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The Insight Meditation Enhanced Stress, Depression, and Anxiety Reduction in Working Professionals Like Medical Representatives Determined by Using Serum Cortisol Level and Electroencephalogram: A Qualitative Study

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Abstract:- The Indian pharmaceutical industry is one of the fastest-growing sectors of the Indian economy and ranks among the top 15 drug-manufacturing countries globally. Among the fastest-growing industries in the world, the pharmaceutical industry has increased over the years. A pharmaceutical company appoints a medical representative to make their products easily reach healthcare specialists and then be used by the general public. The medical representatives construct a well-built network with doctors, clinical specialists, medical practitioners, paramedical experts, Dietitians and nutritionists, paediatricians, gynaecologists, psychiatrists, etc. The problem of stress is widespread in every job description, and it may affect directly or indirectly in the form of health issues and low productivity; the demands of achieving targets induced among medical representatives. Much of this credit goes to Medical Sales Representatives or Pharmaceutical Sales Representatives (also known as MR, PSR) who are solely responsible for the promotion of products among Physicians, Hospitals, and pharmacies and are accountable for sales results. They act as the face of the Pharma company contributing to a better quality of life for customers, building goodwill, and increasing the company's market share. Pharmaceutical sales representatives (PSR) play a large role in helping an industry in a rapidly changing environment to achieve a new corporate vision and normally these medical representatives are in the highest stress position. Most pharmaceutical sales representatives experience significant job stress and unhappiness levels. Stress, depression, and anxiety are the most common psychiatric disorders all over the world. One of India's oldest meditation methods, vipassana also known as Insight meditation, helps a person become aware of things as they are. The goal of the Vipassana method, which aids in self-change via self-observation, is to finally arrive at a condition of inner and exterior peace and mental equilibrium. It is a process of "Self-exploration" to the normal base of the brain and body that removes mental smog and results in a healthier personality filled with love and empathy. Electroencephalography (EEG) is an efficient modality that helps to acquire brain signals corresponding to various states from the scalp surface area. These signals are generally categorized as delta, theta, alpha, beta, and gamma based on signal frequencies ranging from 0.1 Hz to more than 100 Hz. This paper primarily focuses on EEG signals and their characterization for various states of the human body. Beta wave induced the production of cortisol. Also, the beta wave is necessary for our everyday lives, such as thought, communicating, arguing, and problem-solving, during conscious mental work. This Beta wave can also lead to tension, anxiety, and restlessness as they enable us to think properly. Persistently elevated cortisol concentrations are associated with metabolic disorders. Cortisol is a vital hormone sometimes known as the stress hormone in humans, as it is involved in the body's natural response to physical or emotional stress. cortisol has effects on memory, mood, and neurological diseases. Cortisol is best known for mediating the body's reaction to stress. This study aims to review the existing research and challenges of serum cortisol levels (cortisol is an indicator of stress) and EEG signals with the Insight meditation effect.

Keywords:- *Medical Sales Representatives (MR), Pharmaceutical Sales Representatives (PSR), Vipassana, Insight Meditation, EEG, Stress, Cortisol.*

I. INTRODUCTION

One of the most significant aspects of our daily lives is work. The majority of people in this competitive world devote a significant portion of their time to work-related activities. As a result, they worry more about the results of their work, which is very stressful. Stress has an impact on people's behavior, including how they interact with customers and their peer groups. Individuals who experience high levels of workplace stress might not be content with their jobs. This discontent could have a detrimental effect on how well the organization performs. Therefore, contemporary businesses view employee job satisfaction and job stress as two crucial workplace concerns. One of the main components of job satisfaction is work stress. Anger

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and job dissatisfaction result from job stress among employees. One thing that controls work-related stress is job satisfaction. Theoretically, workers' job satisfaction directly impacted their productivity during the neo-classical era. They thought that the relationship between productivity and satisfaction was causal. The incompatibility of job requirements with employees' needs or capabilities can lead to job stress, which is a detrimental emotional and physical reaction. Therefore, unclear job assignments, a lack of training, a lack of promotion, and job insecurity are also contributing to the stressful environment. Employee affective orientation toward their current job is known as job satisfaction. Employee perceptions encompass their emotions, mindset, tenacity, and convictions regarding different facets of their work. There is mounting evidence that the current trends in working conditions may be detrimental to employees' physical and mental well-being as well as their job satisfaction. There are two aspects to the effect of job satisfaction: positive and negative. Positive aspects of job satisfaction include eagerness, high energy, and enjoyable involvement; negative aspects include distress, unpleasant involvement, and nervousness. Over the past few years, the pharmaceutical industry in India has experienced phenomenal growth. The nature of this industry is intense competition. It's because more international and Indian businesses are getting involved in this industry. It simultaneously increases the need for medical representatives and their roles and responsibilities. Pharmaceutical sales representatives face increased pressure to meet targets due to the fierce competition in the market, which ultimately leads to job stress. In many pharmaceutical companies, sales representatives work in a highly stressful environment. Due to a variety of work-related issues, including a heavy workload, strict deadlines, the mobile nature of the job, unreachable goals, extended working hours, and pressure from coworkers, sales representatives experience high levels of stress. Sales representatives experience job dissatisfaction as a result of high levels of job stress [1].

Pharmaceutical sales representatives are typically the medical representatives under the most stress, but they play a significant role in assisting the industry in achieving a new corporate vision in a rapidly changing environment. To gauge the stress levels, an occupational stress index was provided. Organizations can lessen role conflict and ambiguity by implementing a specific role strategy. Additionally, job profiles and working hours must be taken into account in the context of the medical representatives' well-being. Finally, the expectations of the medical representatives should be compared with their actual roles. Pharmaceutical companies are a typical marketing sector that primarily deals with medical professionals. To effectively market various pharmaceutical products and build strong relationships with their direct customers, pharmaceutical companies need to hire more and more skilled and competent representatives. In many organizations spanning multiple industries, the work environment for medical representatives has turned into one of intense stress. Therefore, it seemed appropriate to investigate the impact of stress on medical professionals in India [2]. One of the most enduring aspects of modern and professional life is stress. The late Canadian-Hungarian medical scientist Hans Selye introduced the idea of stress. It's a tricky word; while it can indicate excitement and challenge to some, chronic fatigue, worry, frustration, and an inability to cope are undesirable states that many others associate with it. He saw it as the organism's "nonspecific" reaction to any request for modification. Stress can be defined more precisely as the mental and physical state that arises when an individual's resources are insufficient to handle the pressures and demands of the circumstance. People's behavior can reveal signs of stress, especially when those changes are noticeable. Stress can cause acute reactions in a wide range of domains, including feeling, acting, thinking, and bodily reactions. Extended periods of stress can alter the immune system, autonomic, neuroendocrine, and cardiovascular function, further contributing to poor mental and physical health. Further research indicates that work-related stress may play a significant role in the development of chronic heart disease in working-age populations. It can influence health behaviors indirectly and the neuroendocrine stress pathway directly. There is strong evidence linking job stress to an increased risk of incident stroke, according to another Japanese study. One of the most harmful things a worker may experience at work is stress. Most recognizable in the study of job stress was the early research on role ambiguity and role conflict. Since then, numerous theories regarding the connection between occupational stressors and the strains or illnesses they cause have been developed. Workplace stress is characterized as detrimental emotional and physical reactions that arise when job demands exceed an employee's resources, needs, or capabilities. This can result in injury or poor health. There are health risks and stress related to the nature of the work and its contents. Long hours, work overload, time constraints, challenging or complex tasks, a lack of breaks, a lack of variety, and unfavorable physical working conditions are some elements that are inherent to the nature of the work. Conflicting roles and boundaries at work or in the workplace can also lead to stress. Other ongoing stressful situations include job insecurity, inadequate incentives, lack of training, and promotion opportunities. Health is defined as "a state of well-being in which the individual can work productively and fruitfully" by the World Health Organization (WHO). Everyone who works in any type of environment, including pharmaceutical sales representatives, has the right to a healthy one. A healthy working environment is one in which there are many health-promoting conditions in addition to the absence of harmful ones. Pharmaceutical sales representatives work in groups and are primarily responsible for promoting drugs and pharmaceuticals through sales, which puts them under a lot of stress. Research clearly shows that because of the nature of their work, pharmaceutical sales representatives are more likely to experience health problems. Additionally, prior studies have shown that pharmaceutical sales representatives are subjected to long workdays, lengthy drives, and manual handling of promotional materials. Pharmaceutical sales representatives may experience job stress as a result of all the aforementioned factors. According to one study, PSRs

