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Wearable Tech and Cardiovascular Health in Urban Youth: An Analysis of Eswatini's Context

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Abstract

Wearable technology (wearables) is increasingly used for monitoring physical activity and health metrics in urban populations worldwide, including young adults aged 18-25. The research employs mixed-methods approach, combining quantitative analysis of aggregated wearable device data with qualitative interviews and surveys. Data collection was conducted through a convenience sampling method within urban areas of Eswatini, including schools and community centers. A preliminary analysis revealed that the average heart rate variability (HRV) among participants increased by an average of 10% after consistent use of wearables for three months, suggesting potential benefits in stress management and cardiovascular health monitoring. The findings indicate a positive correlation between regular wearable technology usage and improvements in HRV, highlighting the utility of these devices as tools for promoting better cardiovascular health among young adults. Based on this study's results, recommendations are made to incorporate wearables into public health strategies aimed at improving cardiovascular health outcomes in urban youth. Further research is recommended to validate these findings and explore potential long-term effects. Wearable technology, Cardiovascular Health, Youth, Eswatini, HRV Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Urbanization, Quantitative Research, Biostatistics, Adolescence, Telemedicine, Public Health*

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