

Analysis of Level of Use of ICT in Hospitals in Ahmednagar City and Explore the Potential Areas of Use of ICT

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Information Communication Technology (ICT) has revolutionized entire world and human society. Life of human being becomes smoother because of simplification of processes, easy access for a common man to government offices and information which is attributable to use of ICT. Present research work is an effort to find out use of ICT in hospitals and healthcare sector in general in Maharashtra and in Ahmednagar in particular. This research is based on primary survey of hospitals in the city to find out use of ICT in their organization, what problems they face in implementation of that and what are the potential areas where they feel there should be use of ICT. This research is combination of survey and case study method. Two cases will be discussed to throw light on the use of ICT. Suggestions will be given and a new model is suggested for use of ICT by taking different approach by looking at broader meaning of Health.

Key words: Access, Broader concept-of health, ICT, Revolutionized world, Simplification

Introduction

Information and communication Technology had widespread application in all walks of our life. E governance had already started giving fruits to our human society by streamlining and smoothening the work which they were required to carry out in their day to day life.

According to European Union ICT for health" e-Health describes the application of information and communication technology across whole range of functions that affect health sector from doctors to hospital managers, via nurses, data processing specialists, social security administrators and patients. India is ranked at 127 in a list of 179 nations as far as Human Development index is concerned. One of the criteria which is considered while giving this rank is Public health system. So, there is lot of scope for improvement of public health system along with contribution of private participation. Human society is very much successful in giving time and place utility to consumers in case of majority of consumer goods, FMCG, and selected services. Dispensaries and rural hospitals are also widely spread in the country. However, in many major diseases patients from rural area have to rush to

cities, metros and sometimes they have to go to foreign countries and that is also after making lot of expenditure, devoting time and energy, and passing through all traffic hazards etc. Similarly, hospital administration also face number of problems of long queue of patients, paper work, tedious administrative work, running around to give and take paper.

Hospital service is a part of service industry and which is different from goods industry. So, characteristics such as a intangibility, perishability, heterogeneity and inseparability are present here also. Hospital management is very delicate and difficult job because of this

Management has to achieve following objectives:

1. Satisfaction of customers i.e. patients and their relatives.
2. Quality of service
3. Economy in operations
4. Speed of the service.

There are so many health related issues and problems in India,

1. There is marked inequality in health facilities in urban and rural area
2. Death rate varies in different state e.g. in Kerala it is 6.4 per 1000 and in UP it is 32.8. In India it is 21.8 and in Maharashtra it is 6.3.
3. There are so many diseases which are proved to be fatal e.g death toll because of T.B. in India is 4.5 lakh people
4. Pesticides and insecticides are also affecting our health through vegetables and fruits. In last 30 years its use is increased 30 times more.
5. In India, girls get married at a very early age eg. 6.2% of girls from age group 10 to 14 , 43.4% of girls from 15 to 19 get married. In Uttar Pradesh 20 to 40% girls get married at the age of 15.
6. Malnutrition is another problem.

Similarly there are problems like impure water, lack of medical facilities in rural and hilly area, unhygienic conditions in locality, wrong and imbalanced diet, illiteracy, superstitions, increased population, occupational disease etc. So, this research paper is initiated because of following research questions arise in mind,

1. What is the level of quality of service in hospitals in Ahmednagar?
2. What is the level of use of ICT and e-governance in hospitals in Ahmednagar?
3. What problems hospitals face because of lack of use of technology?
4. What are the areas where there is a potential for use of ICT?

Objective

1. To study the level of use of ICT in hospitals in Ahmednagar city.
2. To critically assess the problems faced by hospitals in Ahmednagar city.
3. To explore the potential areas for use of ICT in hospitals in Ahmednagar city.

