Hypothesis

The proposed work is based on

Null hypothesis

\( H_0 \): There is no effect of EMR on human health

Alternate hypothesis

\( H_1 \): (1) There is effect of electromagnetic radiations from mobile tower on human health

(2) There is significant effect of mobile phone on cardiac electrical activity of the heart rate variability.

(3) There is significant effect of radians high tension electric line on human health.

(4) There is significant effect of geopathic stress on various cardiac parameters

Biophysical Principles:

Radiant energy is absorbed into human bodies according to three main processes. The first is the aerial effect where bodies and body parts receive and absorb the RF/MW signal with resonant absorption. The absorption is a function of the size of the body parts and the wavelength of the RF/MW signal. The body acts like a half-wave dipole interacting strongly with a half wavelength close to the body size. The Aerial effect also relates to body parts such as arms and heads. A typical adult head has a width of 15 cm. This is a half wavelength for a 1 GHz microwave signal, close to that used by most cell phones.

Cell phone-type radiation is in the 0.9 to 1.8 GHz range, i.e. \( 0.9 \times 10^9 \) to \( 1.8 \times 10^9 \) Hz. Hence neither children nor adults are close to the optimum absorption rate but babies and infant bodies, whose dimensions lie between "monkey" and "mouse", are close to the optimal absorption for cell phone-type radiation. A person with a height \( h \) (m), acting as an aerial in an RF electric field \( E \) (V/m) at a carrier frequency \( f \) (MHz), has a current induced in them which flows to earth through their feet, is
\[ I_h = 0.108 h^2 \varepsilon_f \text{(mA)} \]

This induced current flows mainly through high water content organs. In flowing to ground the current passes through the ankles. These consist mainly of low conductivity bones and tendons and have an effective cross-sectional area of \(9.5 \text{ cm}^2\) for an adult, despite the actual physical area are of the order of \(40 \text{ cm}^2\). The formula for \(I_h\) also allows for the effective absorption area of the person, which is somewhat greater than their actual cross-sectional area, because of the attraction of the surrounding field to an earthed conductor. These aerial considerations are more pertinent to whole-body exposures to cell sites. Cell phone aerials form digital phones typically occupy the length of the body of the phone and extend a few centimeters out of the top of the phone body. Cell phone radiation for the phone's aerial is quite close to the user's head and can be intense enough to cause a warming sensation.

The second mechanism involves the coupling of the signal to the tissue as the signal penetrates the tissue and interacts with the cells and layers of tissue. This process is related to the dielectric constant and conductivity of the tissue types, which vary significantly with the carrier frequency.

The third biophysical absorption process involves resonant absorption by biological systems in the brain and cells. Resonant absorption occurs when a system with a natural frequency is stimulated by an imposed signal of a similar frequency or harmonic frequency. Cell phone radiation is shown to interact with human EEG patterns and to alter them. The absorption of EMR produces various ill effects on health.