

Digitalisation of Health Communication: History and Current Scenario

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ABSTRACT

Health communication is evolving with every passing hour, so are the channels of communication. It is a budding field encompassing 'advancing digital media'. It can be envisioned as a land mine of gold which is yet to be explored. It has emerged as an effervescent and imperative field of study outlining the impact of roles played by human communication as well as digital communication in the arena of health care and health promotion. It is a vital area of research because it investigates the role different channels of communication play through different mediums. With the aim to create behavioural changes in respect to health promotion and health care and improve reach and accessibility. Such communication is inquiry based which begins with identification of the problem, examining the problem and helping in enhancing the quality of the approach towards dealing with the problem. This is an embryonic field involving analysis of various models and techniques of communication particularly digital mediums of communication. It is an interdisciplinary forte involving multiple disciplines that work in close association to bring about a change in the health domain. This paper is a secondary research paper tracing the roots of evolution of digitalisation of health communication. Highlighting the role of digital media in promoting health communication in India. Paper further talks about digitalisation of health communication from where it started, where we stand today and what the future looks like.

Keywords: Health Communication, Digital Media, Digitalisation

"I think the biggest innovations of the twenty-first century will be the intersection of biology and technology" – Steve Jobs, as told to Walter Isaacson.

1. INTRODUCTION

Just like a ship in the harbour is safe but a ship is not meant to stay in a harbour it is meant to fight the strong waves of the sea. In the same way digitalisation of health is an unexplored treasure which has the potential to solve all existing and future health related problems of various sectors of India but still people pretend to remain blindfolded towards this asset. But with the unfolding of the perilous pandemic of 2020, it is time for this treasure to be optimised and explored to its maximum capacity. Health communication has always played a central part in the development of society. Like, for example if the members of a community or society are healthy the overall outcome of the society shows automatic progress and development. Recent events such as Covid 19 have pushed scientists, experts, health professionals to diversify and digitalise health communication. To improve its reach, penetration and health outcomes. Digital health has brought with it many innovative terms which further involves health literacy and constant development and training of health professionals to keep them up to date with the changing trends and growth in this field. This paper is a secondary review paper which traces the historical roots of the term health communication. Further connecting the dots of traditional health communication to digitalisation of the same. It elucidates the present scenario of health communication describing the future of it.

1.1 OBJECTIVES

- This is a secondary review paper tracing the roots of evolution of health communication.
- This paper talks about how the traditional structure of health communication looks like and what all it includes.
- This paper talks about the need of changing the outlook of health communication.
- What is digitalisation of health communication and explains all innovations which digital healthcare brings with it.
- Analysing the importance and relevance of digital health communication.
- Future of health communication what it looks like.
- Investment of the government in digitising health communication.

2. MEANING OF COMMUNICATION

First let us begin with the concept of communication before intertwining it with health. Communication through media has always contributed to development. There are several case studies which show that the desired impact on social welfare schemes could not be achieved because of lack of awareness and motivation coupled with misplaced concepts of people (Dennis Mc Quail). So, this clearly states that it is communication which leads to a clearer and a meaningful conversation between individuals and groups of individuals.

Communication can be of many types but this particular paper is focused on the importance of communication in the field of health. "Within the health communication field, communication is conceptualized as the central social process in the provision of health care delivery and the promotion of public health" (Garry L. Kreps, 1988). The major role of communication revolves around the central idea of creating, gathering and disseminating health related information to the right people at the right time. Within the health communication field, communication is defined as the central social process in the provision of health care delivery. Health information is the most important resource in health care and health promotion (Kreps 1988). Communication acts as the bridge between the known and unknown in the realm of health-related areas. During a time of crisis or emergency the most important tool to disseminate information is proper communication. Now if we join health with communication, we will further enrich the meaning of health communication. Before joining the two, it is important to define health.

3. DEFINING HEALTH

There are two ways to understand health. One is the technical biomedical approach, wherein standards are set and outcomes measured. The other is a social approach, where what is taken into account is the manner in which the subjects themselves understand their own health, leading to a more collective perception of health. "Today, three types of definition of health seem to be possible and are used. The first is that health is the absence of any disease or impairment. The second is that health is a state that allows the individual to adequately cope with all demands of daily life. The third definition states that health is a state of balance, an equilibrium that an individual has established within himself and between himself and his social and physical environment" as mentioned in the journal *meaning of health and its promotion* by (Norman Sartorius, 2006). The best out of these three which practically can be applied to the individuals is the third definition of maintaining equilibrium with the surrounding and not mere absence of a disease.

The definition given by WHO is too broad and hence becomes impractical to cover all prospects. Earlier the definition of health said, it means mere absence of disease though since this is not practical at any given time so WHO made alterations in definition calling it a holistic term and saying it is a physical, mental, emotional well-being not just the absence of disease. So, the definition of health needs to be multi-layered and it varies from one individual to another. The meaning of health for one person suffering from a virus may be different from the other suffering from cancer. It needs to be seen through the prism of structural components of society and family. Culture, gender, class and family setting in the society plays a pivotal role in defining health for an individual. In to-days era health is intermixing and evolving as digital health, which is further changing meanings and definitions of health for different individuals. For example,

when one combines health with Cancer its definition further changes as appropriately said by Caleb Dulaney, 2017 in the article defining *health in the cancer continuum* health is not a static state, but a series of dynamic transitions during the course of life. With the onset of Covid 19 health is now entering the hemisphere of digitalisation and undergoing further transition.

As quoted by the director of Apollo, in how *innovations in digital health are opening new doors in the healthcare system*, 20 “healthcare innovations are transforming lives around the world. Every year, millions of patients are benefitting from the breakthroughs in medical science. From advanced diagnostics, smarter healthcare delivery models, to usage of disruptive technologies and continually updated knowledge databases, the last few decades witnessed a seismic shift in the way we perceive and deliver healthcare”. One can notice a sudden shift in the needs and demands of the healthcare industry after the onset of the Covid 19 pandemic.

In such a scenario, the shift of traditional health to digital is the only hope and resort for medical practitioners to save lives. If one traces the roots of pandemics in India, our health care system has witnessed the outbreak of infectious diseases like Cholera, plague, encephalitis, dengue fever, malaria, flu but infectious diseases such as tuberculosis, malaria, filarial and leprosy remained uncontrolled for several decades due to inadequate financial attention, and unavailable appropriate technology (Chakravarthi et al., 2017). So, an outbreak of this magnitude requires more advanced healthcare infrastructure and this has been witnessed at various nuances faced by the people at different levels of interactions with this disease.

So, keeping all this in mind it becomes mandatory to understand moving one step ahead and digitising our health care facilities is the realm which needs to be looked upon and invested for a better future of our country, further moving paper throws light on what is information and its connection with health.

3.1 “INFORMATION” UNMASKING: ITS MEANING AND UNDERSTANDING

Health is not a disjointed term used in isolation, rather health plus information is what completes it so to understand it completely one must try to understand what exactly is information. Definition of information is, “it is produced through human observation, so it can be said that all information is subjective” (Dervin, 1983 p.2). Information can be redefined as the sense which is made by individuals about a particular situation at a particular time and space and sense making is the communicating behaviour that allows the individual to design and construct movement through time and space. Now focussing on the channels of communication the channel this paper concentrates on is social media.

