

Osho Dynamic Meditation; Improved Stress Reduction in Farmer Determine by using Serum Cortisol and EEG (A Qualitative Study Review)

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Abstract:- A lot of thought should go into how to revitalize agriculture, because rural demand is critical for reviving the manufacturing sector. Agriculture is also significant because it employs 52% of the population and accounts for 17% of GDP. Over the last 17 years, approximately 14 million farmers have committed suicide. Although per capita land availability has decreased, agriculture's share of employment has decreased more slowly. It means that farmer stress is increase day by day. Dynamic meditation is a popular form of active meditation that was introduced in 1970 by an Indian mystic named osho. The impact of osho dynamic meditation on cortisol levels in the serum (cortisol is a stress marker) & therefore to observe whether it has any anti-stress effect. And calculate beta wave (stress wave) calculated by using EEG and observed reduction in waves or not. After study the hole article we can conclude 1. To study the effect of dynamic meditation on mental health. 2. To Study the effect of dynamic meditation on stress by testing serum cortisol. 3. To study the stress level in farmer before dynamic meditation and after dynamic meditation. Using EEG machine and to achieve better results. 4. To promote farmers and other people to do meditation for positive energy and stress-free life.

Keywords:- Dynamic Meditation, Cortisol, EEG, Stress.

I. INTRODUCTION

➤ About Meditation

The practice of meditation entails teaching the mind to concentrate and refocus. It's frequently employed to attain emotional equilibrium, serenity, and mental clarity. Despite having roots in long-standing religious and spiritual traditions, meditation has become more widely accepted recently as a result of its many positive effects on both mental and physical health.

One of the primary goals of meditation is to achieve a state of mindfulness. Mindfulness is the ability to be fully present and aware of oneself and the surrounding environment, without judgment. By practicing mindfulness through meditation, individuals can learn to let go of negative thoughts and emotions while also developing a greater sense of self-awareness. [1,2]

Regular meditation practice has been demonstrated to significantly improve mental health. It has been discovered to lessen stress, anxiety, and depression by encouraging serenity and relaxation. This is accomplished by triggering the relaxation response in the body, which neutralizes the physiological impacts of stress.

Additionally, meditation can improve concentration and cognitive abilities. By training the mind to focus on a single point or object, individuals can enhance their ability to concentrate and maintain attention for longer periods. This can be particularly beneficial for students and professionals who need to stay focused and perform well in their respective fields.

It has also been discovered that meditation offers significant advantages for physical health. It can strengthen the immune system, lower blood pressure, and lower the risk of heart disease. Regular meditation practice has also been connected to a reduction in inflammation and chronic pain.

Meditation is a versatile practice that can be adopted in various forms. Some common meditation techniques include focused attention meditation, where one concentrates on a specific object or breath; loving-kindness meditation, where one cultivates feelings of love and compassion towards oneself and others; and transcendental meditation, which involves the repetition of a mantra or sound to achieve deep relaxation. [3,4]

Locating a peaceful, cozy area where one can sit or lie down comfortably is necessary in order to begin meditation. It's recommended to begin with shorter sessions and to progressively extend them as you get more at ease and skilled. The benefits of meditation can be substantially increased by designating a specific time each day for practice, as consistency is essential.

In summary, there are many benefits to meditation for mental and physical health. People who include meditation in their daily routines report feeling better about themselves, having less stress, being more focused, and being healthier overall. It is an effective tool that enables people to develop a closer relationship with both themselves and the outside world as well as find inner peace. [5]

According to research, meditation enhances both physical and mental well-being (Pinkey Kumar Singh). Research on meditation has established a solid foundation over the last forty years, showing notable physiological and psychological effects. [6]