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experience job stress, and the main contributing factors were unhelpful coworkers, an excessive workload, and constant pressure to perform better. According to several studies, stress at work poses the same health risks as smoking or not exercising, and this is also the case for pharmaceutical sales representatives [3].

Medical representatives will always be in great demand for their posts. Their career growth prospects are constantly expanding, and they advance swiftly to more important positions.

They support increased sales, public brand awareness, market share development, market share expansion, relationship building, and product information dissemination. Before entering the market, they must conduct competitor, market, and segment analyses in addition to qualitative and quantitative research, scheduling, and marketing mix delivery. They specifically need people with good social skills, comprehension, communication, teamwork, time management, presentation, problem-solving, negotiating, customer service, and follow-up abilities. They also need people who are flexible, adaptable to change, aware of current developments, and keep up with new developments in the medical field and take the necessary steps to evaluate their impact on the company's business strategies. Because of the nature of their work, medical representatives often deal with occupational stressors such as work overload, deadline pressure, challenging tasks, long work hours, inadequate breaks, improper working conditions, and conflicting work roles and boundaries. The possibility of career advancement serves as a vital protective barrier against the daily strain brought on by underachievement, job insecurity, and a lack of training. Even unforeseen socioeconomic status consequences can lead to a loss of control, which serves as an indirect justification for high levels of stress [4].

II. ABOUT MEDITATION

With roots in India and a history dating back to 5000 BCE, meditation has gained popularity as a secular and therapeutic practice. The Latin term "to ponder," meditatum, is where the word "meditation" originates. Meditation practices are methods that promote and develop focus, clarity, emotional positivity, and the cultivation of nonjudgmental awareness. There are many different types of meditation, including secular and spiritual ones that focus on relaxation and stress relief [5]. The practice of meditation reduces accumulated stress, boosts energy, and generally improves health. Numerous health advantages of meditation practice have been verified by research. These encompass a reduction in stress, a decrease in anxiety, a decrease in depression, a decrease in physical and psychological pain, enhanced memory, and heightened efficiency. Decreased metabolism, breathing patterns, oxygen utilization, and carbon dioxide elimination are among the physiological advantages. Other benefits include increased melatonin, skin resistance, dehydroepiandrosterone sulfate (DHEA-S), blood pressure, heart rate, lactate, cortisol, and adrenaline. Meditation improves executive attentional network efficiency, increases coherence in the electroencephalogram (EEG), and increases regional cerebral blood flow in the frontal and anterior cingulate regions of the brain, according to a study on how meditation affects the executive attentional network, those who meditate regularly complete tasks more quickly. While experiencing meditation is linked to an increase in gray matter in the brain, aging causes a decrease in the cortical thickness of the brain, which is made up of neurons [6]. A variety of cultural contexts, such as Christianity and Islam, are associated with mental and emotional control techniques, but the term "meditation" is most commonly used to describe practices rooted in the Eastern spiritual traditions of China, Tibet, India, and Japan. Western nations have embraced meditation as a therapeutic intervention for the mind-body as well as a spiritual practice. The long-term (therapeutic) changes in a person (known as traits) and the transient experiences (known as states) that arise during a meditation practice are the two categories of effects of meditation. The focus of this review will be states of meditation. Many studies have been conducted on the states of consciousness that meditation practices induce, both theoretically and practically. One pertinent inquiry is whether particular psycho-physiological features of meditation states set them apart from other mind-body therapeutic interventions, such as relaxation. Since the original idea behind meditation practices was to lead one to a "higher consciousness," a more theoretical question is whether meditation practices induce particular states of consciousness, distinct from other states like hypnosis or sleep [7].

➢ *Types of Meditation:*

The word "meditation" refers to a broad range of techniques for achieving a calm state of mind. Numerous forms of relaxation and meditation incorporate meditation elements. Inner peace is the common goal that unites all. Among the methods of meditation are:

- Guided meditation: Also referred to as guided imagery or visualization, this technique of meditation involves creating mental pictures of peaceful locations or circumstances. You make an effort to engage your senses to the fullest, including sounds, textures, sights, and smells. A teacher or guide may lead you through this procedure.
- Mantra meditation: To stop distracting thoughts, you repeat a soothing word, idea, or phrase aloud during this kind of meditation.
- The foundation of mindfulness meditation is mindfulness, which is characterized by heightened awareness of and acceptance of the present moment. Your conscious awareness expands when you practice mindfulness meditation. You concentrate on the sensations you have while in meditation, like the movement of your breath. Thoughts and feelings are something you can watch, but you should also let them go unnoticed.
- Qi gong: To maintain and restore balance, this practice typically combines breathing exercises, physical movement, relaxation, and meditation. A component of traditional Chinese medicine is qi gong (CHEE~gung).

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- Tai chi: It's a mild style of Chinese martial arts. Tai chi (pronounced "TIE-CHEE") is a slow, graceful form of performing a set of postures or movements while focusing on deep breathing.
- Meditation on the transcendental plane: This is an easy, organic method. During Transcendental Meditation, you silently repeat a mantra—a word, sound, or phrase—that you have been given in a particular way. With no effort or focus required, this type of meditation may help your mind reach a state of inner peace and your body enters a deep state of relaxation.
- Yoga: To encourage a more flexible body and a calm mind, you engage in a series of postures and controlled breathing exercises. You're encouraged to pay less attention to your hectic day and more attention to the present as you work through poses that call for balance and concentration.
- Attentional focus: One of the most crucial aspects of meditation is usually maintaining your focus. The key to releasing your mind from the numerous distractions that lead to stress and anxiety is to focus your attention. You can direct your attention to things like your breathing, a mantra, an image, or a particular object.
- Breathing deeply and steadily: using your diaphragm muscle to expand your lungs is known as relaxed breathing. To improve breathing efficiency, the goal is to slow down, increase oxygen intake, and utilize fewer shoulder, neck, and upper chest muscles during breathing.
- A calm environment: If you're a novice, it might be simpler to meditate if you're in an area free of distractions, such as one without radios, TVs, or cell phones.
- Quietly seated: As your meditation skills improve, you might be able to practice anywhere, particularly in high-stress settings like rush hour, tense meetings at work, or lengthy lineups at the grocery store, where you can reap the most benefits from meditation.
- Finding a comfortable position: You can meditate while walking, sitting, lying down, or in other poses or activities. To ensure you get the most out of your meditation, just make an effort to be comfortable. Try to maintain proper posture when you meditate.
- Open mindset: Allow ideas to come to you without passing judgment [8].
- Soto Zen: The foundation of the Soto Zen tradition is open awareness and mindfulness. Sitting with their eyes open and facing a wall, one practices it. The instructions given to practitioners are to simply let go of their thoughts and emotions and stay purely aware of sitting, rather than clinging to them or engaging in narrative thinking. Practitioners must always return their attention to the present moment when they become aware that their mind has wandered (i.e., they have identified with a thought).
- Vipassana: Another popular meditation method in the West these days is vipassana meditation. To assist the mind in developing prolonged, focused attention, practitioners of Vipassana start by focusing their attention on their breath in the vicinity of their nostrils. They have to force their thoughts to return to the experience of breathing each time they stray. Their attention becomes even more focused as they work. The next step requires practitioners to mentally scan every body part methodically and sequentially, feeling the sensation in each one. They maintain a constant downward focus from head to toe, followed by an upward shift in the opposite way. Initially, individuals struggle to sense feeling in every region of their body, but with continued effort, they gradually start to feel sensations in more areas of their bodies. All that is required of the participants is that they maintain eye contact and impartially and calmly note the feelings that they are going through. To prevent disturbing the body and mind, practitioners should attempt to avoid creating sentiments of aversion or appetite for particular experiences. One excellent example of a meditation technique that incorporates both open monitoring and concentrated concentration is vipassana [9].

