

HEALTH INFORMATICS: AN OFFBEAT YET ATTRACTIVE CAREER ALTERNATIVE FOR AYUSH GRADUATES IN INDIA

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Abstract

Health informatics penetration in to health care sector is in a nascent stage in India, so also, the health informatics career alternative. There are some 10 institutes providing formal training in health informatics in India out of which 8 are found to be approved by a statutory body such as AICTE or UGC. Studies reveal that India is going to require a very large number of trained manpower in the field of health informatics. In this context a review was done to find out career opportunities in the field of health informatics and allied areas with a special focus on the suitability of AYUSH graduates. The study was conducted by using internet based search engines and indexing web portals such as Google and Google Scholar. A deliberate effort was made to exclude the institutes which do not have statutory approval for their courses. It also excluded short term programmes of lesser duration such as a week or less. Earlier AYUSH Graduates were confined to their own field but with the growing pace of time these graduates are now exploring other career avenues for better prospective in life. Health informatics is such an offbeat yet attractive career alternative for them. Although health informatics as a career option is open to all relevant graduates but AYUSH graduates can enjoy a special privilege owing to their insight about biomedicine and other allied health issues. The present article tries to analyze the present status and trend of health informatics education, scopes and opportunities in India and will act as a guide for AYUSH graduates in choosing a career option in the field of health informatics.

Key words: AYUSH graduate; Career; Health Informatics; India.

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INTRODUCTION

Health informatics is a judicious integration of Information Technology and Health, and other allied disciplines of biomedicine. The application of tools and techniques of health informatics in India is still in a nascent stage. Many hospitals and health care organizations are still dependant on manual processing showing a poor IT (Information Technology) penetration. The situation is just opposite in developed lands such as US and UK, where every hospital is an IT enabled hospital. Again if we look at the health insurance sector and TPA (Third Party Administrator), these require lot of information for patient's claim processing which on the other hand require lot of data storage and retrieval. The accreditation of hospitals and Laboratories by accreditation agencies such as NABH (National Accreditation Board of Hospitals), NABL (National Accreditation Board of Laboratories), and JCI (Joint Commission International) requires IT automation. Application of IT in public health is equally important so also in the field of clinical medicine and biomedical research. Concepts like MHIS (Hospital/Health Information System), HIPAA (Health Insurance Portability and Accountability Act), PACS (Picture Archival and Communication System), CDSS (Clinical Decision Support System), and HL7 (Health Level 7) are slowly getting access in to Indian health care sector. According to an analysis any hospital having 100 beds is a potential IT buyer and about 1000 of such hospitals are there in India.^[1] Development of health informatics in India can bring three different benefits, firstly, as an instrument in continuing education they enable health workers to be informed and trained in advanced medical and health science, second, they deliver the health services to the poor at rural and remote location, third, they can increase the transparency and efficiency of governance, which should, in turn, improve the availability and delivery of publicly provided health services.^[2] From the above

statement it is very much clear that health informatics is very much instrumental in delivering effective health care services. This can only be achieved by trained and skilled man power in the respective field of health informatics. Although health informatics as a career option is open to all relevant graduates but AYUSH graduates can enjoy a special privilege owing to their insight about biomedicine and other allied health issues. AYUSH is an acronym for Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy and are the six Indian systems of medicine prevalent and practiced in India and some of the neighboring Asian countries with very few exceptions in some of the developed countries. In fact India is the only country to legalize six indigenous systems of medicine parallel to modern/allopathic system of medicine. In the early days the AYUSH graduates were limited to their own field with few exceptions in other domains of work. These days with growing pace of time these graduates are exploring other career avenues for better prospective in life. Health informatics is such an offbeat yet attractive career alternative for them.

A brief history

It is need less to mention that computer has made its presence in almost every walk of human life. Computers have changed human approach in every field and health care sector is also a prey to it. Health Informatics is as much a result of evolution as planned philosophy, having its roots in the histories of information technology and medicine.^[3] Health informatics is a discipline at the intersection of information science, computer science and health care. It deals with the resources, devices, and methods required optimizing the acquisition, storage, retrieval and use of information in health and biomedicine. Health informatics tools include computers, clinical guidelines, formal medical terminologies, and information and communication system. It is applied to the areas of nursing, clinical care, dentistry,

pharmacy, public health, occupational therapy and biomedical research.^[4] Health informatics as a discipline has a long and interesting history that would be impossible without Charles Babbage's ideas about the first analytical computer system way back in the nineteenth century. Even though there was talk about using computers in medicine as technology advanced in the early twentieth century, it was not until the 1950s that informatics really took off in the United States. Robert Ledley, who would later invent the first full body CT (Computerized Tomography) scanner, is often credited as one of the founding fathers of U.S. informatics. His use of computers in dental projects with the National Bureau of Standards set the stage for later advancements in applying information technology to medicine.^[5] Health informatics education has evolved since the 1960s with a strong research foundation primarily in medical schools across the USA and Europe. By 1989 health informatics education was provided in some form by at least 20 countries representing five continents. This continues to progress, in Europe with the help of a number of special projects, via the integration of informatics into pre registration of health professional courses, undergraduate and post graduate course work and research degree programs.^[6]

