

# Approaches of Technology using the Internet of Things in the Development of Health Care and Medical Facilities

Ashendra Kumar Saxena, Professor,  
College of Computing Sciences and Information Technology, Teerthanker Mahaveer University,  
Moradabad, Uttar Pradesh, India  
Email Id- ashendrasaxena@gmail.com

**ABSTRACT:** *The growth of society is analyzed by assessing the society's established medical facilities; it is believed that a healthy society is the nation's backbone. With technological breakthroughs, medical science is advancing, and numerous ailments are being recovered in less time. The study's goal is to assess and highlight the many medical facilities and health care approaches that aid in the development of society. The study also aids in measuring the effectiveness of medical facilities supplied to patients to enhance their health. The usage of the Internet of Things (IoT) is rising day by day, assisting society in receiving medical assistance in an emergency and saving the lives of many people, as witnessed throughout the study. Different technologies are proving themselves in providing medical facilities from long distances which are observed in studies. Thus, it is said that the developing society has developed a healthcare system, which will be more developed with development in technology.*

**KEYWORDS:** *Health, IoT, Medicines, Patients, Society.*

## 1. INTRODUCTION

The importance of healthcare facilities in improving health and well-being is well acknowledged. Individuals of various ages, classifications, and origins suffer from health issues, sicknesses, and diseases. They require medical professionals and health care specialists' help and supervision when these problems are serious. In India, universal healthcare and medical facilities have been established throughout the country. In comparison to rural regions, urban areas are in a better condition of development. Individuals in rural areas are reliant on natural circumstances to manage their wounds, health issues, and diseases, according to the study. To cure their health issues and ailments, they gather herbs and herbal medicines from the woodlands. Individuals living in urban areas, on either hand, visit hospitals and doctors' care centers to receive medical help for their health issues, ailments, and diseases.

Individuals from rural areas have created awareness that the adoption of contemporary and creative approaches will make a big contribution to the treatment of health issues and illnesses in the present period. With improvements in technology and the advent of modernization, people from all walks of life are realizing that visiting hospitals and health care facilities and counseling medical professionals and healthcare specialists may help treat health issues and illnesses efficiently. In terms of income and employment, healthcare care and medical services are now one of the country's most important industries. Several persons are seeking work chances in this industry, according to the study reports. The individual from underprivileged, and economically

disadvantaged areas of society are frequently uninformed of options to improve their health and well-being. As a result, they may raise awareness about methods to enhance health and well-being through these locations [1]–[5].

### *1.1.Types of Healthcare*

- Primary care is a form of healthcare that focuses on healthcare workers providing day-to-day medical treatment to patients. Initial care's main goal is to provide frequent physical screenings, with healthcare practitioners serving as patients' initial point of contact.
- Secondary care, also known as specialty care, refers to medical treatments delivered by experts such as a physician, cardiologists, oncologists, and others.
- Tertiary care, also known as specialist consultation healthcare, is for clients who are recommended for enhanced detection and early from primary and secondary clinical staff.

In today's world, healthcare systems are critical. As a result, nations must make significant investments in healthcare to maintain a healthy population, which will result in a successful economy. The healthcare system provides emergency care, nutritional help, preventive services, lab work, labor and transportation of commodities, illness treatment, diagnostic testing, and many more services. Diseases and catastrophes are inescapable in our lives and will inevitably occur. As a consequence, medicine has become an indispensable part of society. Physicians, dentists, midwives, opticians, pharmacists, nurses, and other specialists provide healthcare.

The role of every country is to know about the health condition of their citizens and take care of their health-related issues. The different countries have different apparatus for curing the diseases and enhancing the lives of their citizens. The developed countries have advanced healthcare stations with maximum efficiency of curing rate of patients. Some underdeveloped countries are developing medical facilities for their citizens. Every country has its reserved funds for the betterment of health and supplying medical facilities.

### *1.2.Health Promotion in Hospitals:*

Hospital is seen to be disciplined and suitable locations for promoting healthcare facilities. According to hospital research studies, not every hospital is considered efficient. In other words, staff workers in certain hospitals are efficient, knowledgeable about their job responsibilities, and employ current and inventive approaches in carrying out their responsibilities. Other hospitals, on the other hand, have personnel who do not demonstrate efficiency or apply current and inventive approaches in the execution of their work obligations. In hospitals, the notion of health promotion is ongoing. Hospital directors, physicians, nurses, and members of staff must always strive to enhance health promotion within hospitals. They must research regularly. There is also an arrangement of workshops and seminars inside hospitals that transmit information and awareness of current and pioneering techniques and ways of order to bring about changes to persons.