➤ *About Dynamic Meditation*

Osho discusses dynamic mindfulness. During the first ten minutes of dynamic meditation, breathing is deep, rapid, and chaotic. After that, there are ten minutes of catharsis, ten minutes of yelling the mantra "hoo" while jumping, fifteen minutes of quiet, and fifteen minutes of joyful dancing. Music created especially for this meditation serves as a visual cue for each stage. However, because it is a personal experience, one should keep their eyes closed and avoid looking at other people, preferably while wearing a blindfold. As you are meditating, osho advises that you remain a witness and watch what is going on as if you are just a bystander, as if it were all happening to someone else. [7]

The dynamic meditation, which is osho's most well-known active meditation, is best practiced at dawn. Although it can be done alone or in a group, the energy will be stronger if it is. The term "dynamic meditation" is contradictory. In contrast to dynamic, which denotes effort and activity, meditation denotes silence, no effort, and no activity. It is a dialectical meditation in some ways. The procedure enables active movement-based meditation. Before feeling at ease (relaxation/inactivity) in this meditation, chaos is expressed (dynamic movement/activity). Meditation is simple after the clutter is removed. [8]

According to research by Anuj Bansal, Ashish Mittal, and vikas Seth, participants in the 21-day Osho Dynamic Meditation practice experienced a significant decrease in their mean cortisol level as well as a reduction in stress. [7]

➤ *Knowing how to Manage Stress*

Stress has ingrained itself into contemporary life and now affects people from all walks of life. Stress permeates every aspect of life, whether it be due to pressure at work, financial problems, interpersonal relationships, or health issues. We will examine the causes, consequences, and various stress management and reduction techniques in this in-depth investigation, empowering people to lead healthier, happier lives. [9]

➤ *Understanding Stress*

Stress is a normal reaction to demanding or dangerous circumstances. The body responds physiologically and psychologically as a result, getting ready to deal with the identified stressor. This reaction is a component of our ancestors' "fight or flight" survival mechanism, which enables us to respond quickly to danger. However, the stressors we face today are much more complex and diverse than those our ancestors did, which has long-term effects on our mental and physical health. [10]

➤ *Causes of Stress*

- Work-related stress
- Financial stress
- Personal and interpersonal stress
- Health-related stress

➤ *Effects of Stress*

If left unmanaged, stress can lead to detrimental physical, emotional, and behavioural consequences that impact our overall well-being. These effects may include:

- Physical effects
- Emotional effects
- Cognitive effects
- Behavioural effects

➤ *Managing and Alleviating Stress*

- Lifestyle changes
- Stress-management techniques
- Time management and prioritization
- Seeking support

Stress is an inevitable part of life, but it doesn't have to control our well-being. By understanding the causes and effects of stress, individuals can proactively take steps to manage and alleviate its impact. Through lifestyle changes, stress-management techniques, time management, and seeking support, individuals can navigate the challenges of stress, leading to improved mental, emotional, and physical health. By prioritizing self-care and adopting effective stress management strategies, individuals can find balance, resilience, and greater overall satisfaction in their lives. [11]

Vipassana is one of India's oldest meditation practices, according to studies (Seema Vijay Pradhan). It can help people feel less stressed, more in control of their lives, and more generally well-being. [12]

(Christopher r. K. Maclean, kenneth g. Walton.) studies show transcendental meditation decreased the level of stress hormone level in blood sample. [13]

➤ *Risk factors Affecting Farmers' Mental Health*

Global awareness of the problems with farmers' mental health has recently increased. We provide a comprehensive analysis of the results, locations, study layouts, and methodology applied in recent mental health studies on farmers. This review specifically aims to fill a significant knowledge void regarding the most likely major risk factors that could negatively impact farmers' mental health worldwide. 167 publications on farmer mental health were included in a final systematic review that adhered to prisma criteria and a uniform electronic literature search approach. The four factors that were most frequently mentioned as having an effect on farmers' mental health in the literature that was evaluated were pesticide exposure, money issues, climate variability/drought, and poor physical health/past injuries. Studies from industrialized nations, particularly

those from the united states, australia, and the United Kingdom, made up the majority of the research. [14]

Contradictory findings from research comparing the mental health of farmers and other occupational workers suggested that psychological health disorders were more prevalent in farmers and farmworkers. For the purpose of reducing the burden of mental illness, it is essential to comprehend the risk factors for agricultural psychological disorders as well as their effects. More research will be required to understand the effects of climate change, the mental health of farmers in developing nations, and how to remove barriers to help-seeking among farmers.

