

Assessing the views of various stakeholders regarding use of IT (Information Technology) in the field of Health Education.

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Abstract

Introduction: Information Technology (IT) is revolutionizing our life, our ways to interact with each other, and day to day life and work. India being highly populated, facing double burden of diseases and being predominantly rural with doctor to population ratio being inverse to the demand of rural area it is the need of the hour to plan well in advance to make use of gadgets that have reached to masses especially in the interiors of India. The public health experts have been striving through to reach out to the unreached. Therefore, this study is an effort to understand the current developments in use of IT in the field of health and its future. **Objectives:** To study the current use of IT in Health Education as perceived by various stakeholders involved in the field of Health Education Materials and methods :It is a descriptive, qualitative study where views of various stakeholders regarding use of information technology in health education was taken ie. from public health experts, IEC designer, post graduate student students of community medicine and end users ie . ANC mothers by various techniques(via e-mails, telephonic interviews, face to face interviews and health talk with the help of posters) **Results:** IT is used in the field of health education as stated by various stakeholders in the form of IEC material, power-point presentation, web broadcast, mobile based Apps, e-Posters, IEC materials used in rallies, research, electronic records, telemedicine, web broadcast. IEC designer has stated that IEC material can be designed effectively with the help of a graphic design software Corel DRAW. As far as the ANC mothers who were the end users it was observed that the IEC Material used for health education had a satisfactory understanding of the health problem however multiple health education sessions are required to assess the impact of IT in health education . **Conclusion:** On the basis of the results it is observed that IT is useful in Health Education and thereby it can be used as one of the tools for health promotion for the masses through various modalities(telemedicine, electronic medias, mobile apps, web broadcast etc)

Keywords: IT(Information Technology), Health Education, IEC(Information Education Communication)

INTRODUCTION:

IT can be interpreted broadly as „technologies that facilitate communication and the processing and transmission of information by electronic means.“Its application in health is described broadly as eHealth, which includes Telemedicine(1), Electronic medical records and Health information systems, mobile health and eLearning tools. Application of Information and Technology in health has shown potential in facilitating a better health care delivery system, leading to better health and universal health coverage(2). It creates access, enhances quality, improves primary health care interventions and can act as a solution for situations where human resources for health are scarce(3).

IT can play a significant role in combating rural and urban poverty and fostering sustainable clinical practice.^{4,5} Mobile devices have become commonplace in health care settings, leading to rapid growth in the development of medical software applications (apps) for these platforms.^{4,5} Numerous

development through creating information rich societies and supporting livelihood. For example, in India, ICT Applications such as Lokmitra, Mobile Sakhi, Warana, M-mitra, E-seva, E-chaupal, Cybermohalla, E-post, Dristee, Grampost, Dyandoot, Setu, Friends, Praja, E-post are in functioning for rural development. IT is being used in India to facilitate remote consultation, diagnosis and treatment. Delivering health care with IT enables health care professionals and institutions to address critical medical needs of rural communities, especially those in remote locations and those that lack qualified medical personnel and services.

The use of mobile devices by health care professionals (HCPs) has transformed many aspects of

apps are now available to assist HCPs with many important tasks, such as: information and time management; health record maintenance and access; communications and consulting; reference and

information gathering; patient management and monitoring; clinical decision-making; and medical education and training.⁴⁻¹¹The development of IT can bring about improvements in health in developing countries in at least three ways: as an instrument for continuing education they enable health workers to be informed of and trained in health and disaster management services to poor and remote locations; and they can increase the transparency and efficiency of governance, which should, in turn, improve the availability and delivery of publicly provided health services. Health protection, health promotion and disease prevention is of utmost importance when public health

strategies are concerned. The general public should be aware of vaccination, signs and symptoms of diseases, danger signs of a disease so that they are well equipped or empowered to contribute towards disease prevention and early diagnosis. Health related education also forms a strong base for community participation which is an important and integral part of Primary Health Care. This situation demands co-ordinated efforts of multiple fields/ experts so that information about health and disease can reach out effectively and efficiently to masses. Through mobiles, mobile apps and telemedicine referral linkages can be strengthened.

