USING BIOMEDICAL ELECTRONICS FOR MANAGING CHRONIC ILLNESS [MINI REVIEW]

Ahmed Mohammed Al-Qahm
Gomel State Medical University, Gomel, Belarus
Scientific Supervisor – **M.F.S.H. AL-Kamali**
(Ph.D., Associate Professor of the Department of "Industrial Electronics" Sukhoi State Technical University of Gomel)

Abstract This mini review article explores the potential of biomedical electronics in the management of chronic illnesses. Chronic diseases pose a significant burden on individuals and healthcare systems worldwide. Biomedical electronics, which encompass a range of technologies such as wearable devices, implantable sensors, and remote monitoring systems, offer new opportunities for monitoring and treating chronic conditions. This review provides an overview of the current applications of biomedical electronics in chronic disease management, highlighting their benefits and challenges. Additionally, it discusses future directions and the potential impact of these technologies on improving patient outcomes and quality of life.

Key words: biomedical electronics, chronic illness, wearable devices, implantable sensors, remote monitoring, chronic disease management.

Introduction

Chronic illnesses, characterized by long-term health conditions that require ongoing management, affect a substantial portion of the global population. The use of biomedical electronics presents a promising avenue for enhancing the management of chronic diseases. These technologies, including wearable devices, implantable sensors, and remote monitoring systems, offer the potential to revolutionize the monitoring, treatment, and overall care of individuals with chronic conditions. This mini review provides an overview of the current applications of biomedical electronics in chronic disease management, highlighting their benefits and challenges while exploring future directions for their implementation.

Results and discussion

The utilization of biomedical electronics in chronic illness management demonstrates significant potential for enhancing patient outcomes, promoting self-management, and alleviating the burden on healthcare systems [1-3].

- Wearable Devices: Wearable devices, such as smartwatches, activity trackers, and biosensors, allow continuous monitoring of vital signs, physical activity, and other health parameters. They provide real-time data that can aid in the management of chronic conditions, including cardiovascular diseases, diabetes, and respiratory disorders. Wearable devices empower individuals to track their health metrics, enabling early detection of abnormalities and facilitating self-management.
- Implantable Sensors: Implantable sensors offer the ability to collect data from within the body, providing valuable insights into the progression of chronic diseases. These sensors can monitor parameters such as glucose levels, blood pressure, and organ function. Implantable devices enable healthcare providers to remotely monitor patients' health status, make timely interventions, and personalize treatment plans, especially in conditions like diabetes, heart failure, and neurological disorders.
- Remote Monitoring Systems: Remote monitoring systems allow healthcare professionals to track patients' health remotely, reducing the need for frequent hospital visits. These systems utilize wireless technology to transmit data from wearable devices or implantable sensors to healthcare providers. Remote monitoring enhances disease management by facilitating early detection of complications, optimizing medication adherence, and enabling timely interventions in conditions such as hypertension, chronic obstructive pulmonary disease (COPD), and chronic kidney disease.

The incorporation of biomedical electronics in chronic illness management offers several

benefits. These technologies enable continuous monitoring, early detection of health deterioration, and personalized treatment strategies. They empower individuals to actively participate in their own care and promote self-management. Biomedical electronics also have the potential to reduce healthcare costs by minimizing hospitalizations, emergency room visits, and complications associated with chronic diseases. However, several challenges must be addressed for widespread adoption and effective implementation of these technologies. Privacy and data security concerns are paramount, as the collection and transmission of sensitive health information raise ethical and legal considerations. Standardization of data formats, interoperability between devices and systems, and integration into existing healthcare infrastructure are other challenges that need to be overcome for seamless and efficient use of biomedical electronics in chronic illness management.

The future of biomedical electronics in chronic illness management holds great promise. Advancements in artificial intelligence (AI) and machine learning can enhance the analysis of collected data, enabling predictive modeling and personalized interventions. Integration with telemedicine platforms can facilitate remote consultations and timely healthcare provider-patient interactions. Additionally, miniaturization of devices, improved battery life, and increased user-friendliness will drive greater acceptance and adoption of biomedical electronics among patients and healthcare professionals.

Conclusion

Biomedical electronics offer significant potential for revolutionizing the management of chronic illnesses. Wearable devices, implantable sensors, and remote monitoring systems enable continuous monitoring, personalized treatment, and remote healthcare delivery. Despite challenges, the benefits of these technologies in improving patient outcomes, reducing healthcare costs, and enhancing quality of life are substantial. Further research, standardization efforts, and collaboration among stakeholders are essential to fully realize the potential of biomedical electronics in chronic illness management.

References

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DESIGNING A COMPUTERIZED PROGRAM TO DEVELOP SOME LIFE SKILLS AMONG KINDERGARTEN CHILDREN IN TAIZ

Al-Sharaby A. (Master of Dept. ETIT)
Taiz University, Taiz, Yemen
Scientific Supervisor – **Dr. G.A.A.A. Alawi**
(Ph.D., Associate Professor of the Department of "Educational Technology" Taiz University)

Abstract: The current study aims to design a computerized program to develop some life skills among Kindergarten children. The study followed the Quasi-Experimental method because the study was to design a computerized program commensurate the nature of the one-group experimental method due to the small size of the sample of the study. The sample of the study consisted of (11) children aged between (5-4) years in the first stage of kindergarten in Isbeel Lilmawhubeen Kindergarten. The study implemented two tools: the computerized program, which was designed and prepared by the researcher, and a scale for life skills prepared by the researcher, too. The study concluded that the computerized program prepared was effective in developing some of the life skills. There were statistically significant differences at the level of significance ($\alpha \leq 0.05$) between the mean scores of the sample members on the scale for life skills used in the current study in the pre-measurement, the post-measurement, and the follow-up measurement, in favour of the post-measurement and the follow-up measurement. This study supported multimedia usability to provide children with good attitude and good behaviour towards the reduces learning efforts and