4. SOCIAL MEDIA

To understand this medium it is important to understand its emergence. With the globalization and coming of web 2.0 the entire system of communication has changed. The term social media describes interactive computer mediated technologies that facilitate the creation or sharing of information, ideas, career interests and other forms of expression via virtual communities and networks (the use of social media and online communication in the times of pandemic covid 19, Adrian Wong). With the coming of covid 19 the important role social media plays in information dissemination particularly health related information has evolved drastically. The pervasive role of social media platforms plays to rapidly disseminate consensus and expert opinion by major medical organisation is a considerable addition to their pre-existing social media capacity and works well with the necessity for both contributors and receivers (The use of social media and online communication in times of pandemic, Adrian Wong). As quoted by doctor Michael Ryan, the Executive Director of the WHO health emergency programme, “Perfection is the enemy of the good when it comes to emergency management, speed trumps perfection and the problem in society we have at the moment is everyone is afraid of making a mistake. But the greatest error is not to move and I think that’s the single biggest lesson I have learnt in Ebola in the past”. During the COVID-19 pandemic, social media use has accelerated to the point of becoming a ubiquitous part of modern healthcare systems. As with any tool in healthcare, its risks and benefits need to be carefully considered (The use of social media and online communications in times of pandemic COVID-19, Adrian Wong).

4.1 CONVERGENCE; BOOM OF SOCIAL MEDIA

Social media is playing an important role in promoting health related awareness, because of its reach and penetration it is having an everlasting impact even in the rural population. Hence since it is such a pivotal tool it is being used extensively by the government as well as non-government agencies in spreading health related awareness and information. "Social media empowers and educates masses about their rights and government policies; it has a far-reaching impact across a great social and culturally diverse country, it also empowers certain marginalized groups such as women to raise their issues" (Marcondes de Moraes et al. 2020). Despite the digitalisation of the health sector India still has a long way ahead to meet the health demands of the huge population of this country. To such demand it is imperative that the communication strategy must be in sync with the country's social, cultural, linguistic diversity so that its reach and penetration are not affected. Despite the progress made in the health sector, India is still facing various challenges, and the country needs to go a long way to meet global healthcare standards. For this objective India requires a comprehensive health communication strategy. This strategy must be in sync with the country's social, cultural, and environmental as well as political set up. Health communication is an integral part of the overall well-being of a society. For this we need to understand health communication in depth.

5. HEALTH COMMUNICATION

Communication ^{has} always played the leading role in any pandemic situation or any calamity faced by a country or across the globe. We should stress on a proper communication strategy, learn from past mistakes and use communication as a tool or weapon to fight any calamity or adverse situations.

Health information is the critical resource derived from effective health communication (Kreps, 1988; 2001). Communication can be of many types but for this particular research the researcher focuses on the importance of communication in the field of health "within the health communication field, communication is conceptualized as the central social process in the provision of health care delivery and the promotion of public health." (Carry L. Kreps, 1988, *cancer survivors' information seeking behaviour a comparison between survivors who do and don't seek information*)

Health information is the most important resource in health care and health promotion. (Kreps 1988). Communication acts as the bridge between the known and unknown in the realm of health-related areas. Functions of health communication listed by Derrick son and Lyn are

1. Information-to disseminate relevant information
2. To educate the people about various health related issues
3. Motivation -provides motivation to people to fight and not to give up
4. Persuasion-influencing people helping them overcome various health related obstacles
5. Counselling-it is a process which can help people understand better and deal with their problems and communicate better with those with whom they are emotionally involved. Counselling is not the same as advising. Counselling relies heavily on communication.

The availability and dissemination of health communication has seen a new dawn with the boom of social media.

Advances in medical and consumer health informatics along with convergence of media and emergence of the internet has led to the dawn of a new era.

Puneet Singh Bhatia in his book *BIG CONNECT* traces the history of social media The rise of web 2.0 was a game changer for the web . With this transformation the web not only became interactive but also a place for self-expression. The biggest addition in the web 2.0 era had been the rise of the user generated content so web 2.0 was expression driven feedback driven influence driven opinion driven knowledge driven.

As said by Springer et al(2008) social aspects of web 2.0 have changed the internet. As witnessed in the current scenario the social aspects of the internet along with all other are important but prime focus remains on social structures of the internet. Kaplan and Heinlein (2012) define social media as a group of internet-based applications that build on the

ideological and technological foundations of web 2.0 that allow the creation and exchange of user generated content.

5.1 ROLE OF HEALTH COMMUNICATION

Health Communication is like an active volcano which is full of unknown elements whose potential is yet to be discovered. Traditionally this is the medium of communication between healthcare professionals, patients and policy makers with the pre-set goal of influencing the behaviour of the general public. It is not a unidimensional field but a multidimensional field and includes social sciences, psychology, life sciences communication studies working in close association with each other. It is also important to understand different theories of mass communication while working out a suitable health communication strategy. Numerous private as well as non-private organizations work hand in hand to provide effective communication for improving the health of the society. Civil societies worked towards providing rights advocacy and dissemination of schemes related to various diseases. The ecosystem of healthcare in India is evolving, demanding increased participation of members of the civil society at all levels of policy making as well as the implementation process.

Health communication is an emergent field and has a multidisciplinary nature. Various researchers have diverse perspectives on this subject. But there is a consensus on the importance of the role health communication plays in supporting individuals, spreading information, spreading awareness, influencing policy makers for making informed decisions. The Centre for Disease Control and Prevention (CDC) defines health communication as the study and use of communication strategies to inform and influence individual and community decisions that enhance health" (Riegelman, 2001).

Civil society is actually a group of concerned people who are working towards a common goal or objective orientation of which generally is welfare of the common masses. Civil society uses various communication tools for mobilization support, creating civil society is a group of concerned citizens working for a shared objective which is generally oriented towards the welfare of people and creating a civil society uses communication tools for mobilizing support, achieving the objectives and creating a healthy environment for nurturing people's ideas. Related to issues concerning health and later communicating the same then later theories of health communication and social sciences begin operating to achieve a shared objective. Since the evolution of mankind, it is evident that there is a directly proportional relationship between proper human evolution and effective communication. With the development of complex societies, the thirst for more knowledge kept increasing. Hence just mere acquisition of health-related knowledge is not sufficient; it needs to be effectively communicated to the audience. This process of the exchange of information is called health communication. This entire process of exchange of knowledge has its own characters and participants. Each character and participants have its own value and importance. Paper traces the history of health communication, answering when and how it all began.

6. HISTORY OF HEALTH COMMUNICATION

During the ancient times the Indian healthcare system was a combination of native medical practices as well as the newly introduced western medicine.

During the colonial era, the Indian healthcare system was a diverse mix of Native medical practices and newly introduced western medicine. Initially, Indians were reluctant towards adopting the western medicines as they were very doubtful about the use of animal products in the making of these medicines, but the outbreak of epidemics specifically the Sixth-Cholera outbreak of 1899 which was believed to be originated from India during Kumbh Mela at Haridwar (Arnold D., 1986). This played an important role in changing the mindset of the Indians towards western medicines. "The British government found it very difficult to communicate the role of mosquitoes in spreading malaria, as the idea of vector-borne disease was an alien concept for Indians. But, the Indian Civil Society by then (which consisted of the wealthy elite and were respected by the masses), articulated the principles of hygiene, sanitation, and Germ Theory of Disease in a manner that was comprehensible to the common Indians"(Arnold D., 1986). The Indian community leaders played a vital role in changing

perspectives of the Indians and creating a behavioural change in accepting the western medicine. Their versions were easily accepted by the masses as compared to the colonial government. This is not an exceptional example to postulate the importance of health communication in civil society. There are many examples in modern times too, which highlights the positive impact of the role of civil society in the field of health communication. As we learned so far, "Civil society and nongovernmental organizations (NGOs) have the power to influence individual behaviour and the organizations that are involved in a healthy diet and promotion of physical exercise." (WHO, 2020) According to the World Health Organization they have been seen as collaborators and partners who can support the implementation of health communication strategies by:

- leading grass-roots mobilizations and advocating the healthy life practices related but not limited to diets and physical activities etc.;
- supporting the preventive measures through exchange and dissemination of information on various diseases and programs;
- forming community and pressure groups to promote healthy practices through dissemination of information;
- advocating and supporting health- promoting schemes, policies, and health education campaigns;
- monitoring and engaging with the audiences and other stakeholders;
- contributing in working out some practical solutions for the problems.