Health care services, particularly hospitals, have long been seen to be an excellent location for implementing health promotion efforts. Because of their major role in providing health care facilities in the community, the hospital is well-positioned to campaign for health awareness. The value of medical services in rural regions is yet neglected. As a result, when people in rural areas suffer from health issues or illnesses, they relocate to metropolitan areas. Individuals have several

possibilities to ease their troubles and worries in hospitals and care institutions. These are some of the primary recommendations that were to invest money mostly on treatment strategies but also on other forms of initiatives to improve medical and healthcare facilities. Individuals from rural areas, as well as those from disadvantaged, marginalized, and socioeconomically backward portions of society, must be educated on the methods and tactics that are appropriate for providing medical care therapy.

### *1.3. Approaches to Health Promotion*

Individuals from various areas, vocations, classifications, and origins share this idea that health equals prosperity. Individuals must pay attention to their health issues as they improve. When it comes to encouraging good health, they must have a thorough awareness of the many methods of health promotion. The methods for public health were based on community and organizational development to promote individual health very well. This resulted in a slew of projects, including health-promoting communities, schools, and hospitals, to name a few. The settings approach understands that behavioral changes could only be preserved if they are embedded into everyday life and adhere to the process of interacting with culture. Within businesses, health promotion programs must consider not always personnel but also established social rules, traditions, ideologies, and perspectives. Some of the strategies of health promotion include adopting health promotion programs, establishing supportive environments for health, boosting community participation in health, building skills and abilities, and reorienting medical services.

### *1.4. Create Supportive Environments for Health*

As health cannot be isolated from other goals, societies are complex and interconnected. The social-economic approach to health is based on the relationships that are formed between persons and their environments. Individual health is the overarching guiding concept for the entire world, country, regions, and communities. At the center of this process is the application of guidelines and practices that would create empowering opportunities for women and poor, marginalized, and financially weaker sectors of society. Conservation of natural capital should be emphasized across the country. Within households, there should be an effort to create a pleasant and friendly environment. Friendships and bonds amongst family members must be established.

Geriatric and mental institutions are less vital in comparison unless their facilities are damaged or there is a significant psychological impact on persons in the disaster-affected community. The major purpose of health care institutions is inspection. According to a historical study, the unregulated spread of infectious diseases as a result of natural catastrophes was uncommon, not the rule. Many health clinics are specifically built to treat bumps and scrapes, which can help reduce traffic and minimize referrals to hospitals or other more sophisticated healthcare facilities. Health is commonly viewed as both an individual and a community-wide right. As a result, in many nations, health facilities are owned and operated by the government.

In recent years, a significant amount of money has indeed been invested in hospital expansions and modifications aimed at reducing vulnerability, even though this capital creates no revenue and can become a burden on the authorities in meeting recurrent spending to maintain the facilities operationally. This emphasizes the need to effectively safeguard all social program investments, particularly during times of economic hardship, and ensure that they are not vulnerable to natural

disasters. Thus, the study of development in healthcare and mechanical services is necessary [6]–[10].

## 2. DISCUSSION

By reimagining the realm of devices and human touch in the provision of clinical services, the Internet of Things is certainly transforming the healthcare business. Applications of IoT in healthcare benefit patients, families, experts, clinics, and insurance plans. Patients receive individualized care using wearable devices such as activity trackers and other internet-connected equipment such as blood pressure or heart monitor cuffs, glucose meters, and other devices. These devices may be customized to alert you of calorie tracking, exercising, meetings, blood pressure fluctuations, and other things. IoT has changed people's lives, particularly the lives of the elderly, by enabling them to track their health issues promptly. This has a big impact on single parents and their families. When a person's typical behaviors are disturbed or modified, the warning system sends signals to concerned family and healthcare professionals.

Using IoT-enabled devices and some other remote monitoring technology, physicians can keep a better eye on their patients' health. They might keep records of whether patients are adhering to their treatment plans and whether they need emergency medical assistance. Doctors may be more watchful and active in their contact with patients thanks to the Internet of Things. Data through IoT devices might help physicians choose the best medical technique for their clients and get the desired results.

Hospitals may profit from IoT systems in several ways in addition to monitoring patients' health. Wheelchairs, implanted oxygenation units, cardioverters, nebulizer treatments, and other security cameras are all tracked in real-time utilizing IoT sensors. Real-time monitoring of medical workers' deployment at multiple locations is also possible. Infection spread is a major issue among hospital patients. Sanitation tracking devices with IoT capabilities aid in the prevention of disease in people. Investment management, such as prescription stock control, and surveillance systems, such as refrigerator humidity sensors and humidity control, are also aided by IoT devices.