Researchers have identified a number of occupational health issues in agricultural communities through their investigations, and some have identified farming as a very stressful profession. A variety of risks to one's physical and mental health are associated with farming because of the demanding work that must be done under trying circumstances. Research on the mental health of rural communities. Loss of self-esteem, withdrawal from social interaction, relationship failure, forgetfulness, loss of temper, problems with relaxation, feeling down, and drug addiction have also been reported. High suicide rates among farmers, farm managers, and agricultural workers have been found in several studies; this is thought to be one of the most important problems affecting various farming communities. Concerns about farmers' mental health are widespread. [15]

➤ *Some of the Most Common Mental Health Conditions Include*

Stress is the body's response to an occasion or demand, and it frequently occurs. On the other hand, extreme stress or long-term stress can have negative physical, mental, or emotional effects. Depending on the individual, long-term or chronic stress symptoms can range from irritability to headaches, trouble sleeping, heart disease, and diabetes.

One of the most prevalent mental illnesses in the us is depression, which can affect a person's feelings and thinking. Its roots are in the biological, psychological, environmental, and genetic realms. Depression symptoms include sadness, anxiety, feeling "empty," irritability, losing interest in hobbies or activities, and having less energy. Anxiety disorder - a person with an anxiety disorder may go through extreme or protracted episodes, including panic attacks.

Although one of the main causes of death in the us is suicide, it can be prevented. Talking about feelings of helplessness or shame, as well as worries about burdening others, are indicators that someone is thinking about taking their own life. The person's habits might also alter, such as increasing their drug or alcohol use or withdrawing from friends and family. [16,17]

➤ *Hormone that Causes Stress*

Your adrenal glands create and release the stress hormone cortisol into your bloodstream when your body detects stress. Cortisol, the "stress hormone," raises blood

pressure and heart rate. Humans have survived for thousands of years because of their innate "flight or fight" response. [18]

➤ *Hormonal Changes During Stress*

• *Cortisol*

Under normal circumstances, the body maintains or regulates normal cortisol levels. On the other hand, stress causes the body to release more cortisol. Cortisol is often referred to as the "stress hormone" because it is released in greater quantities when the body is preparing for a fight-or-flight response to stress. It is also responsible for a number of physiological changes brought on by stress. Research on cortisol and the metabolic syndrome has been conducted.

Catecholamines are released by the sympathetic adrenal medullary (sam) system, whereas cortisol is released in response to the hypothalamic-pituitary-adrenal (hpa) axis. These two hormones support stress management in all situations. Stress that is ongoing and prolonged, however, disrupts these processes and raises the possibility of both physical and mental disorders. [19]

An important neuroendocrine response to stress that aids in survival is the pituitary-adrenal axis. The hypothalamus releases corticotrophin-releasing factor (crf) when this axis is activated. The pituitary gland is then stimulated by crf, which results in the production of 3-endorphin, 8-lipotropin, and adrenocorticotropin (acth). Stress can cause these hormones in the human body to multiply by two to five. The hypothalamic paraventricular nucleus regulates the total response to stress. Norepinephrine, serotonin, and acetylcholine play a significant role in mediating the neurogenic stimulation of crf production.