6.1 Historical Perspective and Immediate Challenges

Regional regimes set up various malaria hospitals in various villages of Bihar, Bengal where Indian doctors were posted and they played the pivotal role of not just providing treatment but also helped in disseminating health awareness and education. Colonial India circulated newspapers containing health. Deception or quackery has always been a major challenge before a healthy Indian society and still remains in the 21st century. Efficient health communication has been a driving force in persuading people and creating behavioural changes in people for adopting and rejecting innovations or inventions. It helps in reducing trust deficit.

- "In Post- independence India various Health campaigns were immediately launched by the New Government. The immediate challenges before the new government were high mother and infant mortality Rates, frequent epidemics, leprosy, tuberculosis, vector-borne diseases (Malaria and Encephalitis), lack of vaccination facilities, and the Problem of widespread malnutrition. To share the information about government schemes, the government involved civil society organizations that were already working in the healthcare sector"(Schiavo Renata 2007), "Health Communication from Theory to Practice" published by Jossey-Bass, USA.)

To eradicate such problems a proper communication keeping in mind the target audience was considered of prime importance.

"The malaria eradication program of India was the world's one of the most intensive anti-malaria campaigns, by 1958 around 8,704 malaria squads were operational, and around 438 million houses were sprayed with DDT. Due to this widespread campaign, the recorded cases of malaria fell from 75 million in 1951 to 50,000 in 1961" (Amrith, S. S. 2009) . This was achieved by involving panchayat heads, influential people, religious stakeholders, community organizations etc.

"The cooperative society movement started gaining pace in India from 1950. There are more than 5 lakh such organizations registered in India. Health awareness and access to public health schemes were also incorporated as components in various projects. Cooperative anti-malaria society was established in Bengal by Dr. G.C. Chatterjee in 1912; by the end of the 1930s, 2000 such societies were affiliated to it."(Wang, H., P. Cleary, J. Little, et al 2020. "Communication in a Public Health Crisis." The Lancet Digital Health2, no. 10). Various projects were undertaken by the Cooperative Union of India such as primary health workers of these societies worked to spread awareness about gender sensitization, rural health, aids, polio etc. "Self- help groups (SHGs) are small groups generally consisting of 10-50 women; they pool their resources and start an enterprise. The profit is distributed among the members. These self-help groups are not only doing financial or business activities, but many of them are also focusing on the health

sector. Many SHGs in India are now working on the subject of menstrual health and hygiene”(Gupta M. K., Kumar D., & Visengrawala F. 2015) These groups work rigorously to spread awareness about maternity health, women hygiene, etc. They adopt state of the art communication technologies like street plays, door to door campaigns, traditional wall paintings and even religious meetings. By all these activities they try to remove stigma from. Health related topic, and try and normalise it.

6.2 KEY AREAS OF HEALTH COMMUNICATION: DOCTOR PATIENT COMMUNICATION

In order to gain satisfaction, it is very important to have good doctor patient communication. The skills required by a physician for this purpose include listening to a patient's concerns actively and a proper understanding of the patient's psychology. Uncertainty or absence of feedback, information, and proper explanation from the physician leads to dissatisfaction and higher anxiety levels of patients. (Anat, D. S, 2010). Hence one should look for innovative platforms where doctor and patient can have effective communication. A study shows that 45% of the patient's concerns and 54% of patient's complaints are not addressed by the doctor up to satisfactory levels. “The correlation between the quality of health communication and its impact over health indicators of the patient is also established; it was observed that the reduction of blood pressure in patients was significant when they were allowed to express their concerns without any interruption”(Stewart, M. A. 1995). Thus this shows the importance of effective communication and why communication should be included in the medical curriculum in India.

6.3 Interpersonal Communication: At Hospitals

Hospitals are a hub of diverse languages, cultures, religions, and caste creeds. In such a pluralistic atmosphere it is very important to understand the need of effective communication, where the aim of everyone is to get or provide correct health communication. For example; in India, more than half of nursing institutions and colleges are located in the southern part of the country. (Rao K.D, 2017; WHO) Kerala with a population of 3.1% accounts for 38% of medically qualified nurses in India. (Anand S., Fan V, 2016; WHO). This proves that a plural society like India needs to have a common platform of communication which can be used in a multilingual nature to cater to health needs of the various societies, communities.

6.4 Communicating Health to Society

Health communication is not just interpersonal communication but it is the communication of information to the masses. So, communicators apply various theories of communication while communicating to the masses. For example, “the theory of cultivation states that exposure to any medium of communication cultivates the perception of reality of the recipient. (Mosharafa E., 2015) It has three entities: Institutions, Public, and messages. The health communication also conforms to this theory of cultivation, which means the exposure of the message containing health information “cultivates” its perception, this cultivated perception creates a conclusive understanding of the subject among the masses' ". “Agenda Setting Theory highlights the power of media to influence the priorities of the common public “(Razinah, N., & Zain, M. 2017). Thus this shows the importance of communication in the domain of health communication and how from time immemorial theories of communication still remain relevant even in today's time.

6.5 Health Communication in Education

Through health education individuals learn to maintain, promote, and restore health (Raingruber B, 2004).It is thus an experience which ultimately leads to behavioural change while adopting healthcare promotion techniques.

Health Communication in Public Health

Public health as defined by WHO “the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society” (Acheson, 1988; WHO).the objectives of public health can be achieved by promoting proper health communication campaigns on proper communication channels. According to the Essential health services framework, 2014;

CDC „the public health system includes all private and public entities which can contribute towards the delivery of essential health services.”

7. Health Literacy

- Health literacy is often defined as "the degree to which individuals are able to acquire, process and understand basic health information and services needed to make adequate health decisions"(Apfel, F. (2013), "Health Communication. In: Health Promotion Theory". Edited by: L Cragg, M Davies & W Macdowall, OUP, McGraw-Hill Education: Maidehead, UK.). It is typically used in the health sciences and communication field.
"Health literacy represents the cognitive and social skills which determine the motivation and capacity of people in the field to access, understand, and use information to promote and maintain good health."(WHO, Report 2020)

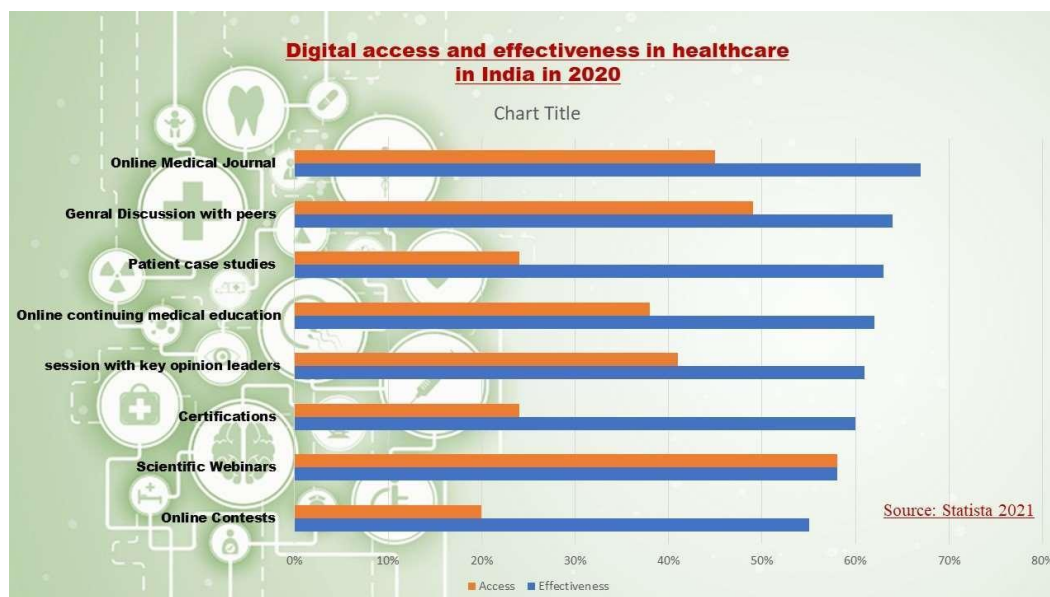


Figure 1: Website Statica

8. NON DIGITAL TOOL FOR HEALTH COMMUNICATION

Non-Governmental Organizations (NGO's)

NGOs are defined as independent organizations working without government intervention. They are classified as operational NGOs and advocacy NGOs. As per the information collated by the Central Bureau of Investigation under the societies registration act, in India, there are 3.2 million (Anand U., 2015) roughly around one NGO per 400 Indians. The impact of various NGOs cannot be overlooked.