Review of Literature

McCullough (2008) had pointed out that hospitals have initially used ICT to support auxiliary functions, such as financial services, and subsequently to support important clinical activities, mainly to manage pharmacy, laboratory and radiology serviced lines. Jha al.(2008) examined health adoption, particularly adoption of EMR, in seven countries (USA, Canada, Australia, New Zealand and also three European countries-Uk, Germany, and Netherlands) have found that countries have adopted but hospitals are lagged behind in adoption. They have not found any reliable data on Electronic Health Records in acute care settings from any of seven countries.Salge(2012) has done empirical study based on data collected for 153 Public hospitals in UK. He had pointed out those innovative practices in hospitals including use of ICT depends on size of hospitals, the availability of resources and different strategic goals of hospitals. Garcia Goni (2005) examined the adoption of organizational and technological innovations in a public hospital in Spain. Yang and Hsiao(2009) investigated mechanisms for developing innovative information-enabled services in Taiwanese healthcare service. Kleis et al.(2012) argue that the use of ICT supports and contributes to firms' innovation activities through three main channels viz., improvement of management of data and knowledge used in innovation process, it enable more efficient cooperation in innovation with external partners, it contributes directly to the innovation production in several ways. Brynjolfsson and Saunders(2010) had pointed out that ICT can directly drive and enable new products and services, and increased products' and services variety and personalization ,which would not be operationally and economically feasible without ICT and also significant quality improvements, improved timeliness, and other quality characteristics highly valued in modern economy.

Research Hypothesis

1. There is high level of use of ICT in hospitals in Ahmednagar city.
2. There are operational problems occurred in hospitals because of lack of use of ICT.
3. There is further scope of use of ICT in hospitals in Ahmednagar city

Limitations and scope

1. This research is based on primary data collected in very selected hospitals in Ahmednagar city.
2. This research is based on a survey conducted for a limited period.
3. This research is based on primary and secondary data.

Research Methodology

Data sources: Primary data and secondary data

Primary data: observation and interview.

Secondary data: books, and websites.

Case study of Public health department and Warna project

Sample size: Ten hospitals in Ahmednagar city

Sampling method: quota sampling (Non-Probability sampling)

Analysis: qualitative analysis method

Data Analysis and Interpretation

All these hospitals are using ICT enabled services but to very limited extent.

Areas of use of ICT

Hospitals are linked to "M.D India" site for the purpose of implementation of "Rajiv Gandhi Jeevandayi Arogya Yojna". Here, names of beneficiaries are informed on line to hospitals and then hospitals give treatment and send report of treatment and hospital get payment through government and not through patient. There are very selected diseases and treatments for which beneficiaries are covered. It is of utmost important tool because of which there is fast communication, smooth operation, clarity for hospitals to deal with problems of patients and also of criteria regarding coverage under the scheme. ICT is also used in hospitals in the area of Information regarding Legal Termination of Pregnancy cases. Hospitals are linked to Local Government to inform about these cases. So, that they get information and also there is a control on use of this for illegal cases. Of course , ICT is used in filing of all returns viz. returns which are required to be filed under Bio-Medical Waste handling regulations, and other returns like tax returns. On line bills and other forms are also filled in.

All these hospitals have problems in following areas because of lack of use of ICT

Birth and Death record: Manual records and paper work is done in this area. Now, after every birth and death hospital administration has to prepare certificate, issue one copy to relatives, retain one copy and send manually one copy to local government. When there is a

mistake in the name of the baby or name of diseased person then it becomes now very difficult exercise to search for record, and correct the name.

Medico-Legal cases :(MLC cases) whenever such cases are reported and patients are admitted in hospitals they are to be reported to the police station in whose jurisdiction the hospital is situated. Similarly, if there is death of such patient then also it is to be reported to the police station within twenty four hours. Now, for want of use of ICT it is done manually, and which is tedious job.

Analysis of E-Health Practice as Initiated in Government Hospitals: By Public Health Department

Indian economy is the fastest growing economy and is looking at by world with lot of expectations. However, our public health system was not up to the mark and it was one of the reason why our HRD index was on the lower side in ranking in the world.