According to reports, individuals with metabolic syndrome exhibit hyperactivity of the hpa axis, which results in hypercortisolism, which may be brought on by ongoing stress and promotes the growth of visceral fat, type 2 diabetes, and insulin resistance. In conditions involving pain, anxiety, fear, or acute tissue damage, numerous metabolic and endocrine changes take place, with a rise in blood cortisol levels being one of the most significant physiological effects. Measuring these hormones is very popular because animals respond to stress by elevating their glucocorticoid or cortisol levels. Numerous studies have used serum cortisol concentrations as a biochemical stress marker and a stress index. [20,21]

• *Electroencephalogram*

An electroencephalogram (EEG) is a test that measures the electrical activity in the brain by attaching tiny metal discs, or electrodes, to the scalp. Electrical impulses are used by brain cells to communicate and they are never really asleep. The appearance of this activity on an EEG recording is wavy lines. An EEG is one of the main diagnostic tools for epilepsy. There are other kinds of brain disorders that can be diagnosed with an EEG. [22]

An EEG is a test that looks for irregularities in the electrical activity, or brain waves, of the brain. During the procedure, electrodes made of tiny metal discs connected by thin wires are applied to your scalp. The electrodes pick up minute electrical charges generated by the activity of your brain cells. The charges are boosted and shown as a graph or recordable image that can be printed out on paper on a computer screen. Your healthcare provider then interprets the reading. The EEG has been in use for a long time and is thought to be a safe procedure. There is no pain associated

with the examination. Activity is measured by electrodes. They elicit no feelings in you. Moreover, there's no chance of getting shocked by electricity. [23]

➤ Brain Waves

Electrical voltages in the brain that oscillate and are only a few millionths of a volt in magnitude are known as brain waves. There are five commonly identified brain waves. Figure 1 displays the primary frequencies and attributes of human EEG waves.

Table 1 EEG Wave Samples for Different Waveforms

Frequency Band	Frequency	Brain States
Gamma (γ)	35-80 hz	Concentration
Beta (β)	12-35 hz	Anxiety dominant, active, external attention, relaxed
Alpha (α)	8-12 hz	Very relaxed, passive attention
Theta (θ)	4-8 hz	Deeply relaxed, inward focused
Delta (δ)	0.5-4 hz	Sleep

• Alpha Waves

A relaxed state is linked to alpha waves. This is the kind of brain wave that happens during meditation or daydreaming. Stress and anxiety levels can be lowered with the help of alpha waves. They may also improve your ability to concentrate and focus.

When the predominant waveform is alpha, the subject is calm and not focused on anything in particular. Alpha waves are believed to help with focus and attention and have been associated with a state of "mental readiness".

• Beta Waves

Alertness and mental activity are linked to beta waves. When you are fully awake and working on a problem or other mentally demanding task, this is the brain wave you experience. Beta waves have been shown to improve memory and cognitive function.

When beta wave activity is predominant, a person is alert and thinking about something. Studies have connected beta waves to "mental effort" and suggest that they aid in focus and concentration.

Adults with excessively high fast beta waves (21–30 Hz) have been linked to stress, anxiety, overstimulation, and overthinking.

• Delta Waves

A deep state of sleep is linked to delta waves. This is the brain wave that happens when you're sleeping soundly and deeply. Delta waves are known to strengthen immunity and lessen stress.

A person is not dreaming when delta wave activity predominates; instead, they are in a deep sleep. Delta waves are believed to assist in tissue regeneration and repair, and they have been associated with "physical healing".

• Theta Waves

Deep levels of relaxation are associated with theta waves. This is the brain wave that occurs when you are about to nod off or go to sleep. You can feel better and have less stress when you use theta waves.

A person is very relaxed and not thinking about anything specific when theta wave activity is dominant. Theta waves are believed to support intuition and imagination, and have been associated with "mental creativity".

