People’s Attitude towards Healthcare Technologies

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Abstract

With the accelerating pace of social and technological developments on health front in India, people’s attitude toward healthcare and in their health-seeking behavior has undergone significant changes. Impact of health-related technologies on population focuses more on improving their quality of life and wellbeing.

It is now and in years to come, health will attain greater significance, amidst the projections of country’s population to be 1.55 billion by 2035, where a large percentage would be in the younger bracket and would be instrumental in driving the economy. And also, there are projections which assumes rise in geriatric population who would also need to be looked after and provided healthcare.

Facilitation of IT-based health, increasing health awareness and literacy skills and exchange of health information among healthcare and public health professionals, is increasingly shaping healthier attitude and behavior of people in delivering health interventions. Furthermore, the availability of personalized self-management tools and resources are helpful in promoting healthy lifestyle among Indian population. This study review highlights the people’s attitude and behavior towards the interventions of healthcare technologies and discusses the technological opportunities to connect with diverse and hard-to-reach population. This article also presents insights from the recently released Technology Roadmap on Medical Sciences & Health Care by TIFAC on enhancing longevity and health span through lifestyle modification, expanding awareness on hygiene and public health and efficient networking of healthcare delivery system through harnessing the potential of future technologies.

Keywords: Healthcare, Information technology, Futuristic health care technologies

Introduction

The advancements and development in healthcare technologies have reached an apex where it is touching lives of almost all. The medical breakthroughs not only help simplifying the lives of medical community but also ensure healthcare access to millions who could not have reach to effective vaccines, medicines, and other essential life-saving tools. Technological solutions/innovations in health sector have immense potential to reduce healthcare costs by creating health awareness and empowering people to better monitor, understand, and self-manage their chronic disease in their own home-setting, rather than in institutional care facilities. Further, integration of technologies with areas like disease prevention, surgical procedures, better access to information and medical telecommunications continues to improve the state of global healthcare. Healthcare professionals are also striving to ensure a positive change in lifestyle of population and keep them healthy over the long term.

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Information Technology and Healthcare

Healthcare has witnessed a magnificent transformation with increased use of information technology (IT) such as electronic medical records (EMR), telehealth services and mobile technologies like tablets and smart phones, benefiting both medical practitioners and patients by reducing the physical distances and making it more accessible. Medical communication technologies have connected doctors with patients instantaneously, who are thousands of miles away, through telecommunication and video conferences that save time and money spent on traveling. This provides doctors better access to any type of information they need – from drug information, research and studies, patient history or records, and more – within mere seconds. Applications that assist in identifying potential health threats and examining digital information like X-rays and CT scans also contribute to the benefits that information technology brings to medicine. Further, medical technologies like minimally invasive surgeries, better monitoring systems, and more comfortable scanning equipment are allowing patients to spend less time in recovery and more time enjoying a healthy life.

Additionally, the blend of medical equipment technology and tele-health has brought robotic surgeries more frequently into practice, which integrates advanced computer technology with the experience of the skilled surgeons by replicating the surgeon’s hand movements and minimizing hand tremors. The technology is also provided with minimally invasive procedures that leave patients with less scarring and significantly less recovery time.

Technology and Medical Research

Research and development is an important aspect for the progress of healthcare and medical innovation sector. To lessen symptoms or treat ailments, comprehensive biomedical research needs to be constantly conducted so as to test the new procedures that prevent, diagnose and cure diseases. Eventually, scientists are able to examine diseases on a cellular level and produce antibodies against them and explore the potential usage of targeted drug delivery, which is an advanced method of delivering drugs to the patients in targeted sequences and increases the concentration of delivered drug to the targeted body part of interest only (organs/tissues/cells), which in turn improves efficacy of treatment by reducing side effects of drug administration.

India also has well-proven strong indigenous healthcare systems. All this is evident in terms of growing medical tourism. Further development of technology in this area will save resources which otherwise go in importing from abroad. From the perspective of medical tourists, healthcare seems affordable. While some view medical tourism as a way of bringing in resources for investing in cash-starved Indian healthcare by contributing to the gross domestic product (GDP), others feel it is deepening already prevalent inequities in healthcare and leading to use of country’s resources for benefiting foreigners.

People’s Attitude towards Healthcare Technologies

A large pool of younger bracket would acquire a sizeable population amidst the projection of 1.55 billion country population by 2035 along with the rise of elderly population at the same time. Health in this scenario would require greater attention in terms of its affordability and accessibility. However, the journey to build these healthy individuals for a healthy developed nation is not going to be smooth, given the current challenges faced in the area of healthcare. The trends suggest that the need for better healthcare by increasing younger and elder population would timely demand healthcare technological interventions and appropriate infrastructure facilities across the country.