➢ *Effect of Meditation on Physical Health*

The physiology changes and every cell in the body becomes fuller of prana (energy) when one meditates. As a result, as the body's prana level rises, joy, calm, and enthusiasm follow. Physically speaking, meditation:

- Reduces hypertension
- Reduces blood lactate levels, which lessens anxiety attacks
- Reduces all pain associated with tension, including headaches, ulcers, sleeplessness, and issues with the muscles and joints.
- Enhances the synthesis of serotonin, which elevates mood and behavior
- Boosts immunity and Enhances slumber [8].

➢ *Effects of Meditation on Mental Health*

Meditation practices are associated with many perceptual and cognitive abilities. These skills could be normal or extraordinary. Numerous scientific studies have been carried out to quantify the different psychological and behavioral impacts of meditation.

- Assist in overcoming anxiety and depression
- The ability to perceive
- Enhances memory, focus, and attention.
- Aids in Pain Management and Healing
- Retention and intelligence
- Strengthen bonds with others [8].

Since ancient times, many cultures have employed meditation as a way to relieve physical tension and promote calmness in the body. Since the 1960s, meditation has been utilized in the West to promote emotional well-being and adaptability to life's stresses. It may be employed in both clinical and non-clinical contexts without compromising spirituality. The scientific literature has hundreds of distinct forms of meditation. It is necessary to comprehend the concept of meditation, including its spiritual and cultural foundations, to comprehend how it works. The applications

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listed under the three main titles that appear most frequently in the literature may serve as a basis for exploring the range of meditation applications available. These three applications have been the subject of several investigations. Studies on the practice have shown that it can alleviate chronic pain, enhance cognitive performance, and lower stress. Research on the topic of whether awareness-based meditation lowers stress has shown that it does, both in the short and long term, improve the physical and emotional health of patients with a variety of medical conditions and improves the non-clinical population's ability to manage stress [10].

III. ABOUT STRESS, DEPRESSION AND ANXIETY

➢ *Stress:*

Tension, either bodily or emotional, is known as stress. It might originate from anything that happens to you or anything that agitates, worries, or frustrates you. Your body's response to a challenge or demand is stress. Stress may be helpful for brief periods, such as when it keeps you safe or helps you accomplish a deadline. However, prolonged stress can be harmful to your health. The definition of stress management is "a collection of methods and approaches designed to assist individuals in analyzing the particular stressors in their lives and implementing proactive measures to reduce their impacts. “Stress is defined as "the psychological, physiological, and behavioral response that an individual experiences when they believe there is an imbalance between the demands made of them and their capacity to meet those demands, which, over time, results in ill health". Stress is a common emotion [11]. Everybody experiences stress, and it is particularly prevalent in healthcare system organizations, especially those with weak communication networks and frequent changes. The organization of work and resources is a crucial component that goes beyond work procedures. It may greatly influence a variety of factors, including nursing care results, productivity, creativity, competitiveness, and patient safety. A professional liability, unfavorable working circumstances, a heavy workload, working in shifts, working at night, strained interpersonal connections, a lack of information, unintentional stabbings and cuts, etc. are other crucial components. Stress disrupts a person's psychophysical equilibrium and overall personality, which has an impact on their daily life on a physical, emotional, psychological, and social level. For individuals working in the healthcare industry, stress can also have an impact on how they interact with patients. As a result of the vast range of relationships that nurses have with patients and their families, their line of work can produce a variety of tensions that can result in stressful circumstances [12]. Stressful events, how a person's body and mind respond to stress, and the emergence of clinical depression all seem to have intricate relationships. The majority of studies think that in some individuals, a stressful experience and the onset of depression are directly related. It's interesting to remember that stress may have both beneficial and harmful effects. Divorce, losing a job, ending a relationship, and losing a loved one are a few instances of negative stress. Planning a wedding, getting ready for a new career, and relocating to a new place are a few instances of good stress. Stress resulting from external events, both good and negative, might be before the onset of depression [12].

- *Stress Comes in Two Primary Forms:*

Acute Stress: This is transient tension that passes soon. You experience it when you brake hard, argue with your significant other, or ski down a steep hill. It aids in your handling of risky circumstances. It might also happen when you try something novel or thrilling. Everyone has experienced severe stress at some point.

Chronic Stress: This type of stress lasts for a longer amount of time. If you are having issues at work, in your marriage, or with money, you may be experiencing chronic stress. Chronic stress is any kind of stress that lasts for more than a few weeks or months. Chronic stress might become so normal to you that you fail to recognize its negative effects. Stress management is important since failing to do so can have negative health effects [11].

- *Symptoms of Stress: Although we all Experience Stress Differently; Some Common Symptoms Include [11]:*

✓ Moody
✓ Irritability
✓ Short temper
✓ Accelerated speech
✓ Nail biting
✓ Restlessness
✓ Lack of confidence
✓ Getting confused easily
✓ Worrying
✓ Nervousness
✓ Health issues

- *Techniques used for Managing Stress:*

✓ Yoga and meditation
✓ Physical exercise
✓ Entertainment
✓ Away from stressful environment
✓ Sleep
✓ Speaking with likeminded persons
✓ Playing with pet animals
✓ Prayer
✓ Medication
✓ Positive thinking
✓ Time management
✓ Tour
✓ Browsing and exhibiting the feeling through social media

➢ *Depression:*

Indian: According to the majority of community-based research, depression is the most prevalent mental illness. According to reports, it is also among the most prevalent mental illnesses among patients treated in outpatient clinics and in a variety of medical and surgical settings. According to reports, it is also the most prevalent mental illness in

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senior participants in a variety of contexts. Research from India has also demonstrated the significant influence that life experiences have on depression in the time leading up to its development. Research focusing on women has also demonstrated the need to recognize risk variables such as marital discord, sexual coercion, and interpersonal disputes.

