

TECHNOLOGY INTERVENTIONS IN HEALTH IMPROVEMENT AMONG INDIANS

Abstract

The advancement in healthcare is resulting in an increase in life expectancy. Healthy citizens can contribute more towards the growth of the nation. Hence the advancements in technology give us time efficient, cost-efficient treatment. In the present era now it's time to start use of telemedicine and blockchain technology in healthcare to provide fast healthcare delivery services to those who need it. The growth in information technology, data speed and reach of internet to mass scale now enable us to provide the best healthcare to deliver to patients. The chapter discusses the in-depth possibilities of Telemedicine and Blockchain in healthcare. It addresses the future sense of the healthcare sector for patients, doctors, and other healthcare professionals. In the conditions of disasters, war and other emergencies the application of Telemedicine and Blockchain in healthcare will be a boon for saving lives of Indians.

Keywords: Healthcare, Telemedicine, Blockchain Technology, Advancement in Healthcare.

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I. INTRODUCTION

The practice of medicine and the healthcare sector develops every day by adopting newer technologies. The presence of robotic technologies in telemedicine allows patients to be observed remotely, doctors can take medical histories and participate from remote locations to improve community health. Pharmacy automation represents robotic systems for dispensing medications in a hospital retail pharmacy environment.

The term Tele-health encompasses a different technology that can provide patient care and improve the health care delivery system. Tele-health and telemedicine are different from each other because Tele-health refers to a wide range of remote health care facilities. Tele-health is basically a remotely operated non-clinical service such as organizing teaching programs, administrative meetings along with on-going physician education (CME). According to the World Health Organization, tele-health can be described as "surveillance, health campaign and public health functions".

For the first time in the history of the medical field, Shafi Ahmed, an oncological surgeon, performed an operation using a virtual reality (VR) camera at the Royal Hospital in London in April 2016. It was an important milestone in surgery.

Against the backdrop of the current research, a study was conducted on technology assessment that is changing the dimensions of public health in society, which is a current need.

The telemedicine and healthcare sector are progressing daily by implementing newer technologies at the community level. The development of robotic technologies in health care is gaining attention of all medical personnel.

The intervention of technology in a better environment through green building, in disease prevention, treatment and diagnosis extends the life expectancy of the public. A healthy lifestyle is the prevention of many diseases. A study is needed on technology assessment that changes the dimensions of public health in society.

The use of technology has fascinated the healthcare industry for making better health accessible, cheap treatment, low cost, and quick diagnosis. Over the past many decades, healthcare technology has advanced to advanced stages. The overall health of society depends on the standard of living, hygiene practices, availability of clean drinking water, clean air, healthy food. Proper exercise after getting all these will be able to give a healthy life. The government has tried to provide treatment and diagnosis through Public Health Centres to the rural and urban public located near the Public Health Centre. The public also has an obligation to observe hygiene in the Public Health Centre and prevent the further spread of infections through contamination. Safety tools such as hand torches, sterilizing autoclaves, sterilized cotton, and other tools will include healthy and safe treatment available at the Public Health Centre. The disposal of biological waste from primary care also needs to be carefully reconsidered. Biohazard disposal guidelines must be strictly followed by primary health care personnel to prevent any mass contamination of pathogens. Thus, for all primary healthcare needs, technology plays an important role from registration to delivery of treatment. The methods used for treatment, diagnosis and administration of drugs must be

comfortable and less painful for the patients who visit them. Reports of the diagnosis must be available within a reasonable time limit to allow the physician to make a timely decision on the line of treatment. The 21st century has changed our life and eating habits in many ways towards an unhealthy person. Screen time has increased for children and parents, resulting in many chronic diseases in society such as dry eyes, spondylosis, lower back pain, depression, etc. When initiating a planning, preference should be given to natural methods of treatment. While creating smart cities in balance with nature, a better life for residents must be preserved. Proper disposal of municipal waste, compliance with health and hygiene at every level can make us achieve the goal of Health is Wealth. Public health is a place where the root causes of various problems in society and the availability of solutions can be studied. The government now needs to reach out at the village level to further stop the overuse of screen time and people's active participation in community works. Major treatments that have high drug costs must be diagnosed at a reasonable cost to poor nations. Whenever the poor public from the villages visited the surrounding towns as part of medical tourism - for medical treatment, which was not there in their village, then proper instructions should be made available at the bus stand/train station itself. Many times, the government has enacted facilities in district hospitals but due to lack of knowledge people are misguided and fall prey to big private hospitals falsely by losing their hard-earned money. The government's various health plans are nice, but they become more lucrative when their knowledge in plain language is made available to those who really needed it. An awareness campaign has the power to turn worse situations into better ones. The power of media can be used to utilize advanced technologies, procedures emerging in healthcare day by day. Doctors, nurses, laboratory technicians as well as other allied health personnel are required to provide training to update their knowledge and increase the efficiency of their work. The internet of things and Blockchain is useful in healthcare sector. Their uses are not much explored and needed deep study for exploring possibilities in advancement in healthcare. Both internet of things and Blockchain having potential to save lives in healthcare by incorporating latest tools and technologies which can bring low-cost treatment and diagnosis, fast and effective procedure also relief to the patients.

Healthcare was the fastest growing industry in terms of both revenue and data. With so many electronic medical records, security has always been a necessity. To make this vital information more secure, blockchain technology is increasing its uses day by day. Therefore, the researcher developed his blockchain technology solution in medical healthcare. This not only protects your data from his tampering, but it stops data leaks. This technology stores data and ensures reliability. Using this technology in conjunction with cloud computing technology also eliminates storage-related concerns, as the cloud places trust in storing and managing data. Blockchain can also address cloud security issues. In fact, sharing and storing medical data in a blockchain-based cloud can solve many medical data problems. The main purpose of this whitepaper is to introduce the latest technology of his blockchain-based medical healthcare system. Several existing studies on the same areas were explicitly discussed and comparative studies with published studies were also presented.