Health insurers have several alternatives when it comes to IoT-connected intelligent equipment. Insurance companies can utilize data acquired by remote patient monitoring for assessment and claims processing. Using this data, it will be feasible to recognize fraud claims and identify underwriting potential. IoT devices enable visibility among insurers and consumers throughout the screening, invoicing, claims management, and risk-assessment processes. As a consequence of IoT-captured data selections in all business procedures, customers will have relevant insight into the fundamental reasoning behind every choice made and process results.

Using developed new methods, counseling and guidance services, trying to promote the workable and safe design of health facilities, trying to promote hygienic conditions, and food should be told to prepare in clean and sanitary surroundings, doctors, nursing staff, and hospital workers must be well, providing sufficient visiting hours, sharing information respectfully, enforce law and policies. Finally, it can be concluded that the provision of health with health facilities, when performed effectively and using cutting-edge approaches, will significantly contribute to the promotion of health and well-being.

If insurers offer incentives, customers may be compensated for using and transmitting health data given by IoT devices. Clients who use IoT apps to monitor their daily activities and respond to prescription regimes and preventive care measures may be rewarded. As a result, insurers will be able to drastically reduce claims. Insurance companies can utilize data provided by these sensors to validate claims using embedded technology.

### 3. CONCLUSION

Healthcare and education and hospitals are thought to play an important role in fostering health and happiness. Individuals of various ages, classifications, and origins suffer from health issues, sicknesses, and diseases. As a result, medical and healthcare services will play a significant role in improving health and well-being in such situations. Individuals require healthcare providers and caretakers' help and direction when their health issues and diseases are serious. In India, universal healthcare and medical centers have been established throughout the country. Thus, health-related issues are increasing with the busy lifestyle of the people with improper diet and habits so everyone must take care of themselves. Health and medical awareness should be spread among the people through various means of communication, which will help for the betterment of society. An improved health system helps in improving the society which will help to reduce the death rates as people will develop a healthy lifestyle.

#### REFERENCES:

- [1] H. Javdani and H. Kashanian, "Internet of things in medical applications with a service-oriented and security approach: a survey," *Health Technol. (Berl.)*, 2018, doi: 10.1007/s12553-017-0180-8.
- [2] I. Chiuchisan and O. Geman, "An approach of a decision support and home monitoring system for patients with neurological disorders using internet of things concepts," *WSEAS Trans. Syst.*, 2014.
- [3] R. Basatneh, B. Najafi, and D. G. Armstrong, "Health Sensors, Smart Home Devices, and the Internet of Medical Things: An Opportunity for Dramatic Improvement in Care for the Lower Extremity Complications of Diabetes," *J. Diabetes Sci. Technol.*, 2018, doi: 10.1177/1932296818768618.
- [4] B. M. Eskofier *et al.*, "An overview of smart shoes in the internet of health things: Gait and mobility assessment in health promotion and disease monitoring," *Applied Sciences (Switzerland)*. 2017. doi: 10.3390/app7100986.
- [5] T. Adame, A. Bel, A. Carreras, J. Melià-Seguí, M. Oliver, and R. Pous, "CUIDATS: An RFID–WSN hybrid monitoring system for smart health care environments," *Futur. Gener. Comput. Syst.*, 2018, doi: 10.1016/j.future.2016.12.023.
- [6] World Health Organization, "Sundsvall statement on supportive environments for health," *Third Int. Conf. Heal. Promot.*, 1991.
- [7] J. D. Lin *et al.*, "The general picture of supportive health environments for persons with intellectual disabilities among 121 disability welfare institutions in Taiwan," *J. Intellect. Disabil. Res.*, 2006, doi: 10.1111/j.1365-2788.2005.00729.x.
- [8] N. Mier, M. G. Ory, S. D. Towne, and M. L. Smith, "Relative association of multi-level supportive environments on poor health among older adults," *Int. J. Environ. Res. Public Health*, 2017, doi: 10.3390/ijerph14040387.
- [9] B. Poland, M. Dooris, and R. Haluza-Delay, "Securing 'supportive environments' for health in the face of ecosystem collapse: Meeting the triple threat with a sociology of creative transformation," *Health Promot. Int.*, 2011, doi: 10.1093/heapro/dar073.
- [10] D. Clarke, D. Rajan, and G. Schmets, "Creating a supportive legal environment for universal health coverage," *Bulletin of the World Health Organization*. 2016. doi: 10.2471/BLT.16.173591.