More research is required on variables including cost, treatment attitude, adherence, compliance, and neurobiological correlates. To establish the necessity and length of continuous therapy, it is also necessary to investigate the course of depression disorders in India. Research ought to assess the economical treatment approaches that are readily implemented in primary care settings to successfully address depression [12].

- *Types of Depression: Like Many Other Disorders, Depression may Take Many Distinct Forms.*

✓ A variety of symptoms that impair one's capacity to work, sleep, eat, and engage in formerly enjoyable activities are indicative of major depression. Throughout a lifetime, one may have these incapacitating bouts of despair once, twice, or several times.
✓ Dysthymia, a milder form of depression, is characterized by persistent, chronic symptoms that prevent you from functioning but do not incapacitate you. People with dysthymia also go through significant depressive episodes.
✓ Compared to other depressive diseases, manic-depressive or bipolar disorders are not nearly as common. It entails manic or euphoric and depressive cycles. The moods shift gradually most of the time, but occasionally they are spectacular and quick. One may exhibit any or all of the additional signs of a depressive disorder when they are in the depression cycle. Any or all of the symptoms described under mania may be experienced throughout the manic cycle. Mania frequently harms reasoning, decision-making, and social behavior which can lead to embarrassing situations and major issues.

Symptoms of depression: Not every manic or depressed person has all of the symptoms. Some people may only have a few symptoms, while others may have several. Additionally, each person may experience symptoms to varying degrees [12].

- *Depression is Characterized by:*

✓ A persistently depressed, nervous, or empty sensation;
✓ Despair and pessimism
✓ A sense of powerlessness, remorse, and worthlessness
✓ A decrease in your enjoyment of past interests and pastimes, such as sex.
✓ Excessive sleeping, insomnia, or early morning awakenings.
✓ Losing weight and/or appetite, or gaining weight and overeating.
✓ Feeling lethargic, fatigued, and slowing down.
✓ Suicidal ideation and attempted suicide.
✓ Agitation, impatience,
✓ Trouble focusing, recalling, or making choices,
✓ Physical complaints that don't go away or get better, include headaches, stomach problems, and chronic discomfort [12].

➢ *Anxiety:*

The Latin word "anxietas" (to choke, throttle, bother, and disturb) is the source of the English term "anxiety," which refers to a range of behavioral, emotional, and cognitive reactions to perceived risk. It's common for humans to feel anxious. When experienced in moderation, anxiety fosters a proactive and flexible reaction to difficult or unpleasant situations. When anxiety levels are too high, people become unstable and enter a dysfunctional condition. When anxiety occurs in the absence of a challenge or stress, when its duration or intensity is out of proportion to the challenge or stress, when it causes significant distress, and when it impairs psychological, social, occupational, biological, or other functioning, these factors are all considered signs of excessive or pathological anxiety. One may argue that anxiety is an emotion that existed before the emergence of man. It is a crucial clinical focus due to its prevalence in human beings and its involvement in a variety of anxiety disorders. Recent advances in nosology, epidemiology, and psychobiology have made a substantial contribution to our knowledge of anxiety disorders. Recent developments in the medication and psychotherapy of these diseases have given patients a reasonable expectation for symptom alleviation and improved functioning. The following are the main types of anxiety disorders included in the American Psychiatric Association's (DSM-IV): - Acute stress disorder, posttraumatic stress disorder, obsessive-compulsive disorder, generalized anxiety disorder (GAD), panic disorder (with or without agoraphobia), agoraphobia without panic, social phobia (social anxiety disorder), particular phobia, and anxiety disorder not otherwise described. The DSM-IV now includes anxiety that manifests as an adjustment disorder, a co-occurring drug addiction disorder, or a general medical condition. Lastly, anxiety that does not correspond with a psychiatric diagnosis may be situational in healthy individuals or a sign of another mental illness [13].

➢ *Selection of Meditation:*

- *Vipassana (Insight Meditation)-*

The development of insight into the body and mind's reality is known as vipassana. The Buddha provided the most thorough and concise explanation of the concepts and practice of Vipassana in the Satipatthana Sutta, where he also assured practitioners that their efforts would yield positive effects. It is equivalent to Vipassana and Satipatthana. Anyone who attempts this type of mental training will quickly learn that, although it may seem easy, it is a difficult process that takes time to master. Typically, instruction in morality (sila) and concentration (samadhi) comes before engaging in vipassana practice. All meditators must abstain from illegal means of subsistence (such as dealing in weapons, etc.), murder, theft, immorality, and dishonesty. Shakyamuni Buddha proposed a three-tiered

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technique, in which morality forms the basis for concentration, which in turn supports Vipassana. The caution that follows for Vipassana practitioners is that all further practices would be ineffective without a solid moral foundation. Buddha provided around thirty meditation topics for focused practice, the evolution of which has been covered in-depth in canonical works like the Vishuddhimagga. All types of "right" (samma) concentration entail paying the meditation object their whole attention for an extended time while maintaining healthy mental habits. The subjects cover a wide spectrum, from visual items (color kasinas) to serious matters (death, repulsiveness toward the body, etc.) or even just ordinary physiological activities like breathing. Additionally, the purpose of meditations is to suppress negative emotions and promote positive ones such as empathy, compassion, joy, and calmness. While certain meditation subjects are appropriate for all students, there are occasions when Buddha would choose a particular collection of topics based on the student's mental makeup. Once more, the highest level of mental concentration that is feasible varies depending on the subject. Here, concentration serves to create the mental peace and ongoing attention required for effective Vipassana practice. As previously said, Vipassana requires a certain degree of moral and mental skill. While Vipassana is based on focus, it is important to remember that concentration is more than just another type of concentrative practice. All forms of Vipassana include witness-like, ongoing observation of natural processes within the body. The word vipassana means "to see" in a particular way, that is, to perceive calmly and mindfully. The goal of "concentration" is to maintain focus on a predetermined topic. A long-term, consistent observation like this can provide insight or understanding into the real nature of mental and physical processes. According to renowned teacher and expert in Vipassana meditation, Shri S.N. Goenka place it- “The goal of the exercise is to go within oneself and become aware of one's own physical and mental reality. To become a Buddha, Siddhartha Gautama underwent this. He disregarded all prejudices and investigated himself to ascertain the genuine nature of his mental and physical makeup. He began with the most obvious level of reality and worked his way down to the most subtle, discovering that all of the material world's physical structure is made up of subatomic particles known as attha kalapa in Pali. He discovered that these particles are the fundamental constituents of matter and that they are also continually emerging and dissipating at a rate of billions of times every second. The material universe is nothing more than flames and vibrations; it lacks substance” [14].

Vipassana is a technique that explores all aspects of the body-mind complex, although initially, it focuses attention on only one. Buddha formally recognized four bases as the centers of attention for beginning Vipassana practice:

- ✓ Awareness of body.
- ✓ Awareness of sensations (feelings).
- ✓ Awareness of mind or consciousness.
- ✓ Awareness of mental contents.