• Gamma Wave

It's widely acknowledged that gamma brainwaves occur between 30 and 80 hertz. Positive mood states, enhanced creativity, attentiveness, and concentration have all been associated with them. Numerous learning and memory problems have also been connected to abnormalities in gamma brainwaves. [24, 25]

(Padmavathi Kora, k. Meenakshi, k. Swaraja, a. Rajani, mantena satyanarayana raju) Research on EEG brainwave signals can assist clinicians in assessing brain activity, and various meditation techniques can be used to advance mental fitness depending on the patient's condition. Changes in alpha, beta, and theta brainwaves are indicative of yoga's beneficial effects on brain activity. These effects include improvements in insight, memory, mindset, and a decrease in agitation or anxiety.[26]

II. METHODOLOGIES

➤ Osho Dynamic Meditation

This meditation is a fast, powerful, and comprehensive method to release long-standing, deeply rooted patterns in your body and mind that keep you stuck in the past. It also allows you to experience the freedom, witnessing, silence, and peace that are waiting for you outside of that prison.

The meditation is intended to be practiced in the early morning, when "the whole of nature becomes alive, the night has gone, the sun is coming up, and everything becomes conscious and alert." this meditation can be done alone, but it can be beneficial to begin with others. It is an individual experience, so ignore those around you. Wear clothing that is loose and comfortable. The meditation is to be done with its specific osho dynamic meditation music, which indicates and energetically supports the different stages.

The meditation lasts one hour and is divided into five stages. Keep your eyes closed throughout, and if necessary, use a blindfold. This is a meditation in which you must remain alert, conscious, and aware at all times. Continue to be a witness. And when you have become completely inactive, frozen, in the fourth stage, this alertness will peak.

- *Ten Minutes for the Initial Phase*

Breathe erratically through your nose, allowing your breathing to be rapid, deep, and intense while maintaining no rhythm or pattern. Pay close attention to your exhalations. The body will take care of the inhalation. Breath should be taken deeply into the lungs. Perform this as fast and forcefully as you can until you are breathing. To help you save energy, move your body naturally. Feel it intensify, but hold on to it during the first phase.

- *10 Minutes for the Second Stage*

Explode! ... remove everything that needs to be discarded. Pay attention to your body. Allow your body to express itself in whatever way it wants. Go completely insane. Scream, shout, cry, jump, kick, shake, dance, sing, laugh, and generally make a scene. Hold nothing back; move your entire body. A little acting can often help you get started. Never let your mind get in the way of what is going on. Go insane on purpose. Be complete.

- *10 Minutes for the Third Stage*

Jump up and down, arms raised high above your head, shouting as loudly as you can, "hoo! Hoo! Hoo!" allow the sound to hammer deep into the sex centre each time you land on the flats of your feet. Give everything you've got; completely exhaust yourself.

- *15 Minutes for the Fourth Stage*

Stop! Freeze wherever you are and in whatever position you are in. Make no attempt to arrange the body. A cough, a movement, or anything else will dilute the energy flow and cause the effort to be wasted. Be a witness to everything that occurs to you.

- *15 Minutes for the Fifth Stage*

Celebrate! Whatever is there can be expressed through music and dance. Keep your vitality with you throughout the day. [8]

➤ *Determining how Many People to Include*

A staggering amount of book chapters, articles, and books offer advice and state that anywhere between five and fifty participants is sufficient. [27] As a result, choose five to fifty participants for the meditation study. For example, we could choose twenty fit male farmers, ages twenty to fifty, for the study.

➤ *Preparation of activity*

- An experimental study was planned doing the dynamic meditation empty stomach in morning at 6 to 7 am.
- The regular practice of dynamic meditation for 21 days should be carrying out. Twenty healthy farmers between 20 to 50 years, 20 males participate in the study.
- c) Blood samples taken in the morning of the day before the study (baseline) and after meditation on the 21st day of the study were used to estimate the serum cortisol level. The paired t-test was used to determine whether the difference in mean cortisol levels between the baseline and post-meditation groups was significant. [8]
- Check the mental state at the first date of meditation and 21th day of meditation with the help of EEG machine MATLAB software.
- We can compare the blood cortisol sample and EEG result data, before meditation at 1st day and after meditation of 21th day and conclude stress level in farmers and hormonal level in blood sample, and calculate stress reduction performance. [28]

According to that we are conclude the effect of dynamic meditation are useful for stress reduction in farmers or not

➤ *Evaluation of Test Cortisol*

Goal of the cortisol hormone test (indications)

The serum cortisol level will be measured in order to rule out hypo- or hyperfunction of the adrenal gland.