Community-Based Organizations (CBO's)

"A community organization is defined as assisting a group of people to recognize their common demands and help them to fulfil those" (Walter W. Pettit, 1925). "Community organization refers to various methods of intervention whereby a professional change agent helps a community action system composed of individuals, groups, or organizations to engage in planned collective action to deal with special problems within the democratic system of values." (Kramer and Specht, 1975). The role of community based organization is to work for the welfare of the masses and help overcome the common health related problems of the community. The types of Civil Society Organizations are Trade unions, Women rights groups, Human rights groups, Child rights groups, Tribal organizations, Farmers welfare organizations & unions, Organizations for legal aid and awareness, Health awareness groups & networks, Environmental groups, Consumer rights forums & organizations, Traders guilds, Cultural organizations, Volunteer action groups, and Sports clubs, etc.

8.1 The Future of Civil Society Movement

Civil society sector is closely associated with different diverse groups with different focus areas. WEF-KPMG report (World Scenario Series, W. S. 2013; WEF) about civil society and its future (2013) discussed some emerging trends

- Civil society is emerging more vibrant with that, the urge of governments to regulate civil society is also increasing.
- Earlier the civil society was seen as the agitators or adversaries of certain sectors, but now industry is working in association with civil society towards their shared objectives.
- The conventional roles of civil society are blurring; which means that civil society organizations are entering into new and more technology-intensive fields.
- Civil society is finding innovative means to communicate their message; they are making great use of social media and the internet. Their reliance on conventional communication mediums is decreasing.
- Funding models of civil society organizations are now diversifying; they are focusing on becoming more financially sustainable and becoming less dependent on external aid. This is making them a full-time career option for young professionals.

8.2 Involving the Civil Society: Some Policy Decisions

India's National Health Mission (NHM) works on provisions to work on proper communication and effective health monitoring. For this purpose the NHM is having a provision of Community based monitoring (CBM) where NGO's & CBO's are supposed to work on three objectives:

1. Represent the community and their problems, to educate them about their rights
2. Work on capacity building and training of committee members.
3. Contribute to independent data collection from village to state level.
- 4.



Figure 2: Handbook for Village Health, Nutrition & Sanitization Committee, NHM

9. DISCUSSION

Human health is directly linked with the effectiveness of communication between human beings. As humans started developing complex societies, they started acquiring knowledge. Mere gaining of knowledge is not enough; they need to communicate it for the benefit of others. We can understand it by this example; assume that there is a prehistoric settlement of humans. One member of their group discovered that leaves of certain plants can repel mosquitoes. In this settlement, there is a well-developed communication network.



Figure-3: Poster issued by SAMA for Creating awareness about Gender-Based Violence

"The term health communication came to be first used in 1961 when the National Health Council organised a national forum on health issues" (Helen, 1962). "This term was again used in 1962, when Surgeon General Luther Terry held a health communications conference to discuss how different communication techniques can be used to provide health information to the public" (US Department of Health Education and Welfare, 1963). The term was officially adopted in 1975 by the members of an interest group at the ICA. In 1997, health communication in the broader fields of Education in the field of public health with the promotion of health and health communication was recognised as subjects to thorough growth and change by the American Public Health Association. In 1997, the American Public Health Association recognised health communication as the subject of comprehensive growth and change in broader fields of public health education and health promotion and communication.

10. Importance of Health Communication

We should know the six principles set forth by the World Health Organization, which describe the role of the communication system in the health sector, before understanding the need for health communications.

1. Accessible for decision-makers:
2. Decision-makers:
3. Credible and trusted:.
4. Relevant for decision makers.
5. Punctual decision-making
6. Comprehensible for decision makers:

10.1 Health Communication and ICT

ICT has proven to be the illuminated path for the developed countries which leads to the dream healthcare of our nation. It provides us with new and better ways to communicate and plays an imperative role in improving healthcare of communities and society



Figure 4: NHM Report, 2020

10.2 Health IT

Health IT refers to healthcare providers in electronic systems and is increasingly used by patients for the collection, sharing and analysis of health information. The term Health Information Technology (HI).

The ability to access information, to facilitate communication and to improve efficiency in almost all

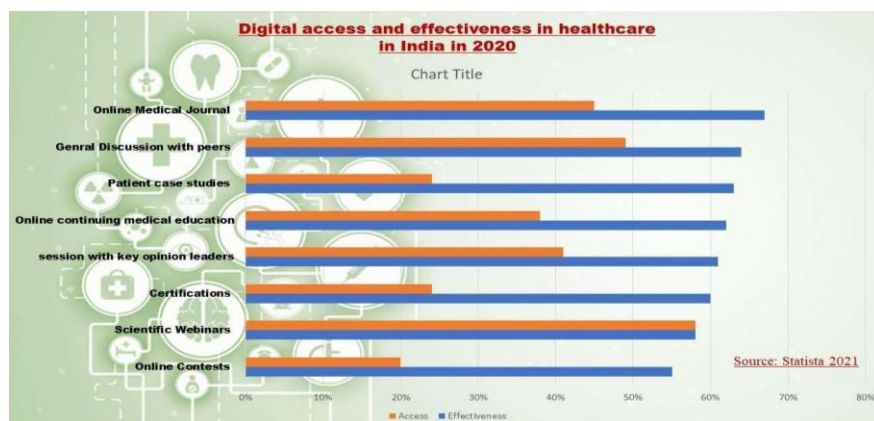


Figure 5: NHM Report 2020

Health Information Literacy is a related concept that describes health information behaviour and that includes the search and use of health or medicine data (HIL).

The Medical Library Association defines HIL as a means of understanding a need for health-related information, of knowing how and where health information should be found, and of evaluating and using it in everyday life in order to make correct health choices.

The concept consists of a combination of literacy on health and information. According to a widely used definition, an informational person is able to determine the amount of information necessary; efficiently and efficiently access that information; critically assess that information or its sources; integrate the selected information into the know-how base; effectively use it to achieve a particular goal; and, to understand the economic, legal aspects of it.

10.3 Dissemination of information

Much research was conducted through a wide range of personal communication media (e.g., telephoning, mail, fax, e-mail) as well as mass media (e.g., radio, tv, film, billboards). The largest communication programme in the world was launched in India on 7 April 2012. The programme "Swasth Bharat" is broadcast by 30 Door darshan Regional Kendra's and 29 All India Radios, covered by 27 States. All of these stations are broadcast. Five days a week in prime time, the half hour programme was broadcast in regional languages. The programme aimed to empower people to learn about health issues in the fields of information, education and communication.

The important chain between government and the ordinary people have always been the Community Health Workers such as ASHA, ANM, Anganwadi intermediate workers etc. so the aim of government has always been to provide these with accurate and proper health communication strategies.

Community health workers are defined by the World Health Organization (WHO) as members of their community work, selected for and accountable to their activities by the communities, supported by the health care system but not necessarily an organisational body, and have a shorter background than professionals. 'Proper use of these by health professionals.

All these community health workers are now being technologically trained, language and skills in literacy and moving towards digital revolution in the health sector.

