**Discussion**

Electroencephalogram (EEG) plays an important role in the detection of depression. To find the best accuracy machine learning technology is proposed in this research. This research considers resting state EEG signals via 19 channels. EEG recording was collected using an electrode elastic cap placed on the participants' scalp to maintain the International 10-20 system rule.

This research used prepossessed data. So there is no need to filter the data. There are six types of disorders such as obsessive-compulsive disorders, addiction disorders, disorders linked to trauma and stress, depression disorders, schizophrenia, and anxiety disorders, and with healthy control data available. We extract depressed and healthy control data for our research.

In this study, two machine learning models - Random Forest, and XGBoost are used to diagnose depression. The study objective is to traits and link those qualities to the appropriate label. We translate these labels to 1 and 2. Models will be trained using particular labels from healthy controls and depressed participants. Two models produced accuracy. Considering two models XGBoost reported higher accuracy with 82.57% accuracy rate.

The suggested strategy offers some advantages. First, it produces more accuracy. This takes less time to train the model which reduces the execution time to the model.

**Comparative Analysis**

Two classification techniques- XGBoost and Random Forest are used in the design of our model. The best accuracy 82.57% was provided by the XGBoost model. In Electroencephalogram-based depression detection using machine learning techniques where maximum accuracy was found 81% for depression detection. They also used the Random Forest model where the accuracy was found 76%. In our proposed model we get 74.31% for the Random Forest model and 82.57% for the XGBoost model.

**Table : List of a few Recent Works.**

|  |  |  |
| --- | --- | --- |
| **Previous Work** | **Approach** | **Accuracy** |
| [] | XGBoost | 81% |
| proposed | XGBoost | 82.57% |

The suggested EEG-based depression detection model, utilizing multiple machine learning techniques offers practical benefits. The automation through machine learning reduces clinicians’ workload, speeds up diagnosis, and accommodates various EEG collection methods, making it more flexible and accessible to a wider range of participants.