- *Cortisol Hormone Precautions*

- ✓ Pregnancy increases the value of something.
- ✓ Stress, both physical and emotional, can add value.
- ✓ Medication such as spironolactone, estrogen, cortisone, amphetamine, and oral contraceptives can raise value.
- ✓ Medications that lower the value include lithium, danazol, betamethasone, exogenous steroids, and methyldopa.

- *Appropriate Cortisone Levels*

- ✓ 8 am serum am = 5 to 23 µg/dl
- ✓ 4 pm serum pm = 3 to 13 µg/dl
- ✓ Adults and elderly individuals: <100 µg/dl/24 hours; urine (free cortisol) = 20 to 90 µg/24 hours

The participants blood serum cortisol level is comparing with the standard range of cortisol and find out stress level. [29]

➤ *Evaluation Parameter for EEG*

Table 2 EEG Wave Samples for Different Wave Forms

Frequency band	Frequency	Brain states
Gamma (γ)	35-80 hz	Concentration
Beta (β)	12–35 hz	Anxiety dominant, active, external attention, relaxed
Alpha (α)	8–12 hz	Very relaxed, passive attention
Theta (θ)	4–8 hz	Deeply relaxed, inward focused
Delta (δ)	0.5–4 hz	Sleep

The participant in the study the EEG wave are measure by MATLAB software are compare with reference data and measure the mental state of farmers.

While awake, one can observe beta waves, which are high-frequency, low-amplitude brain waves. They have a stimulating effect and are involved in rational and conscious thought. When we have the proper quantity of beta waves, we can concentrate. This wave can cause ADHD, daydreaming, depression, and poor cognitive function when it is suppressed, but when it is prominent, it causes anxiety, high arousal, stress, and an inability to relax. When conditions are right, beta waves support conscious attention, memory, and problem solving. Three categories can be used to group these waves.

- Low beta waves, sometimes referred to as "beta one" waves, occur between 12 and 15 Hz and are generally linked to introverted, quiet, and focused concentration.

- Mid-range beta waves (15–20 Hz): Often referred to as "beta two" waves, these waves are associated with heightened alertness, nervousness, and performance.
- Known as "beta three" waves, high beta waves (18–40 Hz) are linked to severe stress, anxiety, paranoia, high energy, and high arousal. [30, 31]

III. RESULT

The dynamic meditation is performed by farmer for regular 21 days, and then the level of serum cortisol and Wave of EEG result are obtained.

The serum cortisol level is high before the Dynamic meditation (DM) and after 21 days of regular practices of dynamic meditation the level of serum cortisol mean value (10.59) to serum cortisol mean value (14.83) are suddenly decreases and stress level should be reduced.

Table 3 Serum Cortisol Level

Sr. no	Serum Cortisol Level (microgram/dL) One day before starting the dynamic meditation (Baseline)	Serum Cortisol Level (microgram/dL) After 21 days of the dynamic 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

Serum cortisol levels one day prior to and 21 days following the start of dynamic meditation (DM) are shown in [Table/Fig-2] [8].