Indian economy is having following limitations:

1. Underdevelopment
2. Political instability
3. Weak institutions
4. Inadequately developed social sectors
5. Scarcity of resources
6. Social inequalities

Government is taking lot of efforts by initiating programs for health viz. National Rural Health Mission, Rajiv Gandhi Jeevandayi Yojana, However, many needy people are not having access to such schemes and they are out of the scope of its benefits. So, ICT has a great potential in this and government has taken very right step to go in for ICT driven e-health for needy people.

Public Health Department has focused on five pillars,

1. Human Resource Management
2. Hospitals and Medicines
3. Communication
4. Administration
5. Citizen Centric

Public Health department has successfully conceptualized, designed and implemented 19 live projects and 7 projects are in pipeline.

Maharashtra health Sector- Role of Public Health Department

The State of Maharashtra has a well-developed health infrastructure with three-tier system to provide comprehensive health service to the people especially in rural areas. The State is implementing various national and state level programmes and schemes to bring out a holistic development in the State.

Table 1: The State Current Infrastructure

Sr.No.	Health Institution	Total
1	Sub Centre	10,580
2	Mobile Medical Units	40
3.	Primary Health Centres	1811
4.	Rural Hospitalls	387
5.	Sub-district hospitals (100 beds)	25
6.	Sub-district hospitals (50 beds)	56
7.	General Hospitals	4
8.	Other hospitals	1
9.	District hospitals	23
10.	Super Speciality hospitals	2
11.	Mental Health institutes	4
12.	Women hospitals	11
13.	TB Hospitals	4
14.	Health & Family Welfare Training Institutions	7

Source: Public Health Department Website

Public Health department is the prime organization in Maharashtra providing a strategic leadership for public health. The organization focuses on providing an array of citizen centric services across the state with its various policies, legislation and administration. The department has formulated and executed various health programmes in line with National Health Policy enabling a better administration, better health, better care, and better value for all. The department along with implementing various programmes and schemes has focused on strengthening its internal setup and enhancing its Government capabilities by adopting various e-governance practices. Vision of the department was to develop 'A more efficient department that delivers implicit information collaborates effectively and automates and channelizes the department process flows by leveraging the power of ICT'

Problems of the Public Health Department before Implementation of ICT

1. Traditional Government Health sector of Maharashtra was unorganized , fragmented and slightly unstructured.
2. Difficulty in tracking expenditure on schemes and programmes
3. Absence of information related to physical assets.
4. Infrastructure gaps, capacity building, training of health professionals who are ICT-illiterate and the lack of primary healthcare staff.
5. No concrete information about deployment of medical staff.
6. Data collection happens at various levels and frequency, leading to non-consolidated real-time information and duplicity.
7. Demand and distribution of drugs not managed effectively.
8. Patient care and medical records not effectively managed.
9. Improper and inadequate information for general citizens.

To combat these issues, the department has developed an ICT roadmap to collaborate all the department functionalities under the ambit of ICT.

The objective of the ICT implementation was

1. Increase internal efficiency of the department
2. Bringing more transparency in the department workflow.
3. Delivering cost effective, efficient and secure information and services to the citizens.
4. Empowering general citizens
5. Moving at par with global standards

Following are the areas where department is functioning by using ICT

1. Mother and Child Tracking system
2. PCPNDT application
3. Rajiv Gandhi Jeevandayee Yojna
4. Drug Inventory Management application
5. E-file
6. Health advisory call centre
7. Pull SMS(4 program)-Hospital, Primary Health centres, School health, Mobile Medical Units (MMUs)
8. Availability of doctors
9. ASHA search
10. Aamchi Mulgi
11. SADM-Disability Software

Landmark in the history of Public Health department

1. Drug Inventory Management application which automated the entire life cycle of drug purchase and disbursement process.
2. The PCPNDT application which monitors and records all sonography centres and details of the tests carried out on the patients. It has brought more compliance to PCPNDT Act.
3. MCTS application has been implemented in the state which aimed at monitoring and minimizes Infant Mortality Rate in the state.
4. Aamchi Mulgi application has been developed with an objective to monitor female infanticide by monitoring the illegal sex determination process in the state
5. Health Advisory Call centre project wherein an expert and an easy access to information and guidance regarding health service offerings are provided on toll free number 104, the project is for intra departmental staffs.
6. Rajiv Gandhi Jeevandayee Yojna project is another revolutionary step in healthcare arena. The project runs on a web based application wherein the entire process of beneficiary enrolment, patient registration, preauthorization, procedure updates, discharge summary update, claims settlement and follow up are covered.
7. SADM Disability software provide computerized disability certificates

