NATIONAL INSTITUTE OF TECHNOLOGY
RAIPUR

BIOMEDICAL ENGINEERING

ASSIGNMENT

Emerging Technologies in Healthcare

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1 Introduction

Industry transformation has being accelerated by digitalization. New technologies are helping equipment and processes today, enhancing productivity and efficiency across industries. These new trends have also benefited the global healthcare industry. While acceptance is currently slow, it is a boon to both patients and physicians.

Devices, drugs, vaccinations, processes, and systems are all used in healthcare to streamline operations, cut costs, and improve the quality of treatment provided. Artificial intelligence (AI), blockchain, robots, bioprinting, and nanotechnology are just a few of the most promising healthcare technologies.

2 3D printing

The invention of 3D printing is another new technology in the healthcare industry that is proving to be transformative. This new field of 3D Bioprinting enables physicians to print artificial limbs, organs, joint replacement parts, and bio tissues. In addition, in the field of pharmacology, there are ongoing experiments for printing pills and other medications. Lastly, 3D printers can also help create medical devices and surgical tools.

3 Blockchain

A distributed electronic ledger, or blockchain, might authenticate successful transactions and improve record security by preventing fraud and protecting consumer identification and personal health data (PwC). As the health-care business becomes more automated, hospital employees will need to be taught on how to use new technologies while also being receptive to workflow adjustments. To take advantage of the many benefits that come with adopting new technology, health care workers will need to provide guidance and comprehend the new technology in order to enable patients have a positive experience

4 Nanotechnology

Nanotechnology for the healthcare industry has been in the works for quite some time. It investigates molecular structure in order to create precise medical devices and treatments. Nanorobots and nanomedicines are two examples of nanotechnology breakthroughs. In 2018, nanotechnology was used to create an electronic pill that can be controlled after being released in the patient's body to relay diagnostic information or release medications in a specified area of the body. The technique is currently being used to create smart patches that can monitor wounds and promote speedy healing. The majority of this application is still in development.

5 ARTIFICAL INTELLIGENCE

AI is transforming the way healthcare organizations manage and draw insights from the incredible amount of scientific data and patient information 1 that's available. AI can be used to create and customize treatment plans and medication options for patients in a much faster and precise way than human healthcare teams can do on their own. AI can also help in other ways, such as advancing the field of genomic medicine by analyzing complex genetic information to determine the best course of care for individuals based on their DNA. The hope is that AI can one day improve diagnostic accuracy and even predict health outcomes.

6 VIRTUAL REALITY

Virtual reality (VR), which is also a new technology in healthcare, is a versatile tool that may be used to teach autistic children speech and social skills, as well as to engage patients in activities and games for rehabilitation. Through cognitive behavioural therapy and meditation training, virtual reality solutions can help people regulate hot flashes and decrease pain. Some apps use Google Glass and augmented reality to help with clinical and medical documents, such as reminders, orders, and referrals. VR solutions, which are built on HIPAA-compliant cloud infrastructure, assist healthcare providers in creating patient summaries and notes, responding to physician requests, pending orders, and writing referral letters. Surgery centres, hospitals, emergency rooms, home visits, medical offices.