2 METHODS

This is a descriptive, qualitative type of study carried out in a Tertiary Medical Institution for a duration of 1 month. The study was conducted in various stakeholders to obtain their views on use of IT in the field of Health Education. The stakeholders were divided into 4 groups-

a) Public Health Experts from the field of community medicine who are involved in the monitoring of health status of the community, diagnosing and investigating health problems and empowering, educating people about diseases of public health importance in the communities were involved in the study. These experts have worked in various specialities of community medicine and are actively involved in the application of Information Technology in the sector of Health Education. Therefore, assessing the views of public health experts regarding IT is valuable in determining its scope.

b) IEC Designer is involved in preparation of different IEC materials which are used for health promotion and creating awareness regarding diseases of public health importance among the masses in communities as well patients seeking health care services in tertiary care hospitals. IT plays an indispensable part in the preparation of IEC materials due to the various technological

software, graphic designer tools involved in the making, designing and printing of IEC materials like posters, booklets, brochures, flipcharts etc. Therefore, views and opinions of IEC designer regarding use of IT software is valuable in determining its usefulness.

c) Post-Graduate students of Community Medicine Department were included in this study as they are not only involved in the implementation of IT (information technology) but they themselves use the different modalities of IT in day to day life for health education, health promotion, research and social networking purposes. Therefore, assessing their views regarding IT is valuable in determining whether there is adequate implementation of IT and how effective it is in imparting health education.

d) Antenatal mothers of ANC Outpatient Department of a tertiary care hospital were selected as end users of IT in this study. Health education session was carried out for them using IEC material and at the end of the session they were asked questions pertaining to the topic displayed on the posters. This helped us in determining the effectiveness of the IEC material developed through IT.

Sr.No	Stakeholders	Method

1.	Public Health Expert	A pretested, pre-validated questionnaire was sent online through mail to 3Public Health Expert in the field of Community Medicine and responses were collected through the same.
2.	IEC Designer	Telephonic interview was conducted and their views about use of IT in Health Education were obtained.
3.	Post-graduate students using and implementing IT	Face to face interviews of 5 Post-graduate medical students of Community Medicine was conducted through a pre-validated questionnaire and responses were recorded.
4.	End users- ANC mothers seeking health care services in an ANC OPD	A health talk was given to 25-30 ANC mothers in an ANC OPD of a tertiary care hospital using IEC material through posters on Anemia-its symptoms, causes, treatment and prevention and their feedback was obtained by asking questions after the health talk was given.

3 RESULTS

Table 1: Response to questionnaire items on use of IT in Health Education amongst the Public Health Experts working in medical institutions

Sr.No	Questions	Response	Public health expert1	Public health expert2	Public health expert3
1.	Currently where do you see IT being used	Where is it used	Power-point presentation, e-posters, web broadcast, mobile based apps	Telemedicine, educational apps eg. Shishuposhan	Fitness program, research software eg SPSS, electronic media.
		Used by whom	Medical colleges, training programs,	Students and colleagues	Medical students, general population
		was it useful	Yes	Yes	Yes
2	Do you yourself any of these technologies	Yes/ No	Yes	Yes	Yes
3	Perception regarding use of IT in health sector	Why is there a need	Through IT, health information	IT is very useful as it is going to	IT helps in quality implementa

			can reach the unreached	be a part of everyone's one life	tion of health programs
4	Role of doctors in developing these technologies	Roles	Doctors provide facilitation to IT professional specifying their exact requirements and inclusions required in the proposed software	Doctors can provide scientific and correct information about the medical subjects	Doctors provide feedback to IT professionals on its utility. Also they can take initiatives to develop mobile apps on common diseases of public importance
5	What strategies can be used to improve IT in Health Education	Strategies	Adopting policies for mainstreaming IT in health sector	Projects can be taken up with multidisciplinary approach for interventional research projects	By issuing directives from competent authorities (IAS level) to directorate of health services
6	Have you implemented any strategies	In what forms	Seminars, workshops, conferences, patient care,	Developed 'SHISHUP OSHAN' app for pregnant women with the help of IT	Developed mobile app 'BEAT DIABETES', research activities
7	Do you have any ongoing or future plans to implement IT in health	Yes/ No	Yes	Yes	Yes
		In what forms	Medical education activities, disease surveillance activities.	Rural telemedicine for the institute in which working currently.	Ongoing plans of preparing mobile app on monsoon related diseases like malaria, dengue, leptospirosis

					s etc
8	In what way do you think you will be able to contribute towards increasing IT use in Health	what will be its scope	Scope is inevitable in this modern era as it will benefit the health economy of the country	Scope is enormous as more number of people will be using IT in regular life	We can create awareness, better access to health care services and make health information easily available