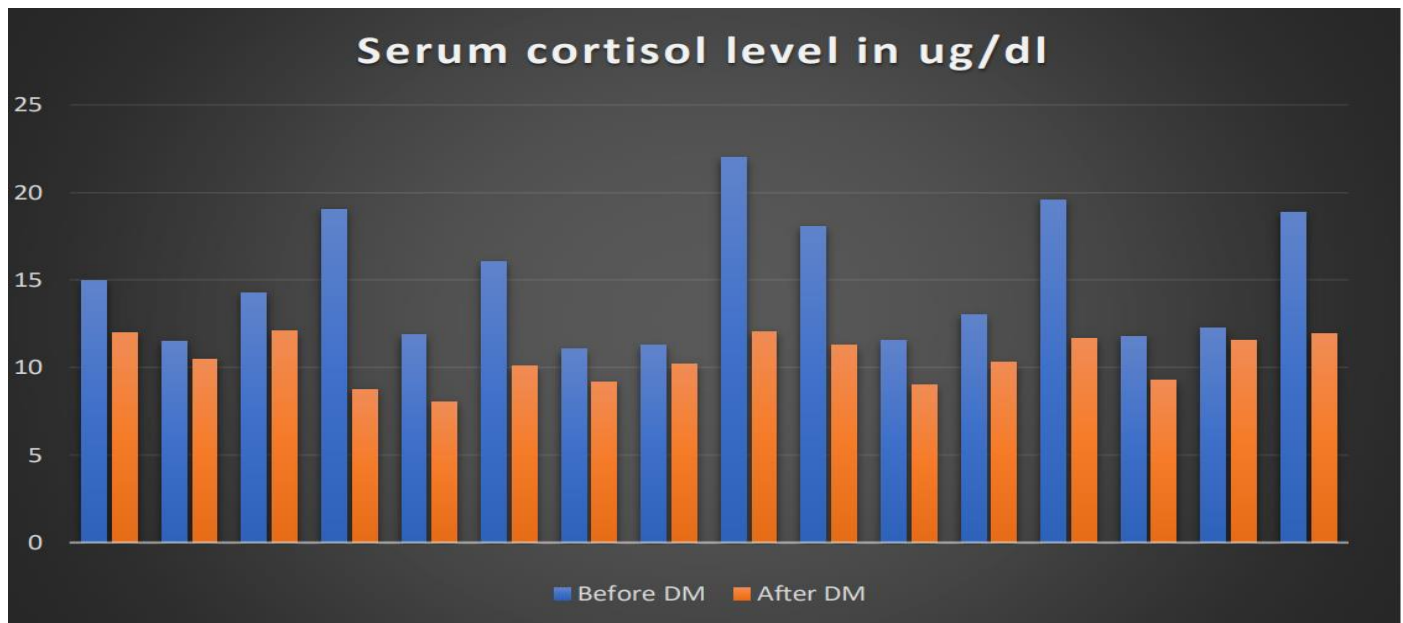


Fig 1 Describe the Graphical Representative of Serum Cortisol Level. [8]

➤ EEG Wavelengths

This feature extraction process yields the Gamma, Beta, Alpha, Theta, and Delta frequencies at various levels of decomposition. Following the extraction of these features, the statistical parameters are calculated at each level of the extracted frequency band. Lower frequencies are more dominant while meditating than higher frequencies, which are more dominant in a non-meditating subject. Data for 20 subjects was calculated in the same way. It demonstrates that the Alpha Frequency band is more dominant in meditators than in non-meditators.

Table 4 Comparison of EEG Wavelength before and after the Meditation [28]

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

IV. LIMITATION

The study's limitations included its small sample size and the fact that it was carried out on healthy, normal volunteers. People who are under stress, such as those with troubled family relationships, stress at work, or psychological problems, should also be the subject of the study. To substantiate the stress-busting effect of dynamic meditation, more research on particular stress-affected groups should be done, involving a larger sample size.

V. CONCLUSION

Following 21 days of dynamic meditation, the participants' plasma cortisol levels—a stress marker—were significantly lower when they were tested. This suggests that there are anti-stress benefits to osho dynamic meditation.

Dynamic meditation is therefore a strong contender for integrative stress management and associated studies. The release of suppressed emotions like crying, which has been demonstrated in the past to lower stress and the stress hormone cortisol, may be, at least partially, responsible for the meditation's mechanism of action.

Thus, it is feasible to draw the conclusion that dynamic meditation on a regular basis could be suggested as a therapeutic intervention for stress and stress-related illnesses of the body and mind. To establish dynamic meditation's effectiveness and get hospital approval as a therapy, more clinical research on the subject should be done.

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