

ABSTRACT NO.: 575

TITLE: The EEG Analysis and Measurement of Alcoholic and Non-Alcoholic Subjects

AUTHORS: Amrita Bahall (807002659)
Karina Kissoon (807000110)
Rishi Ramsingh (806004687)

SUPERVISOR: Professor R. Saunders

In this particular research project, the Electroencephalogram (EEG) was used to record and analyze data of alcoholic (patient with a history of alcohol abuse) and non-alcoholic (patient who does not abuse alcohol) subjects. The information obtained will be used to determine the differences in brain activity of alcoholic and non-alcoholic individuals. This is done by determining the absolute power and coherence during different phases of the EEG. These were flashing, counting and resting. The EEG provides information about the electrical activity of the human brain which results from post synaptic potentials.

In order to perform this research project voluntary patients were acquired and taken to the Mt. Hope Medical Science Complex, where the Cadwell Central EEG was housed. The volunteers' scalps were measured using the international 10-20 system and the respective electrode placements were marked off. An abrasive gel was used to clean these areas and electrodes were then attached using an adhesive conductive paste. The patients were asked to be in a relaxed state, where flashing and counting practices were done alternately with thirty seconds (30s) resting intervals. An Evoked Potential test was also done on patients, where a pair of Goggles was stimulated for two hundred (200) counts. This was followed by another VEP test where the person's right eye was focused on a Light Emitting Diode (LED) eighty centimeters (80cm) away. The Nx-link program was then used to yield tables and topographic maps after two (2) minutes of artifact free recording was selected from each testing phase.

A typical EEG is divided into four main frequency bands: alpha, beta, delta and theta. In a healthy adult the awake, resting EEG is mainly dominated by medium and fast beta frequencies with little and high alpha frequencies.

From the results obtained, the EEG of alcoholics showed alterations and enhancements in both alpha and beta activity, which differed significantly from the non-alcoholic individuals. Low amplitude in beta