11. WHAT IS DIGITAL HEALTH

"Digital transformation is the assimilation of digital technology with patients, healthcare providers and regulators. Healthcare transformation will add an opportunity to translate new

data into actionable information, allowing earlier diagnosis and precise treatment options. This integration of innovative technologies will improve the patients experience" (Social informatic research unit Report, 2021)

Digital Healthcare has been playing a catalysing role in critical and remote care with increased adoption in the field of optimizing radiology, image triage, and clinician decision support. During the pandemic, Indians have recognized the role digital healthcare players play in providing remote care efficiently. "The pandemic also paved the way for digital healthcare, predominantly perceived as telemedicine or telehealth, to evolve into more comprehensive virtual healthcare systems that provide the patient with clinicians, physicians, nurses, a complete virtual care team that offers the right guidance" as defined in the journal *digital health for optimal supportive care in oncology: benefits, limits, and future perspectives*

"Digital health provides solutions that capture patient-reported outcomes (PROs) and allows symptom monitoring and patient management. Digital therapeutics is the provision to patients of evidence-based therapeutic interventions through software applications aimed at prevention, monitoring, management, and treatment of symptoms and diseases or for treatment optimization". The National Digital Health Mission, launched by the Government of India, is expected to bring in a digital revolution for the health sector in the country, and enable the creation of an inclusive ecosystem that supports universal health coverage.

Thus it cannot be denied that the need of the hour is massive digital revolutionisation in the health care sector, which can help the vulnerable as well as the non-vulnerable population during such tough times of health crisis being faced by our country.

"India's futile healthcare system, already overloaded hospitals totally disconcerted how to deal with this pandemic" (Pranav Kumar). Globally many steps were taken to fight this rattling situation by coming up with innovative ideas to promote health communication, keeping the new norms which, this bilharzia brought with it as the baseline. Social distance was one of the most important components which is a synonym to this ailment, so accordingly new norms and methods of communicating were innovated and conditioned. This background sets the thrust needed to engage more social media platforms for health communication. Since it is the only channel of communication which can disseminate information amongst masses being physically isolated. Mass media has been cited as a promising means to provide health-related information which potentially impacts audiences behavioural outcomes on a large scale. Gesualdo et al. suggested that due to the publicizing potential digital media platforms have, they can now become prominent in driving the change of preventive behaviours, as well as minimizing the risk of the pandemic threats.

11.1 DIGITAL HEALTH A WORD THAT GAINED FUEL DUE TO COVID: RESULT AND DISCUSSION

The COVID-19 pandemic has brought to the forefront the critical need for cutting-edge technological tools and innovation in the arena of public health, medicine and wellness. It has reopened the realm of 'digital health' in policy and public discourse, with consumers increasingly looking at the wide canvas of social media platforms for health communication. As the health responses to the pandemic are strengthening there can be seen a tangible shift of the needs of the common man from lifestyle enhancement choices to a shift to medical and emergency care requirements on the digital platforms. "The Healthcare sector is emerging as one of the largest and most thriving sectors in India. To provide universal health coverage to the citizens, the newly launched 'National Digital Health Mission' by the Government of India is also set for the nationwide rollout. It aims at reforming the healthcare system by bringing more transparency, standardisation, and innovation." (How Is Digital Innovation Driving The Healthcare Space During The COVID-19 Pandemic, Gaurav Gupta, The Indian Express) Digital health has a holistic chain of benefits which dazzled and gleamed because of the covid 19 pandemic and came to the limelight. Some benefits are like the virtual doctor patient engagement, faster dissemination of information, more access to a plethora of information available globally, geographical limitation is eradicated, more user friendly and budget friendly.

The following data shows the spike of digital health globally as reported in the article Digital Health in the Aftermath of COVID-19 by Ankita Sharma and SIRU

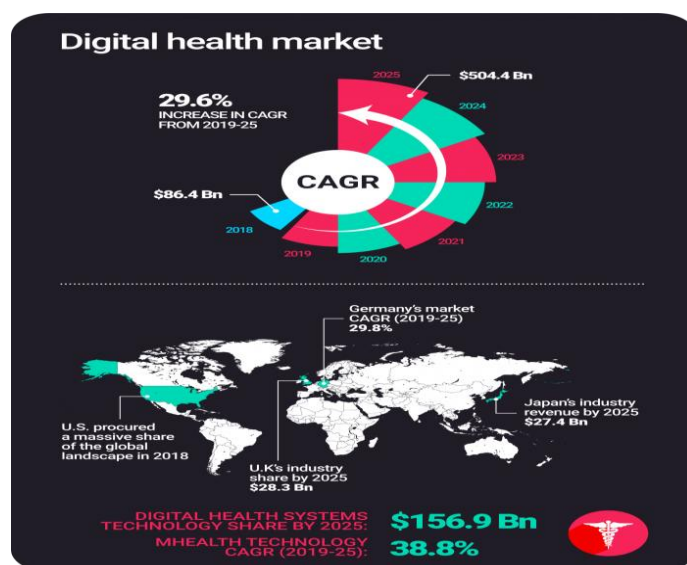


Figure 6: SIRU(STRATEGIC INVESTMENT RESEARCH UNIT)

The report further digs deep into how Indians have loosened their hostility towards the acceptance of a new technology in their lifestyle, the data suggests the same. Anything which is new takes time to infiltrate within a society, as the crisis is changing the needs of the people digital health too is gaining acceptance in the masses.

According to the Future Health Index (FHI) 2019 report

India is leading in the adoption of digital health technology with 76% of healthcare professionals in the country already using Digital Health Records (DHRs) in their practise.

64% of Indian healthcare professionals agree that patients having access to their own health data (including test results, prescriptions, scans etc.) has positively impacted their patient's experience.

87% of Indians with access to their digital health record say they want their healthcare professionals to have access as well.

80% of healthcare professionals in India have shared patient information with other professionals inside their health facility.

67% of Indians feel comfortable or neutral about seeking medical advice from their doctor through a health application on the phone, suggesting a high willingness and openness to further adopt telehealth and unlock its benefits.

Figure 7: SIRU

This report given in the article by Ankita Sharma and SIRU(strategic investment research unit) clearly indicates how India has adopted the health care technology and how Indians have responded to the digital healthcare delivery systems with the onset of the pandemic.

The Government of India has used a variety of measures to make health communication digital, as well as the information seeking behaviour of the people or seekers of information digital. To give Covid 19 a tough fight and not lag behind the developed nations in this fight against the unknown government has undertaken the following steps as stated in the report of SIRU(strategic information research unit)

Use of digital healthcare by the Government of India

Aarogya Setu
Mobile app developed by the Ministry of Electronics and IT to help citizens identify their risk of contracting the novel coronavirus.

Telemedicine Practice Guidelines
Ministry of Health and Family Welfare in consultation with NITI Aayog released these to legitimise the practice of remote consultations. Doctors can now provide consultations through video, audio, email or text.

National Health Stack (NHS)
It is a visionary digital framework with a holistic approach to support healthcare across the nation. The recent NHS study has also aimed for Digital Health Records for all citizens by 2022 to leverage all benefits of telemedicine and E-health for Indian citizens.

National eHealth Authority (NeHA)
It is a visionary digital framework with a holistic approach to support healthcare across the nation. The recent NHS study has also aimed for Digital Health Records for all citizens by 2022 to leverage all benefits of telemedicine and E-health for Indian citizens.

e-Sanjeevani
This app has been shortlisted by the Ministry of Health and Family Welfare for supporting Government's plan for a pan-India tele-medicine rollout.