IEC Designer

An IEC designer working in a government set up involved in the preparation of IEC materials was approached and a telephonic interview was

conducted. He has been working as IEC Designer from past 25 years.

Table 2: Telephonic interview of IEC designer

Sr.no	Questions	Responses
1	Various forms of IEC materials prepared	posters, flipcharts, booklets, brochures, pamphlets, placards, flax, paintings etc
2	Source of IEC material	Content, images from internet and self-made designs
3	Procedure of making IEC material	IEC material is prepared using a Graphic Design software called 'CorelDRAW' in which the required content is inserted by the designer. Then adjustments and formatting of the content is done in view of its size, font, borders, alignments, images etc. After editing, the IEC material is then scanned by the software and final print is thus obtained
4	Usefulness of IT in making of IEC material	IT is found very useful in the generation of IEC materials. Previously before the invention of computers and software, IEC was handmade and it was thus cumbersome to design the whole thing. Now, with the development of software and graphic designing tools the work is simplified. Also the content and design is now more accurate as well as specific.
5	Problems/ obstacles faced while using IT software	Typing of heavy content in periods of high load and increased demand of IEC material and technical problems while using the software are some of the obstacles faced by the designer
6	Any suggestions to improve use of IT in making IEC	Development and supply of new digitalized software and new drawing pads to reduce typing load and technical errors.

Table 3: Response to questionnaire items on use of IT in Health Education amongst the Post graduate students of community medicine (N=5)

Sr. no	Questions	Responses	Students
1.	What are the different methods/ devices of IT have you seen being used	Apps, social media, electronic records, internet use on Mobiles, laptops, computers.	5
2	In health education, what is the role of IT in our daily professional life(except the use of social media)	Information, awareness, research activities, electronic records,	4

3	How is IT being used in the field of health sector	Telemedicine, health related mobile apps, IEC materials, IDSP, HMIS	4
4	Would you like to suggest any new/ different strategies for implementation of IT in health and health care delivery services	Strategies to implement telemedicine in rural areas, disease surveillance through software	5
5	Would you like to suggest any innovative measures to make the existing methods of IT more user friendly	Linking of health information of beneficiaries to their aadhar card no or bank account numbers.	4

IT utilization by PG Students

Table 2 presents responses to questions on utilization of IT by post-graduate students of community medicine conducted by face to face interview method. All of them had been using computers for more than three years. One respondent reported irregular use of computers or IT devices. Almost half of the subjects (50%) were competent in some basic skills. From the total study participants all of them used electronic communication like email and social media like whatsapp, facebook etc almost every day. The results also showed that among the

electronic communication means, email or social media services are the most widely used applications, followed by the Internet search engines to look up academic information and some of the students utilize the Internet to look up information about health services.. It was observed that there is rampant use of IT among the medical post graduate students themselves and are actively involved in the implementation of IT in the field of Health education.

Table 4: Various means of IT enumerated by students

Sr.no	Category	Examples
1	Mobile Apps	Apps on diabetes/ obesity, fitness-yoga/ calorie burnout/ exercises, nutrition egshishuposhan, m-mitra, m-sakhi Subject wise learning apps- anatomy, pharmacology, medicine
2	Health programmes	RNTCP- NIKSHAY, AXIYA, 99-DOTS ; RCH- MCTS, Kilkari , Children-NHP indradhanush (immunization) India fights Dengue app
3	Health information	IDSP (integrated disease surveillance programme) HMIS (Health management information system)
4	Research	Pubmed, coursera, Google Scholar, open edX,
5	Teaching	e-learning, e-classroom, web MD
6	IEC materials	Posters, flipcharts, brochures, booklets used for health promotion, health education sessions, demonstrations