For health technologies where the end-user is the patient or consumer, acceptance of technology by the individual is key to successful access to that technology. The use of health technology greatly depends on the experiences and values that shape the attitude of end user towards disease, medication, treatment regimens, and side effects. The younger group being tech savvy due to rapid penetration of IT into practice is seen easily adopting healthcare technologies whereas the older population faces obstacles interfacing with same technological interventions. It is for this reason that it becomes highly important to empower people about the usage of these healthcare technological interventions so as to improve their quality of life and increase health span. Besides disparity based on economic status, disparities due to demographic, topographic and social factors have also prevented the benefits of technological advancements in health reach all.

Insights from Technology Roadmap on Medical Sciences and Healthcare

The Technology Roadmap on Medical Sciences & Health Care recently released by Technology Information, Forecasting and Assessment Council (TIFAC), an autonomous organization of Department of Science & Technology, Government of India, focuses on the key aspects and health indicators such as enhancing longevity and health span, disease burden including communicable diseases, new and re-emerging infectious diseases along with increasing incidence of non-communicable diseases/lifestyle-related diseases like cardiovascular diseases, type 2 diabetes, cancer and chronic respiratory diseases. It has also discussed in detail the major public health concerns about poor sanitation and hygiene conditions in India. It has also stressed upon the other basic parameters like lack of infrastructure in terms of paramedics, clinics,
In this respect. This technology roadmap is oriented to identify the technologies and strategies to improve quality of life of Indians with a vision “Ensuring affordable and accessible healthcare to every Indian through prophylactic, promotive, curative and rehabilitative aspects of technologies”.

In this technology roadmap, main elements of the framework for action are defined under ten missions to achieve the stated vision:

- Enhancing longevity
- Nutritional intervention
- Health awareness
- Mother and child healthcare
- Control of infectious diseases
- Novel therapeutic approaches
- Minimization of all forms of disabilities
- Indigenous and modern systems of healthcare
- Rural and urban healthcare delivery systems
- Indigenous biomedical technologies

The roadmap highlights the need for all the aforementioned sectors to meet the challenges through technological interventions. Implementation of technologies and attempting to identify the future concepts including bioprinting, targeted drug delivery system, next-generation genomics, promoting public health practices, integration of traditional and modern health practices would transform overall health system and help in achieving the defined set of Sustainable Development Goals (SDGs).

Furthermore, the technology roadmap also identified Blue Sky Research area in the scientific research domains where “real-world” applications are not immediately apparent. It has been also defined as “research without a clear goal” and “curiosity-driven science”, for example to name a few, gene manipulation to delay ageing process and increase health span and susceptibility status of the pathogen without any culture and real-time monitoring of resistance status, etc. The whole technology roadmap thus assimilates technologies in different timelines, policies and strategies to provide efficient and affordable healthcare to all citizens of India.

**Way Forward**

Enhancing the innovations in medical sciences and healthcare sector, changing disease profile, shift towards lifestyle-related disorders, rapid urbanization, affordability and accessibility issues throw insurmountable challenges that need to be paid urgent attention. The influence of health technologies does seem to be having a continuing and significant impact on reduction of mortality, morbidity and also improvement of quality of healthcare. The technology roadmap has significantly analyzed the current situation of diseases, health conditions, comparison of health indicators in relation to global scenario, technology advancement in the field of screening, diagnosis, prevention, control and rehabilitation of health states, mother and child health, geriatric care, prevention of disability and impairment, reversing the trends of non-communicable diseases, health promotion and healthy living.

The roadmap has been appropriately aligned with the vision envisaged in the main Technology Vision 2035 document particularly in the context of synchronization with the prerogative “Universal healthcare and public hygiene” and grand challenge “Guaranteeing nutritional security and eliminating female and child anaemia” flagged in the vision. Technology Vision 2035 exercise has visualized an achievable target of USMR of less than 6 per 1000 and a MMR of less than 15 per 100,000, a primary health center in every gram panchayat having remote access to specialists/super-specialists and a multispecialty hospital in every district with air ambulance and trauma care services. In the next few decades, rapid advancements are expected, which would create newer opportunities for technology providers, industries (biotechnology, chemical, pharmaceutical), doctors, patients, start-ups, in particular and to society in general. An effective synergy between the prime stakeholders, namely, research institutions, academia, industry and government would be utmost essential to ensure development, technology transfer and deployment of these technologies and also to facilitate advent of affordable products in the market, providing a scalable model of public-private partnerships (PPP). At the same time, initiatives need to be taken for creating awareness and educating people to build a healthy attitude for using and adopting these healthcare technologies wherever required to improve the quality of their lives but primarily adopting a healthy lifestyle as an inexpensive tool towards prevention of onset of diseases.

**Conflict of Interest:** None

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