Figure 8: Website Statica

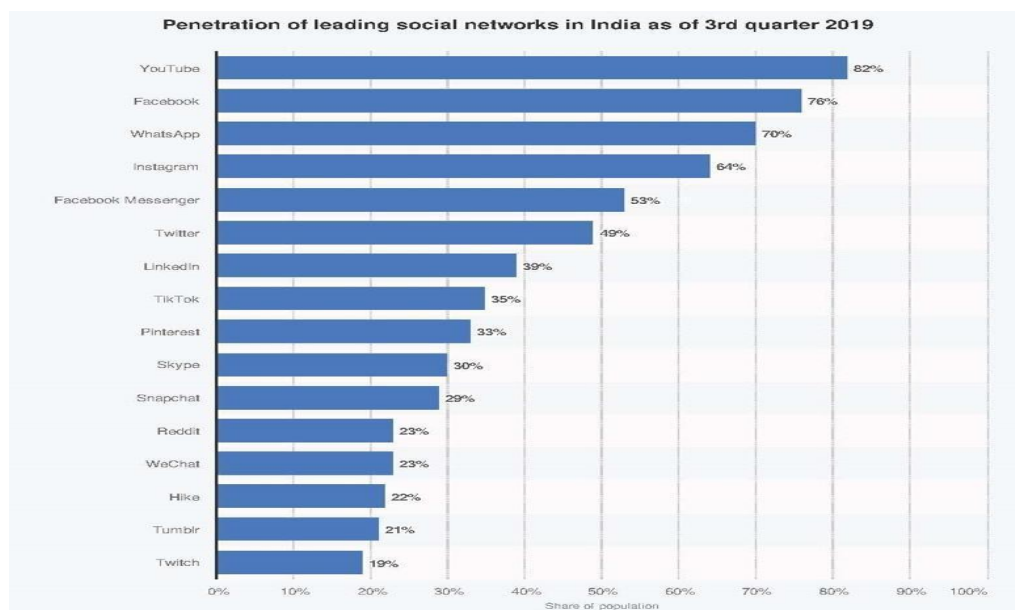


Figure 9: Statica website

These statistics taken from the website statica we can clearly see the penetration of social media platforms in the Indian society during the last two years. The three platforms this paper particularly talks about are Twitter, YouTube channels and Online Facebook health groups.

11.2 TWITTER

The paper first analyses data for Twitter, "which is a micro blogging site popular globally. Twitter is unique as a global public conversation platform that does the multifunctional work of breaking news of entertainment , sports, politics, and everyday interests, Twitter is where people come to see what's happening and join the conversation"(twitterindia.com). The website

also talks about a new tab which they have introduced which is dedicated particularly to covid and one can get all the information they want by just pressing that tab, and they have also updated an events page where all recent activities and updates related to Covid are available, the website says "We've added a new tab in Explore so it's easier to find the latest information on COVID-19. The tab will include curated pages highlighting the latest news such as public service announcements, Tweets from public health experts and journalists, as well as stories about how people are coping and helping each other".

Twitter is one of those social media platforms that has served as a communication modality during disease outbreak, and it provides essential information regarding issues of the infectious disease. In the paper Coronavirus impacts social networks see surge in usage by Annapurani, the author says that a content analyses of Twitter usage by group of seven world leaders in response to covid -19 revealed that 82.8 percent of their Covid 19 related tweets were informative, 9.4 percent were morale boosting, and 6.9 percent were political. So Twitter is being used globally for health communication. A lot of elite tweets were retweeted for spreading information regarding various health emergencies. According to a Pew research centre survey, 72% of users had searched online for information about a range of health issues of their own and of others in the past 12 months.

11.3 YouTube

With over 2 billion monthly active users, YouTube is a social media behemoth and a key player in the contemporary information ecosystem. "It is one of the largest search engines in the world, second only to Google by volume, and a gate-way to the news for a large number of its users" (Burgess & Green, 2009, p. 16). In recent years, it has also emerged as a major source of information about science, technology, and health, especially for young people (Anderson & Jiang, 2018). If we analyse data on YouTube channels according to data available on YouTube and Google websites, 66% people in Germany used YouTube to develop a new hobby in 2020 while a whopping 94% people in India used YouTube to learn to do things on their own since Covid forced people to become self-reliant, globally 82% people used YouTube to learn to do things themselves. Globally there was a 215% increase in daily uploads of videos related to self-care during the pandemic. 72% people used videos to keep fit and there was a 515% increase in videos with home workout titles. Daily YouTube live streams increased 45% in the first six months of 2020. YouTube viewers in India in 2019 were 271.9 million which increased to 308.7 million by 2020. The Bmj journal said Premier Health institution of India All India Institute of Medical Sciences New Delhi Used its YouTube channel AIIMS Telemedicine for education and training of doctors, nurses and other health care personnel, on various aspects of Covid 19 starting from diagnosis, disinfection, treatment to high end ICU care and issued guidelines for hospital set ups all across the country in collaboration with Ministry of Health and Family Welfare. Their videos despite being more than one hour long were watched by more than 80000 professionals. It has been an incredibly successful programme reaching millions of people who are able to watch them at any convenient time, and can refer to them any number of times in learning and relearning. "WHO has been no way behind in exploiting the YouTube potential to educate public about Novel Coronavirus by its Video 'Novel Coronavirus' which was launched 4 months back and has been viewed more than 5.3 million times and widely regarded as well as quoted as trusted source of information" (Covid-19: The doctors turned YouTubers, The Bmj). The journal further said that WHO has been no way behind in exploiting the YouTube potential to educate public about Novel Coronavirus by its Video 'Novel Coronavirus (2019-nCov)' which was launched 4 months back and has been viewed more than 5.3 million times and widely regarded as well as quoted as trusted source of information. Learning has these basic components: watching, listening, reading and writing. YouTube fulfils two of these obligations, and if a well-versed speaker is good at explaining, it is bound to get an audience especially in these scary times when people are searching for the latest and authentic information. So it is clearly evident how there has been a sharp increase in the viewership of YouTube channels for satisfying various informational needs in the last one year. According to the information presented on the website of statistics Statica the penetration of social media in the last one year looks like this:

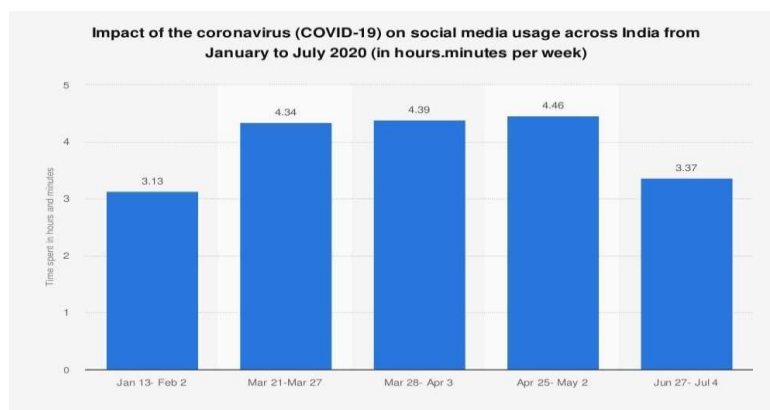


Figure 10: Website Statica

So the data collected from the website Statica shows the impact of Covid 19 pandemic on social media usage across India during the last six months data shows spike during March where the users suddenly jumped from 3.13 million to 4.34 million and remained almost steady until Covid showed a slight decline in January. So this data proves a directly proportional relationship between Covid 19 and usage of social media amongst Indians.

Data today is more important than gold, today's data collected can be helpful in handling tomorrow's problems. The internet is the most accessible form of information dissemination tool with just a click of a button .“ Alexa, an Amazon global company, reports YouTube as the most visited web portal after Google in March . Some studies have analysed the impact of YouTube in previous pandemics .For example YouTube served as a source of substantial useful information during the H1N1influenza pandemic in 2009” (YouTube as a source of medical and epidemiological information during Covid 19 pandemic , Alexander Muacevic and John R Adler)

11.4 FACEBOOK ONLINE GROUPS

If researchers focus on Facebook online groups there has been an increase in the usage of the internet in people to form health related groups and try to stay connected . These online groups have active members who share information , habits , culture etc “Three quarters (77%) of people surveyed say the most important group they are part of now operates online (44.3% primarily online, plus 32.4% both online and offline. And 70% said digital tools were very important for helping their communities thrive during the pandemic. This increased participation in online community groups is here to stay: over the next 12 months, 86% of people whose most important community group is primarily online say they'll continue engaging with that group at the same level (48%), or even more frequently 39%”(Facebook Releases New Insights on Groups Usage During COVID-Andrew Hutchinson).