Use of IT in health care sector roots back to 1957 in India, the neurosurgery department of King Edward Memorial Hospital in Mumbai used to keep electronic patient records during that period.^[7] But it is only after nineties the use of informatics felt clearly when a project called Indian health care project begun in 1994 in collaboration with Govt. of India, Apple computers and CMC in the state of Rajasthan. The project combined an IT device- the Personal Digital Assistance (PDA) - and support tools intended to reduce the time spent by an ANM (Auxiliary Nurse Midwife) in paper work, increase the accuracy of data collected and supplied by ANMs, ensure the availability of village level health care data in

an electronic form, and provide ANMs with information that would help them to improve the effectiveness of the service.^{[2][8]} Prior to that in 1993, a professional society called Indian Association of Medical Informatics (IAMI) was formed with an intention to promote and further the application of informatics in to the field of health, bioscience, and medicine in India.^[9] C-DAC (Center for development of Advanced Computing) an autonomous body first developed a total HIS (Health Information System) package in collaboration with Sanjay Gandhi Post Graduate Institute of Medical Sciences in 1997. Apollo is a pioneer in the field of Telemedicine in India and is credited with being the first to set up a Rural Telemedicine Centre in the village of Aragonda in the state of Andhra Pradesh. Even though the first Telemedicine site was launched in 1999, Apollo's initiatives with Telemedicine (including Tele cardiology Clinic) started well before that. Similarly a Tele Medicine center was started in 1999 at Sanjay Gandhi Post Graduate Institute Medical Sciences with connection to three Govt. medical colleges of Odisha.^[1] Now-a-days the IT penetration is increasing day by day with more and more corporate hospitals setting up centers in II tier cities in India requiring IT automation in them. States governments are also trying to interconnect various hospitals in their state; Maharashtra Govt. has come forward to interconnect hospitals in the state.^[10] Organizations like ISRO, IIT, Kharagpur etc; corporate firms like WIPRO, TCS, and SISL etc. are instrumental in developing IT solutions in health care in India.

On the contrary the education in Health Informatics domain is a story of yesterday, so also the career alternative. Presently a very few number of institutes provide formal education in health informatics. The International Institute of Health Management Research started a Diploma programme in Health Care IT (Non AICTE) with its

inception at New Delhi but latter dropped the programme. During the same time SRM School of Public Health, Chennai came up with an MPH programme with one of its specialization as Health Care IT.

OBJECTIVE

To assess the current status and trend of health informatics education, scopes and opportunities in India with a special focus on the suitability of AYUSH graduates for such an offbeat career alternative.

METHODOLOGY

Information regarding existing long term and short term teaching and training programmes, career options, scopes and opportunities in health informatics and related fields like Medical Informatics, Health care-IT, Public Health Informatics, Telemedicine in India were obtained by using systematic search strategies. Two internet based web portals were used for this purpose, the internet-based Google search engine was used to obtain an exhaustive list of institutions offering courses in Health Informatics and allied fields where as Google Scholar was used to obtain various scholarly article in the field health informatics career options, scopes and opportunities in India. Various key words such as Health informatics, Medical Informatics, Health care-IT, Public Health Informatics, Telemedicine, career, scopes, opportunities and AYUSH were used for the purpose of search. The search was limited to the courses, scopes and opportunities that are available in India only.

DISCUSSION

Growth Potential of Indian Health Informatics Sector

In Asian region India and China holds maximum potential of health care IT development owing to their large pool of hospitals, estimating more than 70,000. The

following few lines describes about the growth potential of Indian Health Informatics sector.

- At present IT penetration in to the Indian health care industry is in its budding stage posing greater opportunity to Health Informatics professionals.
- Government of India is encouraging telemedicine setups at different level through Public Private Partnership (PPP) mode.
- State Governments are also trying to interconnect their hospitals at different level (e.g. Maharashtra), by this patients visiting a hospital will be given a unique identification number and s/he will have access to his/her medical history at any of the interconnected hospitals.^[10]
- Health insurance sector is growing in India including third party payments (TPA), hence hospitals need to be empanelled with insurance companies requiring IT automation in the hospitals.
- The corporate giants in health care are making their presence in II tier cities will definitely be requiring IT enabled services for better operability.
- Hospitals trying for JCI (Joint Commission International) accreditation will require IT automation. (by 2011, 17 hospitals are JCI accredited in India)

Educational Opportunities in Health Informatics in India

This calls for a large pool of trained and skilled manpower in the domain of health informatics. At present more than 8 institutes provide education in the domain of health informatics with statutory approval. Previously some of the institutes had programmes on health informatics but dropped them later on. One such example is Amritha School of Medicine, Kochi, Kerala. This institute was offering a M.Sc. and PG Diploma in Medical Informatics but the present search from the institute website does not show these

Table 1: Matrix of existing courses in Health Informatics and its related field in India