End users

With reference to use of Information Technology (IT) in end users, the IEC material prepared on Anemia in the form of posters which were generated through an IT Graphic Design Software was utilized for conducting health education session among 25-30 pregnant women in an ANC OPD of a tertiary care hospital. Health education regarding the following points was

administered in Hindi as the medium of communication as well as the language used in the posters was Hindi. a) what is anemia b) causes of anemia c) symptoms of anemia d) treatment of anemia d) preventive measures of anemia. Immediately after the health talk, feedback was taken from the ANC mothers on how much they understood and regarding

information which they were able to understand on after the health education session. the same topic. (table 4) Following was the feedback

Table 5: Feedback after the health education session done with the help of IEC posters on anemia (N=25)

Sr.No	Questions asked after the session	Feedback of ANC mothers
1	What is anemia	2-3 ANC mothers could answer the question
2	Causes of anemia	Only 2 mothers could answer. Probing was required
3	Symptoms of anemia	4-5 mothers enumerated all the symptoms
4	Treatment of anemia	2-3 mothers could recollect the treatment ie duration and frequency of taking iron and folic acid tablets
5	Preventive measures of anemia	Many of them could answer the iron rich foods and other preventive measures explained to them in the health education session

3 DISCUSSIONS

Use of Information and Communication Technology (ICT) in health can be broadly in four areas viz. Education, Research, Referral, and Management of Data-Health and Education : When ICT is applied to medical education, it is possible to make high quality education available pan India seamlessly. Hospital Management System : It is common experience that work places in the health systems are not adequately governed especially in remote areas. The management of Medical Colleges and District Hospitals can be strengthened significantly with the application of Hospital Management System. Health Research : ICT can potentially transform the medical scene in India, by bringing about a sea-change in medical research. From traditional clinical research to the modern synthetic biology-based research, the opportunity is immense. Work on problems such as Cancer prevention, screening, diagnosis, and therapy can benefit from inter disciplinary cooperation. Health and Management of Data : Electronic Medical Records (EMR), is a fundamental pre-requisite in using ICT seamlessly in healthcare. While EMR is available in several forms, size, shape, and format, Indian medical community with a specific mandate should standardize EMR, create and establish ICT platforms for using EMR based systems, for universal benefits.

4 CONCLUSIONS

This study thus reflects the views of various stakeholders regarding use of IT in the field of Health

education and it is found that IT is effectively used in health promotion, and plays an important role in health care delivery system of the country. The use of IT can be improvised and generalized into rural areas as well by adopting policies for mainstreaming IT in Health sector. For implementing all of the above mentioned technologies, availability of trained manpower is essential. Technical constraints, including connectivity and reliability, also need to be taken care of along with availability of health professionals for correct diagnosis and treatment. Cost consideration and affordability need to be taken into account for the development and implementation of national plan for e-health along with its integration into the health system. People residing in rural and remote areas need to be made aware of the existence of such e-services in their areas; their ethical and social issues also need to be addressed.

5 RECOMMENDATIONS

Health care has lagged far behind many other industries in harnessing the capabilities of IT to improve services, knowledge, communication, outcomes, quality, and efficiency. Given the complexity of modern medicine, it is inevitable that IT will play an ever increasing role in improving health care quality. To make significant progress, a major re-engineering of the health care delivery system is needed, which requires changes in technical, sociological, cultural, educational, financial, and other important factors. Research is needed to: a) Evaluate the role of IT in improving clinical decision making, information management, communication, costs, and access to care; b) Assess barriers to successful implementation of proven IT, as well as strategies to overcome these barriers so that all patients and providers have access

to technologies that can improve safety and quality of care; c) Document the costs and resources associated with adopting and maintaining proven IT applications; and d) Evaluate transferability of IT solutions to other health care settings. Supply and use of IEC materials should be improved and they should be in local language and reflect cultural sensitivity. Financial investments are required to develop and maintain computers at all workplaces, especially in rural areas, which comprises 68% of the total population. (12) Digital India is one such campaign launched by the Government of India to ensure that Government of India to ensure that Government services are made available to citizens electronically by improved online infrastructure and by increasing internet connectivity or by making the country digitally empowered in the field of technologies.

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