12. INVESTMENT IN HEALTHCARE

The Indian healthcare sector is mounting at an exponential rate. This is one industry which has not been impacted by the economic slowdown like other industries. India, one of the biggest emerging markets, is currently an important destination for Foreign Direct Investment (“FDI”). Skewed patient doctor ratio in the rural and semi urban areas has led to poor access of the people to the health care facilities which they should get. Digital health along with all the new digital innovations it brings with it seem to be the solution to the existing health related problems of these people. “The growth of the IT sector in India (which plays a crucial role in telemedicine) has led to the emergence of this sector in India. Tele- radiology has emerged as a fast growing area with an increasing number of foreign hospitals active in this space. These hospitals consult Indian experts to provide opinions, i.e., on x-rays of patients in the hospital. Many hospitals have also adopted the public-private partnership route to render services through telemedicine”(Wang, H., P. Cleary, J. Little, et al 2020. “Communication in a Public Health Crisis.” The Lancet Digital Health2, no. 10)

“Data is the essential fuel for digitalisation, and a strong data ecosystem is the infrastructure required to deliver that fuel in a successful response to any pandemic” (Horgan D., Hackett J) .

At the grass root level progress is hampered because of the limitation of collection, dissemination of high quality data. These limitations become more exposed during the tough times of pandemics.

There are voices rising from all corners of the world demanding for innovation in the healthcare system. Digitisation of the healthcare system is the future for mankind to get optimum healthcare. Health information exchanging should continuously take place, “at least nationally, if not internationally,” according to a research fellow at Brookings Institution. The advantages of sharing healthcare information worldwide are enormous. The current example of Covid 19 showed that

“It is a virus that has shown that information sharing, transparency and collective action are necessary,” says an expert in international affairs at the University of Waterloo. Even historians point to “the big advantage” over viruses that humans can deploy by international data sharing: a coronavirus strain in China and another strain in the USA cannot swap tips about how to infect humans, “but China can teach the US many valuable lessons about coronavirus and how to deal with it.” However, there are preconditions, too: “For this to happen, we need a spirit of global cooperation and trust”.

More data, wider, deeper, harmonised and faster data are seen as prerequisites for success: “Rapid data sharing is the basis for public health action,” states a WHO article, highlighting the dependency of decision-makers on information from peer-reviewed journals and online datasets. “

It is the dawn of a new era to transit the traditional boundaries and move into the epoch of digital awakening, convergence of health communication and digital media. It is the time to learn from the past mistakes and move ahead overcoming traditional boundaries of translating biomedical research into clinical practice. A modern and new weapon is required to address the organisational, operational and legal barriers to address the need of the hour and cater to the changing health needs of the society.

Digital Innovation to the Rescue

In response to the pandemic the digital innovations that came to the surface, some private, some in collaboration with the government reinforced the importance and possibility of digital health for present and future generations. Innovative digital tools are proving to be the magical tool to help the already overstretched healthcare facilities, empowering patients with the ability to conduct self-diagnosis, or generating macro data on the various diseases by aggregating information from various patients and physicians.

12.1 DIGITAL HEALTH

The growing technical advancement is generally termed as digital technology. Even though the advancement in health is considered as digital health, there is a swelling need to understand what exactly is digital health. In the words of WHO it is “a broad umbrella term encompassing eHealth, as well as emerging areas, such as the use of advanced computing sciences in ‘big data’, genomics and artificial intelligence”. In other words it can be said that all information communication technologies when connected with health are referred to as digital health. These technological advancements in digital health could be used for improves accuracy in diagnosis, monitoring in chronic diseases, etc

1. A patient survey predicts that 75% of all patients expect to use digital services in the future. With the healthcare sector expected to touch INR 8.6 trillion (US\$ 133.44 billion) by 2022, one should not harbour any doubt that Digital Health services would bite into a large portion of the pie. (WHO Guideline on Recommendations on Digital Interventions for Health System Strengthening, World Health Organisation,)

The world has come a long way since then, with the development of information technology culminating to a phase where such innovative procedures are steadily gaining acceptance. Healthcare technology is pushing boundaries, broadening its scope every day and with it, the opportunities. From heart rate monitors built into watches to glucose monitors integrated into contact lenses, the healthcare industry is heading into some interesting and revolutionary times.

(Michael Kirby, Medical Technology and New Frontiers of Family Law, 1 AUSTL. J. FAM. L. 196, 212 (1987).

12.2 Some Prominent Examples of Digital Health

I. Telemedicine

Telemedicine is an emerging field in the domain of health communication, it is a standout in the field of evolution in digital health. It covers in its radar aspects such as tele radiation, teleconsultation, tele nursing, tele icu tele surgery etc. This is an important tool in the area of health communication in India since 75percent of healthcare infrastructure is concentrated in urban areas. Telemedicine works effectively to bridge the gap between the patient and the doctor, improving the reach and accessibility.

II. Robot-Assisted Surgery

3. Using robots in the surgeries to increase precision and make surgeries minimally invasive is the new talk of the town. Such development in technology has resulted in less blood loss, effective pain management and better , faster recovery rate. Using the assistance of robots, doctors are able to perform surgical procedures more efficiently. "Going forward it can be witnessed the use of microbots for diagnosis and treatment of diseases. One such procedure called capsule endoscopy, in which the patient swallows a tiny camera so that the healthcare provider can take pictures of the digestive tract, has already been approved by the United States and Drugs Administration (the apex regulatory body governing drugs and medical devices in the United States of America). Other applications in the future may include removing plaque from arteries, taking tissue biopsies, attacking cancerous tumours directly and delivering targeted medication "(Johns Hopkins Medicine; Types of Minimally Invasive Surgery; available at <http://www.hopkinsmedicine.org>)

. III. Self-Monitoring Healthcare Devices

A growing façade which can be witnessed worldwide is the wearing of wearable health gadgets and devices which detect various physiological changes in the body like weight, speed, sleeping pattern, heart rate, pulse, oxygen etc. so that early detection can help in saving lives of people from onset of sudden chronic diseases such as cardiovascular

IV. Electronic Health Records ("EHR")

An EHR helps collect information of all the patients . All reports, updates, details of ongoing treatment, diagnosis, names of doctors all are available digitally. So that no matter in which corner of the country a person is sitting, the treating doctor can get an holistic overview of the entire health record of the person to come up with a proper diagnosis without missing any important detail.

V. Health Service Aggregation

Information that is not available in the proper symmetry is one of the biggest loopholes .It is because of this that the list of doctors for treating various diseases is not available . making it the biggest challenge in healthcare is not available in a proper manner Information asymmetry is one of the biggest challenges in healthcare. Patients are not privy to information which is essential in aiding with their choice of doctors, and at times doctors are not able to reach out to a large number of patients due to a lack of visibility. A number Online platforms are springing up which attempt to solve this problem. These platforms list the names of doctors with their specialties, and allow for patients to search for and make an appointment with the right doctor to suit their specific needs. Patients are also able to rate and review the quality of the service provided by the doctor or institution, which serves as guidance for future patients to make an informed decision.

VI. m-Health

India has emerged as the second largest phone market in the world. Making m- health as a lucrative field for health Providing access to health based applications on smartphones will no

longer be a problem with such a huge penetration of the device. “India is expected to reach 664million mobile internet users by 2023”(. India is now the second largest smartphone market in the world, surpassing the U.S., available at: <https://mashable.com/article/India-smartphone-market/>). Convergence of new media with health communication along with the mobility of m-health opens up the domain of health communication to a large number of people to become active participants of the revolution.

