Techno-med: The Effects of Technology in the Medical Field

PUMA 560, the 1st surgical robot arm, appeared in 1985 and was principally utilized in a neurosurgical biopsy and a non-laparoscopic surgery. From the 1985 robot arm came the 2000 DaVinci system, the first FDA-certified general laparoscopic system. This breakthrough technology enabled physicians to execute many intricate surgeries with more precision, flexibility, and control during small cut procedures. Today, robotic surgery has been featured in neurological, urological, gynecological, cardiothoracic, and other convoluted surgical procedures. Robotics has made an impact on healthcare and is bringing hope to fight Coronavirus all over the world. Over the years, medical technology has made significant advancements, improving patient life.

The medical sector is experiencing rapid advances in technology, thereby enabling medical professionals to treat patients with more efficacy. A broad array of surgical instruments make it possible to diagnose patients accurately. As per “The Impact of Technology on the Medical Field” by Andrew Walden, innovations in technology are becoming a blessing for doctors/medical staff enabling unequivocal patient diagnosis. It is easier for medical staff to access patient data through tablets and computers to revise and add to the patient history. Therefore, this leads to an accurate and well-organized approach to a sudden illness in a patient. According to the book *Improving Diagnosis in Healthcare* by Erin P. Balogh, it is easier for doctors to access patient data and medical information barring inappropriate diagnosis. Ubiquitous computing has allowed doctors to communicate patient data faster, resulting in more efficient patient care. Today’s avant-garde techniques are helping medical professionals to a more practical, effective approach to treating patients with chronic diseases including cancer. Virtual reality is fostering the education of medical students. According to “Here's how virtual

reality is training the doctors of the future" by Zachary Hendrickson Osso, when using virtual reality at David Geffen Medical school, University of California, Los Angeles students performed 230% better in surgical performance with the company's virtual reality's surgical training. Hendrickson also points out that in the long run virtual reality will soon become a common principle in the hospital and clinical setting which will help save time and money.

Modern technologies, such as robotics and artificial intelligence, are reshaping medicine worldwide. The use of artificial intelligence in robotics is revolutionizing and reshaping how operations are performed. According to "Robots' set to replace human surgeons entirely for complex operations' potentially cutting risk of errors" by Joshua Nevett and Mark Waghorn, robots could operate surgeries more efficiently than surgeons avoiding the risk of human errors. Dr. Peter Kim of the Children's National Medical Center used robotics during bowel surgery, tumor removal, and tissue surgery, some of the most meticulous surgeries performed so far. Doctors and scientists like Dr. Peter Kim claim that robotic surgeries will be extremely propitious in the field of oncology and cardiology. According to "Artificial Intelligence and the Future of Surgical Robotics" robots like the Smart Tissue Autonomous Robot are efficiently conducting surgeries, changing the field of medicine. STAR the Smart Tissue Autonomous Robot performed better than human surgeons ex vivo and in vivo surgical operations. The usage of artificial intelligence algorithms is also enhancing robots in the medical field like STAR. Robotic systems could benefit the military and other traumatic occupations in remote locations. Using robotic surgery, surgeons in a military base would lead to less risk and more precision when opening up a patient. Due to the benefits of robotics surgery, the US Department of Health created an autonomous robotic trauma care system that fits in a backpack and can treat and save

soldiers injured in isolated locations. Robotics surgery is not only cultivating and developing new opportunities in the healthcare system but is also improving the survival rates of patients.

The most recent use of technology is to fight Coronavirus Disease 2019 in various ways. According to “How drones are being used to combat COVID-19” by Mukesh Sharma, technology like drones is not only helping to get rid of Coronavirus Disease 2019 but is also preventing it (Sharma, Mukesh, “How drones are being used to combat COVID-19”, geospatialworld.net). Drones can break social gatherings by calculating temperature distributed in the environment. Drones have also been created to sanitize grounds by using desiccant spray and spraying all places human contact occurs like doorknobs and park benches. Furthermore, drones have been programmed to deliver medicine and grocery to people's houses, and conduct temperature checks. During the pandemic, technology has helped medical staff keep track of not only Coronavirus Disease 2019 patients but regular patients according to “Technology Has Broken Healthcare Barriers During the COVID-19 Pandemic” by Keith Boettiger (Boettiger, Keith, “Technology Has Broken Healthcare Barriers During the COVID-19 Pandemic”, neurologyadvisor.com). Telehealth, an online medical platform, has been able to manage the ongoing treatment of the physical condition of patients at forty-four percent, and the evaluation of suspected Coronavirus Disease 2019 infections at thirty percent. According to Amita Kudra, the aid of technology in healthcare is helping speed up the process of detecting Coronavirus Disease 2019 (Kudra, Amita, “How technology is a weapon in the fight against COVID-19”, kevinmd.com). Using an artificial intelligence algorithm trained with data and computed tomography (CT) scans, it found 5000 cases of coronavirus. Because of Alibaba’s artificial intelligence system, it can diagnose Coronavirus Disease 2019 in a patient in a total of only twenty seconds. Robotics in healthcare and allied fields have enabled medical personnel to work

more efficiently, resulting in a reduced life threat for doctors in managing the Coronavirus Disease 2019 Pandemic.

Medical technology has evolved rapidly since 1985, with the introduction of the first surgical robot arm, PUMA 560. Medical robotics is improving patients' lives significantly with its impact on the healthcare system, its connectivity and advancement within daily medical practices, the use of AI, drones, and advanced IT tools. It has been shown to be effective in combating Coronavirus Disease 2019. A significant impact of information technology on medical care involves operational efficiency and ultimately saving lives through enhanced patient care. A technological revolution is transforming medicine.

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