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SMARTMOBILE AND SMART BRAIN INTER-RELATION, A GLOBAL CHALLENGE

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ABSTRACT

Usage of mobile phone has increased rampantly irrespective of age and gender or geographical demarcations as a mode not only for educational but also entertainment purpose. As evidenced by penetration of smart phone usage in most remote rural places, it also has certain negative effect in the larger arena like emotional response, cognitive capacities. Here is an attempt to explain the correlation between mobile phone addiction and subsequent brain changes. Rate of penetration of smart phones: 58% (2022), double then the financial year 2016 Estimated to reach 96% by 2040 Smart-phones shipment across INDIA- 149.7 million Subscribers base in INDIA- 1.1 billion Average data consumption per person per month- 19.5 gigabytes Data traffic - 4G = 90% Most popular categories of app- social media

Keywords: Addiction, Smartphones, Microstat, Brain neuro-chemical axis, Auditory Processing, EEG.

INTRODUCTION

Technological breakthroughs are providing solutions to many issues and likewise posing a different challenge to mankind.

A brief presentation of its effect on physiological –psychological complex.

Human is a social animal, he has his own way of expression be it the way of writing, speaking or any kind of non-verbal but, that have the emotions attached.

MATERIAL AND METHODS

Descriptive study was conducted to find out the link between morphologic changes in brain in addictions (mobile)

Sample consisted of undergraduate students, were directed not to use any drugs during and before the course experiment.

Study was conducted in northern district of Karnataka with volunteers between age group 19 and 45 years.

EMOTIONS ARE BUNDLE OF NEURO-CHEMICAL RESPONSE FROM THE BRAIN.

Expression with right emotion conveys the right message.

We in the modern age of smart phones are turning smarter human by adopting ourselves with the emotionless presentation.

Traditional method of stimulating of brain with varied sentiments has a proven active sites in CNS.

Modernity is a challenge to the very existence and development process since ages.

One such instance is of SMART –PHONE USAGE-

Usage has a drastic negative effect on emotions, cognitive capacities and newer adaptation of brain cells.

Brain is the central system of human body that acts by processing the message it gets and that prepares every organ to deal with it effectively.

E.g.- lion standing in front of person, this is a fear stimulus sent to the brain and brain through its systematic chemical messengers prepares body for fight or flight action.

Similar response is observed in case of excess use of smart phones.

There are different regions of the brain that responds to stimuli in particular way. Continuous use of gadgets has addiction effect on neural circuits, that leads to adaptation to structural change.

Through electro-encephalogram, microstates related to mobile phone addiction tendency was studied using a scale, object of the study was to know the change in brain due to addiction to smart gadgets.

Results

Effect on processing (SPEECH, AUDIATORY PROCESSING)

Changes seen in phonological processing, visual-imaginary processing, attention network was altered.

Effect on executive functioning – certain types of online apps that peculiar communicating nature showed social anxiety emotional deficits, that indicates impaired prefrontal cortex related inhibitory control.

Effect on Working memory, self –control, self monitoring were evident.

Neuroimaging studies have evidence for neurobiological similarities and correlation between different types of addictions, indicating fundamentally established neural pathways.

Person with the behavioural addictions display abnormal function in region of prefrontal cortex, thalamus, ventral striatum, anterior singulate cortex, this change in structure is even observed in the

Internet and gambling addicts.

ELECTROENCEPHALOGRAM is a non-invasive device used to measure the electrical impulses of the brain, that can detect and record millivolt fluctuations of cortical potential with high resolution imaging that aids in assessing the dynamic change in mental activities.

Resting state electroencephalogram define the multi channel EEG signals.

4 types of photo-typical microstates- ms1, ms2, ms3, ms4

they are related to brain activities.

With the withdrawal symptoms and microstat 3 indicates reduced gray –white matter that is observed in cocaine users, with insula dysfunction.

Evidence-

In a case, patient with insula injury did n show the urge towards smoking (in past he was a addict), It was found that MS3 is bold for fronto-insular, bilateral inferior frontal cortex and insula, that plays a crucial role in switching between central executive functioning and default mode.

This shows that the physical and physiological effect of excessive phone usage that has headache, memory loss and brain regions in default mode network is- hippocampus that explains correlation between memory loss and addiction.

CONCLUSION

From this conclusion can be drawn that addict's insula activity increases leading to withdrawal symptoms.

Insula is also responsible for emotional feelings.

So, MS3 changes reflect he sensitivity of mobil phone addicts towards negative emotion, degree of attention to negative emotional experiences.

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