➢ *Awareness of Body/Awareness of Breath (Anapana Sati):*

The first stage in practicing Vipassana is being aware of your breathing. The training begins with a basic awareness of one's inhalations and exhalations. Unlike some other spiritual practices, this one just focuses on the natural breath without attempting to control it in any way. One eventually expands their focus and includes all mental and physical states as one progresses. It is a normal occurrence for respiration to act as a tool for Vipassana and concentration (samadhi). The history of this respiratory awareness process is fascinating. Buddha had experimented with some popular meditation techniques at the time. Even after mastering several concentration techniques, he was not pleased. He subsequently resorted to self-humiliation, but even the strictest austerities were ineffective. At this time, he recalled an instance from his early years in which he had been by himself. He had seen his breath entering and leaving at that point, and it had brought him a great sense of serenity and joy. He recalled that condition as being devoid of any sense of need or unhealthy ideas. This recollection of serene introspection beneath a rose apple tree inspired him to give up self-loathing and start a series of impartial internal observations. The history of this respiratory awareness process is fascinating. Buddha had experimented with some popular meditation techniques at the time. Even after mastering several concentration techniques, he was not pleased. He had seen his breath entering and leaving at that point, and it had brought him a great sense of serenity and joy. He recalled that condition as being devoid of any sense of need or unhealthy ideas. This experience of serene concentration beneath a rose-apple tree led him to abandon self-loathing and begin a series of objective investigations of his own body and mind, which ultimately resulted in the full explanation of the Vipassana method.

- *Awareness of Sensations*

Body sensations result from the interaction of sense objects (sight, sound, smell, taste, touch, and mental objects) with the sense doors (eyes, ears, nose, tongue, body, and mind). An inept response to these feelings typically results in cravings, which then trigger addicted attachment. Buddha experienced that one's primary craving is not for the external thing itself, but rather for the secondary feelings that the item's observation arouses in them. This is an important causal chain link for a Vipassana practitioner. It is possible to significantly lessen the desired habit if one retains appropriate awareness of stimuli or awareness with composure. Sensations are a tool for tracking both material and mental occurrences since they can originate from both mental and physical sources.The Buddha is completely freed and free of all attachments after having witnessed sensations for what they truly are the birth of sensations, their passing away, the enjoying of them, the danger in them, and the liberation from them. The mind is ready for the more difficult work of being aware of sensations when it practices Anapana Sati, the mindfulness of breath. To prepare the mind for the next step, which is to watch sensations throughout the body with composure, one practices observing the breathing in the little space below the nostrils and above the top lip. In actuality, the focus is transferred in a stylized fashion from the feet to the head, allowing for an

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objective examination of every sensation experienced in each area of the body as it passes. The word passana means "seeing," as in the common sense of having visions. Vipassana is the term for a particular type of vision known as self-observation of one's reality.

- *Awareness of Mind (Citta) and Awareness of Mental Contents (Cetasikas)*

Sensation accompanies every thought that enters the mind. It takes careful training to become aware of the contents of the mind and the stream of consciousness. Our senses provide us with a constant grasp of the physical and mental realities. A fundamental classification method associates mental states with either illusion, aversion, or desire. The bodily feelings resulting from the three are quite distinct as well. Given how quickly one conscious state gives way to another, it takes a great deal of concentration and composure to keep an eye on the shifting feelings that correspond with each state. Quite complex systems categorize various mental states to facilitate the observation. Below is a list of a selected few of these systems.

- ✓ Awareness of Hindrances: Realizing that "sense desire or aversion or sloth and torpor or agitation or doubt is present (or absent) in me at this moment."
- ✓ Awareness of Aggregates: The five aggregates of awareness are matter (body), sensation, perception, conditioning (all three are parts of mental contents), and consciousness (mind).
- ✓ Awareness of Sense Spheres: Here, the Buddha mentioned the mind in addition to the eye, ear, tongue, nose, and body. The sense objects for the sense sphere of mind are mental contents.
- ✓ Awareness of Factors of Enlightenment: education to raise awareness of the presence or absence of certain elements. These include consciousness, the ability to investigate, effort, rapture, serenity, focus, and composure.

Understanding of the Four Noble Truths: thorough examination of the four noble truths: pain, the cause of suffering, the means of putting an end to suffering, and the path to doing so. It should be clear that using any of the methods doesn't need thinking conceptually or discursively. It is also possible to directly access and observe the progression of conscious states without the assistance of sensations, albeit this is unusual and requires a great degree of experience and skill [14].

➢ *Why Vipassana:*

Vipassana Meditation is a method that raises self-awareness to improve mind-body balance. Vipassana is defined as an experience of inner peace that promotes self-control, non-delusion, and increased mental clarity. Vipassana is a traditional form of meditation for psychological health and self-improvement. There are three smaller sections to the meditation:

- Anapanasati - Mindfulness of breathing
- Vipassana - Insight meditation
- Metta Bhavana - Universal love and compassion

The term "anekasahaasa" in Vipassana signifies "this moment will pass." It fosters greater understanding and extends love and compassion to the outside world. The following is a list of the numerous advantages that the writers claim Vipassana offers:

- It eases the mind's ability to work joyfully, make better sacrifices, and worry less about exhaustion.
- A realistic understanding of the situation is helpful.
- Instead of making us feel bored, it inspires us to learn new things.
- It makes it possible to communicate the truth much more clearly and precisely than it was previously.
- It makes it simple to retrieve memories.
- It aids in a deeper comprehension of reality's foundations.
- Rather than making people haughty, it makes them easy to chastise.
- It teaches people how to maintain themselves at all times and helps them get to know who they are.
- It brings people together and leads to peaceful, harmonious living.
- It calms people and purifies their speech, actions, and thoughts [15].

➢ *State of Consciousness/Awareness (Phenomenology):*

A person can become more self-aware through meditation. Being aware of one's presence in the present moment is known as awareness. Knowing and being are both included. All it signifies is that the individual both "knows" that he is acting and "is" experiencing his actions in real time. Vipassana involves "paying attention" to a specific aspect of functioning, such as breathing, eating, etc., which helps one become aware of his actions. When someone pays attention to and reflects on his thoughts and feelings, it may help them recognize something that they had previously missed or disregarded. This method aids in present-moment awareness, developing and refining awareness of ongoing experience, and focusing attention on past mistakes. People who engage in such practice can comprehend their actions in various contexts more clearly [15].

IV. ELECTROENCEPHALOGRAM (EEG)

With the use of a variety of electrodes, an electroencephalogram (EEG) is a recording of the electric activity from the scalp. The signal is often preserved in digital or graphic format after amplification [16]. A medical imaging method called electroencephalography measures the electrical activity in the scalp that is produced by different parts of the brain. The definition of the electroencephalogram (EEG) is alternating electrical activity that is detected by metalelectrodes and conductive medium and is recorded from the scalp surface. An electrocorticogram is the EEG recorded directly from the cortical surface; an electrogram is the EEG recorded using depth probes. We will solely discuss EEG measured from the head surface in this paper. Therefore, electroencephalographic reading is a non-invasive technique that has almost no danger and is therefore suitable for