Sl. No	Name of the Institute/University	Courses Available	Level of the Programme	Duration/Mode of Study
1	International Institute of Health Management Research,, Delhi ^[13]	PGDHM (Health Care IT) and PGDM (Health Informatics)	Post Graduate	2 years/ Full Time
2	Indian Institute of Public Health, Hyderabad in Collaboration with Academy of Scientific and Innovative Research ^[14]	Integrated M.Sc., PhD in Health Informatics	Post Graduate and Doctoral	2+3 years/Full time
3	SRM School of Public Health, Chennai, TN. ^[15]	MPH (Health Care IT)	Post Graduate	2 years/ Full Time
4	Manipal University, Karnataka ^[16]	M.Sc. HHIA (Hospital and Health Information Administration)	Post Graduate	2 years/ Full Time
5	Asian Institute of Public Health, Bhubaneswar, Odisha ^[17]	PG Diploma in Public Health Informatics	Diploma	1 Year/ On Line
6	C-DAC, Pune ^[11]	PG Diploma in Health Informatics	Diploma	24 Weeks/Full Time
7	School of Telemedicine and Biomedical Informatics, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lukhnow, UP ^[12]	Diploma in Hospital Information System, Diploma in Public Health Informatics, Diploma in Nursing Informatics, Diploma in Telemedicine, Diploma in Digital Medical Library	Diploma	Each 1 Year/Full Time
8	Indira Gandhi National Open University ^[18]	PG Certificate in Medical Informatics	Certificate	6 Months/On Line

two programmes. Same is the case with IIMR, Delhi but later on they came up with a formal programme with statutory approval from AICTE. All the programmes listed above are of full time in nature ranging from 2 years to six months in duration with a few delivered through correspondence/online mode. The study excluded some programmes which do not have statutory approval such as Medvarsity Online Limited, Global Institute of Medical Sciences; both of them provide Diploma in Medical Informatics but are not approved by statutory agency. Short term courses such as certificate courses have also been excluded. Institutes named e-HCF; JBTDR, MGIMS, Wardha; IIMR, Delhi provide certificate courses in health informatics.^[11] School of Telemedicine and Biomedical Science, SGPGIMS provides five diploma programmes in Hospital Management Information System, Public Health Informatics, Nursing Informatics, Telemedicine and Digital Medical Library.^[12]

Decades back health informatics was not a formal discipline and was mainly dominated by hard core IT professionals who were deficient in health care knowledge or health personnel without proper knowledge of IT. The emergence of formal education in this discipline will definitely bridge the gap. These trained personnel will be of great help in fulfilling the long shortage of health informatics manpower in India. These graduates will understand and express themselves in the health care IT areas which make them effective and efficient workers; practically apply their skills in live working conditions; identify deficient areas in health care setting and develop corrective action; develop leadership quality with positive and assertive attitude to lead a team of health informatics professionals in health care settings; develop and implement health care programmes in collaboration with various stake holders. Most importantly AYUSH graduates can enjoy a special privilege owing

to their knowledge in the domain of biomedicine and allied health care. Another important advantage for these graduates is that ISM (Indian System of Medicine) informatics is in its budding stage creating potential opportunities for AYUSH graduates. This is so because developing ISM informatics will require technical skills both in the field of Indian System of Medicine and IT as well.

Developments in ISM Informatics

Like health informatics, ISM (Indian System of Medicine) informatics is the application of the tools and techniques of Information and Communication Technology to the field of Indian System of Medicine. This could be instrumental in a wide array of applications such as clinical medicine, biomedical research and information storage and retrieval. Initiatives from various segments have contributed to the developments in Indian System of Medicine informatics. The initiatives include the efforts by Institute of Ayurveda and Integrative Medicine which started a Center for ISM informatics and Theoretical Foundation in 1995. This center has developed some digital versions in the form of CDs related to the knowledge of Indian System of Medicine. Other initiatives include CDAC- Pune that developed various software which are collectively called as "AyuSost". Other software developed in the field of Indian System of Medicine includes EasyAyurveda, PRAKES, BODY TUNE, PRAKRTI, PILEX, RASEX etc. This is definitely not the end and the field would be growing in the coming days requiring sufficient man power trained in health informatics.^[19]

CONCLUSION

Health informatics has tremendous potential in a country like India. There would be huge demand for trained manpower in the field of health informatics in the years ahead. This is mainly because of rapid globalization,

potential of the health insurance sector to boom, quality accreditation of hospitals, Governmental involvement etc. It is very much evident that computer has eased our lives and has invaded almost all sectors including health as well. Rapid development of clinical medicine and biomedical research has created huge potential and scope for health informatics. Trained manpower in the field of health informatics will definitely be preferred compared to a plain IT or allied health care professional. Besides the core domain of health informatics much of development is happening in the field of ISM (Indian System of Medicine) informatics creating potential employment opportunities for AYUSH graduates. AYUSH graduates after finishing formal education in health informatics can gain access in to core domain of health care informatics as well as ISM informatics as per their interest, exposure and experience. More recently the Institute of Ayurveda and Integrative Medicine, Bangalore has started a Center for ISM informatics and Theoretical Foundation to give increased focus for the modernization of Indian Systems of Medicine in order to improve access for variety of research purposes.

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