Role of Electronics in Medical Industry & its Growth in Pandemic Covid -19

Arti*, Neha Dobriyal and Om Chhabra*****

*Assistant Professor, Sanatan Dharma College, Ambala Cantt

**Assistant Professor, Department of Electronics, Sanatan Dharma College, Ambala Cantt

*** Student, B.Sc -2nd Year, Sanatan Dharma College, Ambala Cantt

ABSTRACT

Electronics has played a major role in Medical Industry. It had made work easy for everyone. In history it has a big role 100 Years ago Electronics Machines were used in Medical Science. There were three important technology that still existing and helping us. X-ray, Electrocardiography and Stethoscope they are long term existing technologies Stethoscope helped doctors to hear the sound of human body. Biomedical Industry has enormously extended over past hundred years. With the growth of increasing modern technology and internalization of modern engineering concept made success in medical industry.ECG, EWG, Mammography, PCR, Ultra sound, Thermometer, microscope, ophthalmoscope, laryngoscope and Autoclave are among the initial inventions in medical technology. Covid-19 an infectious disease caused by a (SARS-Cov-2) is a global Pandemic. It has sucked more than 210 countries and territories all over the world. Technology played important role to fight with Covid. Latest technology drones, UVs, GPS, Bluetooth, RT-Pcr and ultrasound were helpful in pandemic.

Introduction:

Technology has always played an essential role in every sector over the past few years by providing facility of remote working and improving efficiency in manufacturing and industrial settings. In modern world, the patients come across with the testingat

ISBN: 978-81-955611-7-9

every stage during the treatment cycle. Electronics devices are used in various healthcare applications such as in diagnostics, treatment and other prevention applications. Few electronics instruments such as electrocardiogram (ECG) or electroencephalogram (EEG) are well known electronics medical instruments being used by the medical industry since a long time. These instruments use bioelectrical signals to measure the heart and brain activities of the patients. In the era of Internet of things (IoT), artificial intelligence and Industry 4.0, a new generation of medical devices has been introduced. This advancement has made more accuracy in data recording; real time measurement of the patients is possible. This makes the treatment easy and enhances the decision making in the diagnosis and treatment. In all this, miniaturization of the sensors and integrated circuits has made this advancement drastically noticeable. The medical devices can be monitored and operated using wireless communication for example, radio frequency identification (RFID) technology make use of wireless communication between chips in RFID tags and receivers to identify patients, knowing the patient safety and efficiency in hospitals and all other medical settings. Also with the help of Micro Electro Mechical Systems (MEMS) wearable diagnostic instruments are also making the treatment fast and easy. According to the report of EC Electronics manufacturing devices the global market for wearable technology is expected to register a CAGR of 13.8% between 2021 and 2028[1] and will provide tremendous of opportunities for medical electronics.

Applications of Electronics in Medical Field:

In the era of technology, all are using the latest innovative apparatus, equipment and devices in all the fields of life starting from kitchen , washrooms, in various home appliances, One cannot deny its importance in medical field especially after the Covid time. Non medical professional and other common people may also use these compact and user friendly diagnostic equipments to measure their health parameters. Not even measurements, these equipments are also able to provide the prior information of the instant health problems such as heart attack, blood pressure and many other problems if the people are connected with these equipments. The use of such equipments is very simple. One can find all this facility in form of smart phones, smart watches or by inserting these chips in the body of the patients so that doctor is able to monitor the patient all the time. Not only this, medical electronics equipments, also got the cures for almost all diseases and to implement treatment. With these electronics equipments doctors and surgeons are able to make the medical examinations in a very smart and fast way even in real time monitoring the disease can be diagnosed [2]. These are number of Medical equipments used by doctors such as Electronic Brain Wave

ISBN: 978-81-955611-7-9

Machine, Blood gas analyzer, Medical heart monitors, MRI , Fetal Monitor, Medical glucose Monitor, Stethoscope, IR thermometer, Oximeter, pace maker and many more[3].

Growth of Medical Electronics during covid-19:

The medical electronics will act as a strong pillar in the coming time especially in the chronic diseases, medical imaging, in the field of monitoring the diseases and implantable devices. During Covid-19, the demand of medical electronics equipments and apparatus were increased due to the critical issues raised due to the pandemic. The demand of life supporting systems, ventilators, IR thermometers increased tremendously. The MEMS technology and miniaturization have opened new application areas for sensors, thereby surging the demand for these sensors[4]. The medical electronics market was grown at the highest during this period. Due to high population density need of good medical infrastructure and demand of high health care expenditure was the priority at that time. According to one the report [5] published in February 2021, the health sector in India is amongst top industries in employment generation and revenue generation in year 2020 due to Covid circumstances. Despite f the lockdown condition, this was the only sector where the opportunities and probabilities of the growth increased during the year. "According to BW Business World, the medical device industry in India is estimated to mark a total of INR 77,539 crore (USD $11 billion) and ranks the fourth largest industry in Asia" [5]. "India's medical device businesses, which accounted for more than 13% of the entire Asia-Pacific (APAC) medical device market in 2019, is expected to grow at a compound annual growth rate (CAGR) of 7.5% through 2025" [5] .

Conclusion:

From the review of literature available, it has been included that the medical electronics has a future aspects, job opportunities and scope for the local manufacturers to capture the medical equipment market by investing in this field. Medical devices manufacturers may lead in this sector by providing compact, light, implantable devices to the doctors so that such medical facilities may be provided to the patients at economical rates.

References:

[1] https://ecelectronics.com/news/how-has-the-pandemic-accelerated-health technology?utm_source=rss&utm_medium=rss&utm_campaign=how-has-the-pandemic-accelerated-health-technology.

[2] https://www.healthcareradius.in/features/technology/28067-how-innovation-in-

ISBN: 978-81-955611-7-9

medical-devices-are-transforming-the-indian-healthcare-sector

[3] Review on people's trust on home use medical devices during Covid-19 pandemic in India, Garimasaini et.al, Health and Technology 12(2):1-20, DOI:10.1007/s12553-022-00645-y.

[4] https://www.prnewswire.com/news-releases/medical-electronics-market-with-covid-19-impact-analysis-by-component-device-classification-application-and-region---global-forecast-to-2026-301248534.html.

[5] https://www.linkedin.com/pulse/impact-covid-19-growth-medical-device-industry-india-pallavi-tripathy/

ISBN: 978-81-955611-7-9