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repeated use on patients, healthy adults, and youth. Recently, a lot of work has gone into developing various signal-processing methods to improve EEG profile changes. The intention has been to offer a more straightforward interpretation of the EEG for a range of uses, such as the identification of neurological conditions and the intraoperative monitoring of cerebral ischemia and anesthetic effectiveness [17]. A highly useful instrument in the fields of clinical neurophysiology and neurology is the EEG, which can record both normal and pathological brain electrical activity. The first electrical activity in the human brain occurs between weeks 17 and 23 of pregnancy. It is believed that all 1011 neurons, or the total number of neural cells, are fully grown at birth. This results in 104 neurons per cubic millimeter on average. Synapses allow neurons to link with one another to form neural networks. About 500 trillion (5.1014) synapses are present in adults. With aging comes a rise in the number of synapses per neuron, but a loss in the total number of synapses as neurons become older. The brain stem, cerebellum, and cerebrum are the three regions that make up the brain from an anatomical perspective. The cerebral cortex is a highly convoluted surface layer that covers the left and right hemispheres of the cerebrum. One of the main components of the central nervous system is the cortex. The brain receives centers for initiating movement, gaining cognitive knowledge of sensations, performing sophisticated analyses, and expressing emotions and behaviors. The cerebellum controls voluntary muscle contractions and maintains equilibrium. The brain stem is in charge of biorhythms, hormone and neurohormone release, cardiac regulation, breathing, and other bodily functions. Because of its surface location, the cerebral cortex's electric activity has the biggest impact on EEG. EEG and MEG differ in a few theoretical and practical ways. Even though the same electrical currents create the MEG, it can offer additional information to the EEG [17]. An EEG electrode primarily detects electrical activity within the brain. Nevertheless, the electrical output that the electrodes record is a result of thousands of neurons. The cortex has more than 100,000 neurons per square millimeter. Differentiated wave shapes and frequencies in the form of EEG are only obtained when a region's activity is linked to concurrent electrical activity. According to EEG reports, there are four main periodic rhythms: delta, theta, beta, and alpha. These rhythms are defined by the amplitude and frequency (in Hz or cycles/sec). Scalp electrodes have amplitudes in the microvolt range. Brain wave activation is a representation of the electrical activity of brain neurons, more precisely, the voltage variations resulting from ionic movement inside brain neurons. The Electroencephalogram (EEG), which records this electrical activity, describes it as oscillating or wave-like patterns. These waves represent the normal activity of the brain throughout both resting and active phases. On the other hand, external stimuli can also cause these waves to occur. There are several common ways to collect and modify brain waves, including transcranial magnetic stimulation, transcranial direct modern stimulation, and transcranial alternating contemporary stimulation. These methods aid in confirming the accuracy and advancing knowledge about the central nervous system in both clinical and research contexts. The process of EEG recordings starts with the application of many electrodes all over the human scalp. The EEG will then monitor the voltage variations resulting from the ionic currents flowing through brain neurons. The EEG picks up on these oscillations, displays them as a wave or oscillation, and records the frequency and timing of their activation [18].

- *Delta Waves:*

These waves, which vary in frequency from 1 to 4 Hz, are the slowest brain waves. Deep sleep is associated with delta waves, which have the slowest waves (low frequency) and the largest amplitude. Only in a deeply meditated or dreamless sleep can be produced these waves. There is a tendency for these waves to approach the highest voltage. occurred during deep sleep periods in infants up to one year of age. Adults have sluggish brain activity and little self-conscious brain engagement.

- *Theta Waves:*

Theta waves, or theta rhythm, arise when a repeated job becomes autonomous and requires little to no effort to perform. They range from 4 to 8 Hz. Theta states are essentially formed once the activity or tasks are finished predictably. A study looking into this provides an overview of research that used EEG stimulation to show theta activity during repeated tasks. Both the cortex and hippocampus areas are capable of producing theta waves. Similar to alpha waves, theta waves have been demonstrated to lessen anxiety when stimulated.

- *Alpha:*

Alpha waves are oscillations in the nervous system that occur in the brain, occipital lobe, and thalamus with a frequency of 8–12 Hz. The usual method for detecting alpha waves is EEG. Large amplitude alpha waves are usually associated with moderate brain activity. In particular, alpha waves happen when a person is momentarily inactive but awake. Significant volumes of these waves usually happen while you're sleepy or groggy. In terms of function, alpha waves are important for neuronal networking and suppress certain regions of the brain. It has also been demonstrated that there is a correlation between the alpha frequency and cognitive function, particularly the speed at which information is recovered from memory. There was discovered to be a positive link between alpha frequency and quick and accurate memory ability. In addition to enhancing word recognition, alpha wave activity may help older people's working memory. Elevations in alpha wave activity have been linked to improved perceptions of tranquillity in addition to cognitive advantages.

- *Beta:*

In contrast to alpha waves, beta waves which have a frequency between 12 and 30 Hz occur while one is in a highly conscious state. During active focus and while finishing a task, the brain oscillates in a way known as the beta state. Similar to alpha waves, beta waves are also identified by EEG and are seen throughout the motor cortex during slow motions and isotonic contractions. Enhancement in academic performance is associated with increased beta activation. Likewise, there is evidence linking

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increased beta wave activity to improved student grade point averages. These results could suggest a link between gains in cognitive abilities and beta waves. Studies have demonstrated that beta waves impact mood and emotions in addition to cognitive function. For instance, there has been a noticeable reduction in emotional weariness and anxiety while using transcranial magnetic beta wave stimulation.

➢ *Gamma:*

Brain oscillations that occur between 30 and 100 Hz are known as gamma waves. These brain waves are believed to play a role in conscious attention. Gamma waves are produced to coordinate neuronal activity, and prior research has shown that they start from the thalamus and migrate anteriorly. If this wave is absent which frequently happens as a result of thalamic injury conscious consciousness is unable to arise, and the person enters a deep coma. [18].

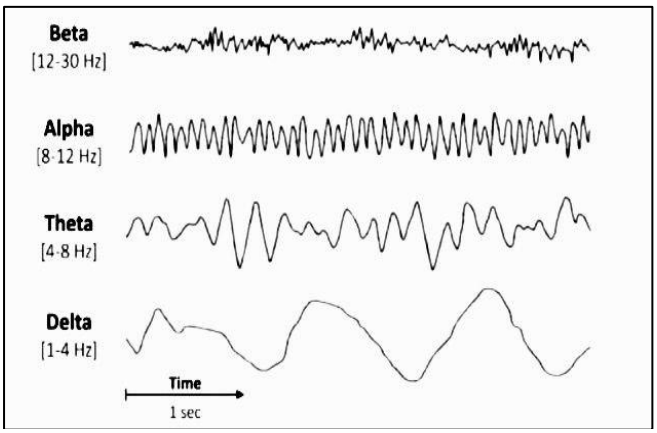

Fig 1 Brain Wave Pattern [18]

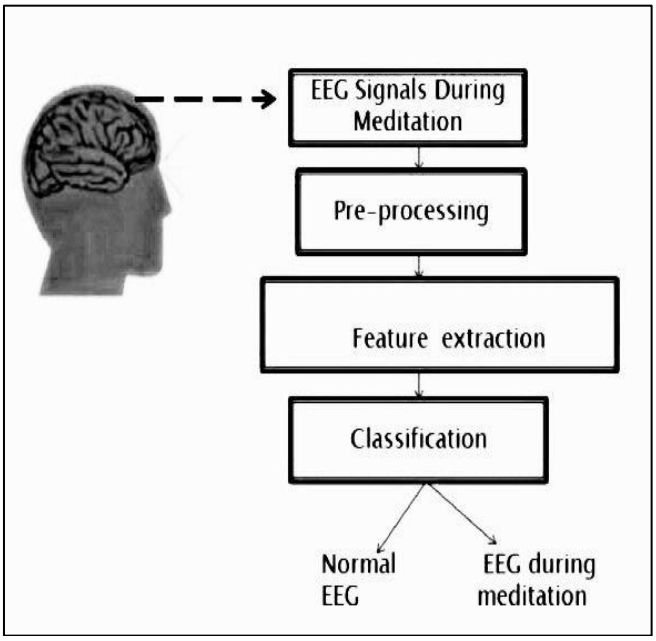

Fig 2 EEG Classification [18]

Numerous methods, including electroencephalography (EEG), functional magnetic resonance imaging (fMRI), and positron emission tomography (PET), can be used to examine these impacts on the human brain. Compared to other methods, electroencephalography (EEG) is a non-invasive procedure. By using electrodes on the scalp's surface, electroencephalography measures and amplifies the brain's bioelectric potential [19]. Table 1. illustrates how the EEG monitors various frequency brainwaves inside the brain [18].