IX. e-Pharmacies

Like any other company selling its goods online e pharmacy is on the rise and is seen spreading its presence on the digital platform in the last couple of years in India. It is a pharmacy that takes orders online and sends orders through mail, courier or delivery people. It allows pharmacists to cater to a larger number of people at a given point of time.

X. e-Learning in the healthcare sector

It has been made mandatory for the doctors to continuously keep themselves updated and keep learning., Continuous medical learning (CME). E- learning is also a convenient platform for doctors to attend conferences and seminars for updating their knowledge sitting in the comfort zone of their area or city.

13. EXAMPLE OF HEALTH COMMUNICATION DURING COVID 19

The Ministry of Health and Family Welfare (MoHFW) of India involved a lot of data analysing, training, on mindfulness identified with covid and circulated methodologies to remain safe and strategies to stop the virus to spread. It involved, print, electronic medium special segment on all mediums of communication was devoted specially for this disease.

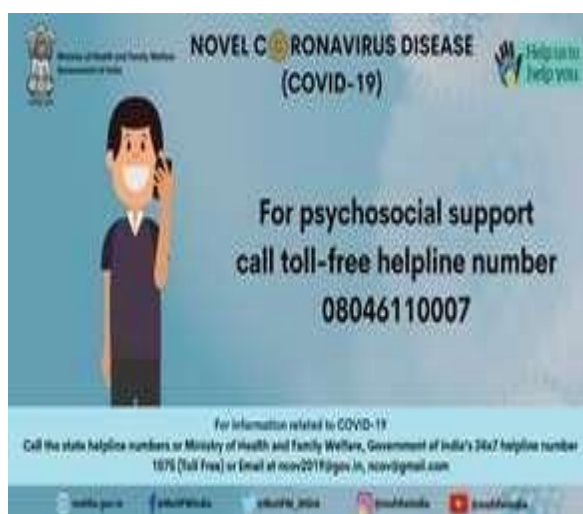


Figure 11: WHO Report 2020

13.1 The role of digital health

Revolutionary healthcare technologies like telemedicine, artificial intelligence etc are changing the complete overview of the Indian health industry. Like many other countries India too is at the cusp of a ‘digital health revolution’. According to the digital health report of India 2020 “Digital health technology is a pivotal pillar in delivering value- based care across the healthcare continuum in India. Adaptive intelligent solutions can help lower the barriers between hospitals and patients, improving access to care and enhancing overall patient satisfaction, particularly in tier II and III cities in India”. Health care companies as well as societies and communities are ready to embrace innovation and emerging trends to successfully steer new age technologically driven business .

“Harnessing the power of digital technologies is essential for achieving universal health coverage. Ultimately, digital technologies are not ends in themselves; they are vital tools to

promote health, keep the world safe, and serve vulnerable “Dr Tedros Adhanom Ghebreyesus, WHO Director General.

India Brand Equity Foundation (IBF) anticipates that the healthcare sector will record a threefold rise, at a Compound Annual Growth Rate (CAGR) of 22% during 2016-2022 to reach US\$ 372 billion in 2022 from US\$ 110 billion in 2016. Similarly, the hospital industry in India stood at \$61.79 billion in 2017 and is expected to increase at a CAGR of 16-17% to reach \$132.84 billion by 2022. This growth is influenced by lifestyle changes, medical innovations, growing health awareness etc.

As mentioned in the digital report of India 2020, digital intervention in healthcare is expected to drive the industry at a CAGR of 23% by 2020. The adoption of AI is reshaping the Indian healthcare market significantly. Research & Markets predicts that the applications of AI in the healthcare space in India will be worth US\$ 6 billion (INR ~431.97 Bn) by 2021, expanding at a rate of 40%. According to the Future Health Index (FHI) 2019 report, India is leading in the adoption of digital health technology with 76% of healthcare professionals in the country already using digital health records (DHRs) in their practice. According to the Future Health Index (FHI) 2019 report, India is leading in the adoption of digital health technology with 76% of healthcare professionals in the country already using digital health records (DHRs) in their practice. The report also confirms that digital health technology is a pivotal pillar in delivering value-based care across the healthcare continuum in India. Speaking about India's adoption of digital health in an article for the Observer Research Foundation, Prof Rajendra Pratap Gupta from Digital Health India, said: “Given that India is setting up 150,000 health and wellness centres by converting its rural health centres, and these have an element of tele-medicine as its offering, it is the right time to frame legal and regulatory frameworks/standards for digital health, data privacy and protection act.”

13.2 A vibrant start-up ecosystem

Digital health start-ups are opening new avenues for adoption of new innovative health technologies. Digital health start-ups in India provide a vast backdrop for solutions. This start-up domain goes beyond a specific disease, therapeutic area, geography, type of product and service or business model.

According to Inc42's The State of Start-up Ecosystem Report 2018, there are a total of 4,892 start-ups in the Indian health-tech space. 2018 saw an increase of 45.06% in the total investments in health-tech start-ups. Overall, health-tech start-ups in India raised a total of US\$ 504 million between 2014-2018.

13.3 Non-communicable diseases (NCDs)

NCDs have huge capacity to leverage technology. Technology helps in creating structured care continuum for the chronic patients. It helps in collection of data and updating the pool of virtual information about all medical history of these patients. Lastly it improves access to these patients eliminating their limitations.

The World Health Organisation defines digital health as “a broad umbrella term encompassing eHealth, as well as emerging areas, such as the use of advanced computing sciences in ‘big data’, genomics and artificial intelligence”. Thus Digital health can be said to be an amalgamation of new media and traditional health technologies for the purpose of proper communication for precise, improved diagnosis and treatment.

14. CONCLUSION

Civil society in India played a crucial role in disseminating information regarding health to the masses. In a democratic country like India which is facing the challenge of population explosion the biggest challenge stands providing good health to its citizens. But the inadequacy of resources and expertise amongst the masses cannot be overlooked. Hence greater society involvement is recommended in health communication. Two way flow of communication will help the policymakers understand the greater problem of the society. Providing them a structure to change or finetune their policies and schemes. Proper digital communication where feedback is instant and where all members of the society as well as the policymakers are

involved over a common platform of communication there proper execution of the schemes and policies become easier. Recent pandemic made utilization of innovation and adoption and behavioural changes among the policymakers as well as the common man possible. For a nation like India, with its geological immensity, this was undoubtedly a big achievement. The result of a digital health application in one local area should be copied and applied in another while altering and making changes according to the needs of the target population.

The present and future of health communication research lies on the effective dissemination of relevant health information for the promotion of public health. "Modern health communication efforts will recognize the importance of multiple channels of human communication and implement a wide range of different prevention messages and campaign strategies targeted at relevant and specific audiences (Maibach, Kreps, & Bonaguro, 1993). Modern campaigns are becoming increasingly dependent on integrating interpersonal, group, organizational, and mediated communication to effectively disseminate relevant health information to specific at-risk populations.

"Health communication inquiry is becoming increasingly concerned with the role of culture on health and health care. We believe that communication scholars will work to end the prejudicial treatment of marginalized cultural groups within the modern health care system, such as prejudicial treatment of people with AIDS, the poor, minorities, women, and the elderly" (Kreps, 1996a). Future health communication campaigns will look into the health communication needs of the marginalised groups or the underlying groups, and identify strategies for the upliftment of these members of these groups. "We believe the field of health communication is moving toward a sophisticated multidimensional agenda for applied health communication research that will examine the role of communication in health care at multiple communication levels, in multiple communication contexts, evaluate the use of multiple communication channels, and assess the influences of communication on multiple health outcomes" (L.D. Jackson & B.K. Duffy (Eds.). (1998), *Health Communication Research: Guide to Developments and Directions*, Westport, CT: Greenwood Press, pp. 1-15.). the future looks hopeful for more evolution of innovative healthcare communication which will incorporate all members or groups of the society for the overall upliftment of our country. We should never forget the past and learn from the past mistakes and move towards a brighter future of healthier citizens of our country.

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