Blockchain, or ledger of transactions, was proposed by Nakamoto *et al.* It is proposed as a decentralized crypto currency. This technology ensures that adversaries or attackers cannot break into your database. His model worked as permission less model, with the flexibility to leave and join nodes without prior knowledge of the consensus node. Santoshi has taken his Proof-of-Work (POW) from several contracts to manage the Ledger. It is now

also used by several other crypto currencies. The main consideration for this POW of his is the speed at which transactions are processed. Therefore, speed transaction trade-offs in blockchain must be secure. A chain of digital signatures is used to define an electronic coin. Each coin is transferred from its owner to another by digitally signing the hash of the previous transaction with the next owner's public key and finally appending it to the end of the coin. A trusted third party, a central authority, checks all transactions to prevent double spending.

II. THE FEATURES OF BLOCKCHAIN CAN BE SUMMARIZED AS FOLLOWS

1. Decentralized. It is a key aspect of blockchain is that it does not rely on a central node.
2. Transparent. All stored data is secure and transparent to all nodes.
3. Open Source. Anyone can use blockchain technology to create any application.
4. Autonomous. A blockchain allows each block to securely apprise or transfer its own data.
5. Immutable. This is because records on the blockchain are stored permanently and cannot be changed.
6. Anonymous. To make it anonymous, blockchain successfully maintains trust between nodes.

The Internet of Things (IoT) is a collective term for any of the many networks of sensors, actuators, processors, and computers connected to the Internet . Healthcare applications for IoT can possibly provide complete patient care in a variety of settings, including acute (hospital), long-term (nursing home) and community-based (typically home). The IoT has the prospective to precisely track people, devices, specimens, goods and even animals and analyze the data collected. Connect patients to sensors to measure vital signs and other biometric information to diagnose problems faster, provide better care and use resources more efficiently. In 2013, it was reported that people had 2 Internet-connected devices for every people, and this number was predicted to exceed 6 by 2025. As new IoT systems are developed and deployed, the challenge in healthcare is to improve patient care without reducing patient care by reducing human contact with patients.

III. AUTOMATION IN MEDICAL DIAGNOSIS

The medical diagnosis changed to many folds in past 2-3 decades. The diagnosis in biochemistry got paradigm shift from use of colorimeter to automated analyzers enhanced the speed and accuracy of test results. The numbers of tests execution also increased to many folds. The impact of intervention of technology is showing its results in diagnosis and patients wait time got reduced for getting right line of treatment on accurate diagnosis of diseases. The BECTEC culture methods in blood culture not only able to reduce time of diagnosis but also becoming life saving for critically ill and infected patients. Before 10-15 years the blood culture and sensitivity tests results required minimum 4 days to give reports while that time is now reduced to 1-2 days. It helped many patients to save them from multi drug resistant bacterial infections. The future is more prospering when these automation will be connected with blockchain and all government and private hospitals perform in same network. This automation not only help to save medical data of each visiting patients but also helped for decision of line of treatment for accidents cases and critically ill patients .

The interventions in health through technology by various departments of Government of India in past decade showcased its eminent place in world.

CSIR-CSMCRI (Central Salt and Marine Chemical Research Institute) has popularized a new and gentle method for iodine and iron accompanying Double Defended Seasoning (DFS) in work to combat iron and iodine deficiency. The grown fruit retains the aggregation of micronutrients for a more extended magnitude. Big society-based approximate troubles were transported in Bhavnagar and Vadodara to determine allure security and productivity. Enhanced Samba Mahsuri (Religious belief): Diabetic Companionable Edible grain With the popularization of the Enhanced Moving feet and body to music Mahsuri (Group) variety for one CSIR, the district under the education of ISM has existed firmly growing, and it is supposed that it was developed in a community of 130,000 hectares across—the country in 2016. CSIR's Mission on SCA approaches the question of attending a four-step policy of populace screening and incident of confabbing codes; the discovery and growth of new lead fragments for the situation of SCA; access to genome rewriting and stem container research; and inexpensive diagnostics. Streptokinase is a lively, growth-conditional injectable protein drug that saves until 40% of people's lives following in position or time essence attacks, if likely within hours of the invasion of breast pain. CSIR-IMTECH has grown a streptokinase technology flat case for transporting papers that contains instinctive streptokinase; recombinant streptokinase; clot-specific streptokinase (thrombolytic particles of the tertiary era); and a generation after baby boom of clot-buster(s) (one of four equal parts-production thrombolytic fragments). Natural streptokinase of CSIR-IMTECH was transferred to Cadila Pharmaceuticals. The price of foreign brands in the country has more happened reduced by about 40%, superior to significant stockpiles for the Aboriginal American consumer, making it inside the reach of the average woman. Recombinant streptokinase using the recombinant Chromosome route has been developed by CSIR-IMTECH. This electronics was moved to Shasun Drugs and Chemicals, whose incident managed to change this lively, existence-conditional drug to consumers at low prices. CSIR's program to expand science for a homemade antagonistic-coagulating drug was difficult because antagonistic-coagulating drugs are not synthetic but biotechnological drugs. Even though technology transfer and commercialization have happened troublesome, these exertions have resulted in extended marketing.

IV. TULYTM RASBURICASE

TULYTM is a freed and unproductive recombinant device of the enzyme urate oxidase, usually referred to as ras-buricase. It is beneficial in both situations and stops extreme uric acid levels. It further reduces the risk of acute sort collapse and additional life-threatening difficulties.