Table 1 EEG Frequency Band

Wave	Frequency	Characteristic feature
Gamma	(>30hz)	(i) A rise in targeted stimuli. (ii) Maintains careful observation of localized variations in blood flow to facilitate long-term memory synaptic plasticity. (iii) More concentrated stimulation.
Beta	(13–30hz)	(i) Amplitude almost ¡ µ30 V. (ii) The rapid process of β happens when people are focused, aware, and involved in problem solving, assessment, decision-making, or other mental activities. (iii) The system enters an attention state during beta bursts, enabling gamma coordination.
Alpha	(8–13hz)	i) Voltages less than 50 µ V; ii) Adults' predominant frequency; iii) Attention-demanding and semantic memory tasks (iv) Simple to observe with closed eyes and passive mind. (v) When there are more extensive work needs, theta is synchronized and alpha is desynchronized. (vi) Rapid, low-amplitude beta rhythms predominate in the waves. Opening your eyes in a well-lit area might cause alpha blocking. (vii) µ rhythm: Sensorimotor cortex's alpha inaction
Theta	(4–8hz)	(i) 30 to 60 µ V (FmTheta) of voltage (ii) In typical children and infants, a calm state during meditation, sleep, and somnolence in adults. (iii) A neural marker of internal mechanisms that need control.
Delta	(<4hz)	(i) A tendency to gravitate toward the highest voltage (ii) Appears in infants up to one year old during deep periods of sleep (iii) Slow brain rhythms (iv) Minimal conscious brain involvement

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➢ *Application of EEG:*

EEG's biggest benefit is its quickness. Neural activity can exhibit intricate patterns that emerge in a matter of seconds following the administration of a stimulus. MRI and PET offer higher spatial resolution than EEG. Therefore, EEG pictures are frequently coupled with MRI scans for improved allocation within the brain. EEG can identify the locations and relative intensities of electrical activity in various brain areas [17].

- *The Following are some uses for EEG Research and Clinical Applications in Humans and Animals:*

✓ Track consciousness, unconsciousness, and brain death;
✓ Identify the site of harm after a stroke, brain tumor, head injury, etc.;
✓ Evaluate afferent pathways (using evoked potentials);
✓ Track cognitive involvement (alpha rhythm);
✓ Generate alpha and other biofeedback scenarios;
✓ Regulate the level of anesthesia ("servo anesthesia");
✓ Look into epilepsy and the source of seizures;
✓ Test the effects of epilepsy medications;
✓ Track the development of the human brain
✓ Look into sleep disorders and physiology [17].

➢ *About Serum Cortisol Level:*

The body normally maintains or controls the appropriate amounts of cortisol. However, the body secretes more cortisol while under more stress. Because cortisol is also generated in larger amounts during the body's fight-or-flight reaction to stress, it is sometimes referred to as the "stress hormone." It is also in charge of many bodily modifications brought on by stress. Researchers have looked into the relationship between cortisol and metabolic syndrome. Additionally, the research demonstrated a substantial correlation between morning cortisol levels and metabolic syndrome symptoms including obesity, high blood pressure, and a bad lipid profile. The Hypothalamic-Pituitary Adreno Cortical Axis (HPA) triggers the release of cortisol, whereas the Sympathetic Adrenal Medullary (SAM) system releases catecholamines. These two hormones aid in stress management in all its forms. On the other hand, persistent stress interferes with these processes and raises the risk of both physical and mental disorders. According to reports, people with metabolic syndrome have hyperactivity of the HPA axis, which results in a state of hypercortisolism. This condition may be brought on by ongoing stress and contributes to the development of visceral fat, obesity, Type 2 diabetes, and insulin resistance. One of the most significant physiological repercussions of the numerous metabolic and endocrine changes that occur in circumstances involving pain, worry, fear, or acute tissue injury is an increase in blood cortisol levels. Measuring cortisol or glucocorticoids has drawn a lot of interest since animals react to stressors by raising their levels of these chemicals. Numerous studies have employed serum cortisol levels as a biological stress marker and as an indication of stress [20].

- For 21 days, a planned experimental investigation involved practicing the vipassana meditation on an empty stomach every morning from 6 to 7 am.
- Twenty fit participants, from 24 to 40 years, took part in the research. The study measured the serum cortisol level by taking blood samples in the morning of the day before and after meditation on the 21st day.
- We used the paired t-test to determine if the difference in mean cortisol levels between the baseline and post-meditation groups was significant [20].
- Using the EEG machine and MATLAB software, assess the mental state on the first meditation date and the twenty-first meditation day [19,20].
- We can determine the stress level in Medical Representatives and the hormonal level in the blood sample, as well as compute stress reduction performance, by comparing the blood cortisol sample and the EEG results from data, collected before meditation on the first day and after the meditation on the 21st day [20].
- Based on this, we can determine whether or not Vipassan a meditation helps medical representatives reduce stress.
- Selection of the number of participants: A staggering amount of book chapters, articles, and books provide advice and state that having between five and fifty people is sufficient [21]. So, we may choose twenty healthy male medical representatives between the ages of 24 and 40 for the study.

➢ *The Participants have Explained the Method of Meditation:*

It is important to complete a ten-day residential course at any Vipassana Meditation Center with noble silence and no interaction with the outside world under the supervision of a competent teacher (Acharya) to study Vipassana. On "day zero," participants are required to arrive at the Center. Following completion of the registration process, the course begins in the evening. The training in Vipassana consists of three steps:

- *Step-I Observance of Sila (Moral Conduct)-*

It serves as the basis for the Vipassana practice. Participants in the course are required to swear an oath to refrain from murdering, stealing, engaging in sexual misbehavior, lying, and using any kind of intoxicant while they are there.

- *Step-II Anapana (Awareness of Respiration)—*

This entails monitoring the inhalation and exhalation processes in their natural order. When practicing Anapana, focus your attention on the space above the top lip and below the nose. Breathe quickly or forcefully for a short while if your thoughts are racing or excited; otherwise, breathe normally. Anapana encourages peace of mind, serenity, and present-moment awareness. The mind begins to quiet down, sharpen, penetrate, and become capable of practicing Vipassana meditation as it gets more focused. Participants practice Anapana Meditation by concentrating attention on natural breathing for the first three and a half days.

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- *Step-III Vipassana (Development of Wisdom or Insight)-*

Vipassana is the practice of perceiving one's reality via choiceless observation of bodily sensations and the cultivation of a nonreactive attitude. It is the purifying of the mind. Every time we come into contact with the outside world, our bodies experience a variety of feelings that we interpret as either pleasant or unpleasant and begin to enjoy or dislike. We teach our mind to examine all feelings with impartiality and detachment throughout practice, meaning that we avoid becoming fixated on pleasurable sensations and averse to unpleasant or painful ones. As we continue down this path, we come to see that every feeling is fleeting, essenceless, and subject to perpetual change. For the past six and a half days, this step has been taken. Participants get repeated teaching methodically for meditation. For the initial nine days of each day, there is noble quiet. Acharya Goenka explains the day's development in a videotaped evening sermon. For the past six and a half days, this step has been taken. Participants get repeated teaching methodically for meditation. For the initial nine days of each day, there is noble quiet. Acharya Goenka explains the day's development in a videotaped evening talk.

