the organizational knowledge, healthcare organizations must develop such organizational culture where the individuals can interact with each other. Small organization and doctor clinics staff don't do much efforts to keep themselves updated or they didn't get such facility from their organizations to keep themselves updated with latest knowledge updates. The web based knowledge management systems are very useful for such organizations. In large organizations where clinical staff cannot make much interaction with other staff working on different floors such systems can help them to fulfill their knowledge requirements.

The CAMH model used in developing computer programme can be extremely useful in providing medical help to people of hard to reach area. The system can be handled by the semiskilled/paramedics so that the patients get immediate medical assistance. Doctor based in the city area will offer diagnosis and treatment to the patient. Such a system can be extended across all specialties of medical sciences.

Given the extreme shortage of physicians in rural areas, computer-assisted diagnostic software to process patients at rural clinics appears to provide an appropriate approach with long-term implications. However, little attention has been paid to the utilization of computer-assisted diagnostic systems for rural environments where fully qualified physicians are not present. Such a system has contributed to improved healthcare for more than seven years in rural India and holds promise for applications. Both the patient examination process and the use of a patient database in proactive preventive medicine initiatives need study and development. With emerging new technologies for Internet communications and Internet-capable medical instrumentation, new models for healthcare in rural locations in rural India are emerging that deserve examination and testing. It requires a strategic approach to the establishment of a tiered system of first-level health centers, regional clinics, and national hospitals/specialty centers that incorporate the use of technology, while making the best use of human and financial resources.

#### 6. ACKNOWLEDGMENT

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