



Applicant Information

Applicant Name	Applicant Email	Affiliation	Country
Ms Miriam Gborglah	miriamgborglah5@gmail.com	Kwame Nkrumah University of Science and Technology	Ghana

Abstract Details

Title:

Predicting Cardiovascular Diseases Using Machine Learning Algorithms and Electronic Health Records

Category:

Health Information and data science

Authors:

Miriam Gborglah, Eric Opoku Osei, Asiwomeh Ameko

Objectives:

This study aimed to predict cardiovascular diseases (CVDs) using data from electronic health records and machine learning approaches

Method:

A quantitative research approach was adopted. The data source for this study was secondary, extracted from electronic health records of the Tamale Teaching Hospital in Ghana from January to December 2022. The dataset used in this study had the following variables: age, sex, weight, systolic, diastolic, height, heart rate, hypertension state, glucose, diabetes, BMI, and CVD. The sampling approach used in this study was the purposive sampling technique. The ML models were compared using predictive measures to identify the model that best predicts CVDs.

Results:

The study found that the proportion of CVDs was 19%. In predicting cardiovascular diseases, it was found that all the attributes measured a statistically significant increase in the occurrence of CVDs. The most important attributes leading to cardiovascular diseases were hypertension status and diabetes. Based on the F1 score the highest-performing algorithm was the Random Forest. However, logistic regression was the algorithm with the highest accuracy and area under the Receiver Operating Characteristic Curve.

Conclusion:

Machine Learning algorithms should be efficiently utilized to develop systems that can run on the EHRs in Ghana for systematic predictions of CVDs. The current electronic health records in Ghana should be resourced for interoperability of its systems.

Submission Date:

2024-09-16 11:26:29