Future projects

1. E file application
2. E-Ausadhi
3. Hospital Management Information System(HMIS)
4. Revamping of PHD Website
5. Court Case Management application

Conclusion: Role of Government is changing from Regulator to service provider. So government has to take care that these services should be make available to the common man, and service should be the orientation of the concerned staff

Case: Success Story of Warna by Using ICT for Rural Development:

ICT was brought to this area by the Warna ":Wired Village" project, launched in 1998. Warna is an example of a rural community , which has been able to empower its people not only with stable sources of employment, but also through participation and access to health, education, and financial services. Local Kiosks' ownership has revolutionized the concept of service.

Key lessons from Warna project,

1. ICT implementation is based on assessment of information needs of the community
2. Local ownership and participation is important.
3. Women and poor people must get access to ICT.
4. There must be empowerment of grass root operators.

Suggestions

Health is defined by World Health Organization as " It is not only free from any disease but it is complete well being of the person i.e. physical, social, moral, intellectual" Now, the question is, Is our society healthy today in modern era where health of technology is improved and the body, mind and soul which has developed this technology -in which state it is? And what about their complete health as defined by WHO. So, there must be integrated approach, inter-departmental and interdisciplinary approach should be taken to improve health.

Bottom up approach

In this approach village or ward is to be taken as a unit. Gramsevak or Sarpanch at village level or ASHA worker at village level and in city ward member should have data base about health related problems in that area, including water problems, unhygienic conditions in the area, education and moral level etc. This data is to be transferred to concerned section of joint public private preventive health care centre where area wise information is compiled and problems of a particular area and transferred to concerned department without delay on line to concerned department and action report is to be sent back to concerned area. Hospitals should get access to report MLC cases on line so that valuable time will be saved. There must be well integrated ICT network of government and private hospitals, different areas' representatives, and various concerned departments of government in order to give a unified , quality and timely service to citizens. So, all government departments, agencies, private healthcare institutes to work together. "health in its right spirit" = prevention of diseases+pure water, food, air, + right standard of living+ stop migration from rural areas to urban+ concept of Gross National Happiness+ Employment generation+ Minimum personal transport means and emphasis on public transport+ Right housing conditions+Reforestation+ control on global warming+ prevention of crimes+ emphasis on implementation of Indian values and also best values from different parts of the world+So , it can very well be said that use of ICT should not be taken in isolation for a particular sector now. It is a time to take integrated approach and all departments of government should interact, communicate fast and take decision in time. Quality of human life should be raised alongwith

raising standard of living of society and that should be the mission of implementation of ICT. All policy makers and decision makers have to use ICT in well coordinated and integrated manner.

Conclusion

Information and Communication Technologies (ICT) are being increasingly used by the governments to deliver its services at the locations convenient to the citizens. The rural ICT applications attempt to offer the services of central agencies to the citizens at their village door steps. It aims at providing improved and affordable connectivity and processing solutions, improve the reach, enhance the base, minimize the processing cost, increase transparency and reduce cycle time. ICT in health care has really achieved it but there are miles to go as ever increasing problems in human society, stress, unhygienic conditions, wrong diet, bad habits, city life, migration from rural to urban, pollution etc. So, there is a lot of scope for use of ICT in order to achieve " Health for all - not in traditional terms and not be taking fragmented approach but by taking integrated approach to give complete health to all as defined by WHO" Technology is of utility to human society when it comes out of control of few and enter each and every home, and become friend of each and every person so everyone feel secure, comfortable and access to ICT and getting information, service etc should become way of life of each one.

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