➢ *Evaluation of Cortisol [22]:*

- Free serum cortisol reference range: 8 am: 0.121-1.065 mcg/dL
- Total serum cortisol reference range:
- Adult/elderly;
- 8 am: 5-23 mcg/dL or 138-635 nmol/L (SI unit)
- 4 pm; 3-13 mcg/dL or 83-359 nmol/L (SI unit)
- Collection and Panels:

- *See the List Below-*

✓ Container/Tube: Red top
✓ Specimen volume: 0.5 mL
✓ Collection instructions: Include the time of drawing.
✓ Reject sample due to gross hemolysis or visible lipemia

On day 21, Out of Twenty volunteers sixteen volunteers (four volunteers were not present due to health reasons) blood samples showed lower serum cortisol levels than the baseline values that is, the day before they began the meditation. The average cortisol level dropped significantly. [Table/Fig. 2, 3.]

Table 2 Serum Cortisol Levels: One Day before Starting the Meditation (Baseline) and after 21 Days of the Meditation [20]

Sr. no	Serum Cortisol Level (microgram/dL) One day before starting the meditation (Baseline)	Serum Cortisol Level (microgram/dL) After 21 days of meditation
1.	14.99	12.01
2.	11.52	10.49
3.	14.27	12.08
4.	19.05	08.76
5.	11.89	08.05
6.	16.06	10.08
7.	11.05	09.16
8.	11.26	10.21
9.	22.01	12.04
10.	18.05	11.28
11.	11.56	09.01
12.	13.01	10.29
13.	19.58	11.68
14.	11.78	09.26
15.	12.28	11.57
16	18.86	11.91
Mean	14.83	10.59

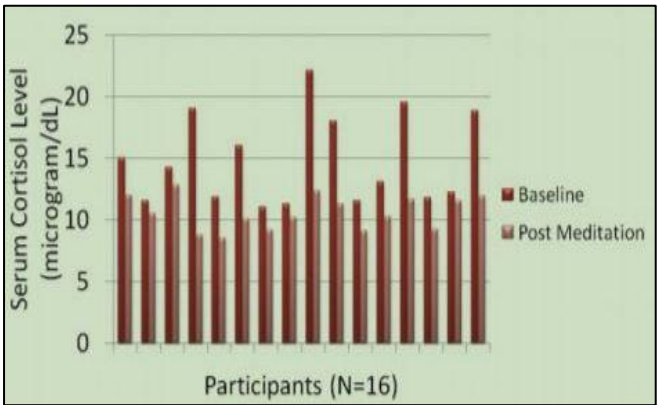

Fig 3 Baseline (1st Day before the Start of Meditation) and Post Meditation (after 21 Days of the Meditation) Serum Cortisol Levels of the Participants (N=16) [20].

➢ *EEG Parameters to Follow:*

Table 3 Classification of Brainwaves

Waves	Frequency	Mental State
Alpha	8-12Hz	Awake but ease
Beta	13-14Hz	Awake but relaxed
Gamma	(>30Hz)	High-level information handling
Theta	4-7Hz	Light sleep or profound relaxation
Delta	(<4Hz)	Deep, Sleepless dream

- *Real-Time Recording Process:*

Some selected healthy participants without any prior meditation experience, and also some selected healthy participants who meditate regularly are the participants of this study with reference electrodes and a sampling

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frequency of 250 Hz, to track the changing spectrum features of EEG recorded with electrodes. On the head, electrodes are used in clinical electroencephalography. Software called MATLAB is used to analyze the recorded EEG data. Using MATLAB software, researchers recorded the brain waves of those participating in the study and compared the results to reference data. This feature extraction method gives the Gamma, Beta, Alpha, Theta, and Delta frequencies at different breakdown levels. Following the extraction of these characteristics, the statistical parameters are computed at every level of the extracted frequency range. For both meditating and non-meditating subjects, Table 4 compares the power levels of various frequency bands. During meditation, it is evident that lower frequencies predominate over higher frequencies, which are more prevalent in non-meditating subjects [19].

Table 4 Comparison of Mediator and Non-Meditator with Absolute Power at Different Frequency Bands [19]

Frequency Bands	Meditator	Non-Meditator
Delta	0.13	0.01
Theta	0.13	0.01
Alpha	0.17	0.01
Beta	0.1	0.03

V. CONCLUSION

Due to a variety of circumstances, including a tremendous workload, strict deadlines, the mobile nature of their work, unreachable goals, lengthy workdays, and pressure from their jobs, medical representatives experience significant levels of stress. It is possible to use yoga, meditation, counseling, and therapy to minimize stress at work. However, stress is an inevitable part of life that prepares people for further action. Effective methods of reducing stress include engaging in other activities, including yoga and meditation, and spending time with loved ones. If stress worsens or lingers, it might be quite helpful to seek professional help from a therapist or counselor. EEG brainwave signals could help doctors in assessing brain activity, and various meditation techniques can be used to enhance mental health depending on an individual's condition. Changes in alpha, beta, and theta brainwaves are indicative of the beneficial benefits of meditation on brain activity. These effects include improvements in insight, memory, and thinking as well as a decrease in agitation, stress, and anxiety. This study focused on the detection and extraction of patterns from human brain activity following meditation. These days, diagnostic processes are starting to incorporate alternative therapies like mindfulness and Insightful. This work makes a significant contribution to our understanding of the neuro-electrical effects of mindfulness, specifically with the numerous uses of mindfulness meditation in medical care and therapies. Medical professionals can examine a patient's degree of mental activity by using EEG brain activity research findings. EEG signal and coherence have been explained in terms of a full review of many types of meditation, including Vipassana, Yoga, Qigong, Samatha, and Mindfulness, among others. A qualitative investigation is required for the classification of EEG samples for different operations. Real-time signals are captured for both meditating and non-meditating participants. Statistical parameters are then computed and characteristics are retrieved. When compared to non-meditating participants, the comparison revealed that the lower frequencies are more prevalent in the meditating subjects. Such a study can be used to train people to meditate, and real-time EEG data can be used to monitor the trainee's development. Upon testing individuals after meditation, the current study found substantial decreases in plasma cortisol levels. This implies that there are anti-stress benefits of meditation. Insight meditation and integrative stress management strategies might be beneficial. It is already known that releasing suppressed emotions like sobbing lowers stress and the stress hormone cortisol, which may be part of the meditation's mechanism of action. Consequently, it can be said that practicing Insight meditation (Vipassana) regularly might be suggested as a therapeutic intervention for the reduction of stress and stress-related illnesses of the body and mind. It is necessary to conduct a stress audit to pinpoint "stress areas" to enhance working conditions and reduce tension at work. Stress has an indirect impact on an organization's ability to survive by affecting the performance of its employees. In the long term, this will help the organization succeed, thus the company must devise appropriate measures to reduce stress among Medical Representatives. Highly motivated salespeople will be considerably happier and will give the company their all in their work. These actions can improve sales representative's job satisfaction and minimize stressful situations at work. Therefore, identifying the key causes of job stress and managing it will benefit both the employer and the employee in the long run. Insight meditation needs more clinical research to demonstrate its effectiveness and get hospital approval as a treatment. In the future years, we expect to see the development and approval of more meditation regimens specifically designed to address certain ailments.

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