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EFFECTIVENESS OF YOGIC AND PSYCHO NEUROBIC EXERCISES ALONG WITH DIET ON DIABETES MANAGEMENT

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ABSTRACT

BACKGROUND: ‘A healthy mind sounds in a healthy body’, is a saying we’ve heard very often in our lives. Diabetes, is one major concern for a huge chunk of population in the world. It is not only an illness in itself, but also comes with a set of separate life threatening symptoms also. Dealing with this illness is a struggle in itself and with this paper, we aim towards finding non medicinal solutions to the same.

INTERVENTION: This research paper is an empirical study analysis on various methods of curing Diabetes. An experiment was conducted with participants of all age groups and the results were tabulated and analysed. The methods used are Yoga, Psycho Neurobic exercises and a strict control of diet. These methods were implemented on a study group, and results were obtained.

CONCLUSION: The experiment was performed daily over a period of 45 days and proved to be successful. The tri modular approach consisting of Psycho Neurobics, Yoga and Diet narrates a strong impact on Obesity. All the three hypothesis assumed have been verified by the Chi Square test and clearly indicate that Psycho Neurobics,

Yoga and Diet are very effective in dealing with Diabetes. These are very easy to perform regimes and cause long terms benefits, if done regularly.

1. INTRODUCTION

1.1 WHAT IS DIABETES?

Madhumeha (Diabetes Mellitus) is conventional metabolic disorder of tissue and cellular level. Unhealthy diet and physical idleness are the leading causes of the major non communicable diseases (NCDs). Diabetes commonly known as “Blood Sugar” is a metabolic disorder that is presently spreading wings in the world, Diabetes is posing a great socio-economic burden to every country. India is said to be home of diabetes as every 6th people is said to be suffering from diabetes and India ranked in the top 10 countries for having number of diabetic citizen.

1.2 VARIOUS CATEGORIES OF DIABETES

A. **TYPE I DIABETES:** When we have type 1 diabetes, insulin is not liberated by our body. The immune system assaults and kills insulin-producing cells in our pancreas. Also known as juvenile diabetes, it may emerge at any age. Individuals with type 1 diabetes should take insulin every single day to stay alive. It may lead to dehydration too, if the blood produces extra sugar, we pee more and this way the body gets rid of it. With that sweat, a colossal amount of water goes out, forcing the body to dry out. Type 1 diabetes also contributes to loss of weight as when we pee, the insulin that evicts, brings calories with it. That’s why many people lose weight with high blood sugar.

Cause: This category of diabetes is triggered due to an autoimmune reaction in the human body, where the body attacks itself accidentally. This destroys the cells in the Pancreas that produce insulin. These cells are also called Beta Cells. One key feature of Type I Diabetes is that it can go on for months before any major and considerable symptoms appear.

B. **TYPE II DIABETES:** When we have type 2 diabetes, insulin is not devised or utilized well by our body. At any time, even during childhood, we could devise type 2 diabetes. Nonetheless, in middle-aged and older people, this type of diabetes happens most often. It is the most common type of diabetes.

Cause: The exact cause of this type 2 diabetes is still not clear, but increased appetite, increased thirst, increased urination, blurred sight sores tiredness that are slow to heal are some of the causes of recurring infections.

C. **GESTATIONAL DIABETES:** Gestational diabetes is high blood sugar in the blood (glucose), which emerges while pregnancy and generally disappears after birth. It may emerge at any stage of pregnancy, but in the second or third trimester, it is more common. This occurs if the body is not able to produce adequate insulin, a hormone that assists in controlling blood sugar levels to meet our pregnancy needs. It may create problems for both mother and child, but if the disease is detected early and well handled, the complications can be minimized. This type of diabetes generally does not have symptoms.

1.3 COMMON SYMPTOMS OF DIABETES

- Frequent Hunger outbreaks
- Significant weight loss/gain
- Frequent urination
- Vision not clear (blurry)
- Fatigue and tiredness

1.4 DEALING WITH DIABETES

Yoga

Yoga is an antiquated art that interfaces the brain and body. It is an activity that we perform by balancing the components of our bodies. Likewise, it encourages us to ruminates and relax. Moreover, yoga causes us to keep control of our bodies just as psyche (mind). It is an incredible channel for delivering our worries, stress and tension. Yoga picked up ubiquity bit by bit and is presently spread in all districts of the world. It joins individuals in concordance and harmony.

Diet

Our food is a very essential component of our lives. By monitoring our food and diet, replacing small portions with healthier alternatives, we can keep diabetes at bay for prolonged durations of time. Dieting is the phenomenon of consuming special kinds of food and supplements to monitor body sugar content and even lose weight under some instances.

Psycho Neurobic Exercises

Psycho-neurobics is actually the science and method of producing the right vibrations in the body based on specific concepts and technology. By actualizing some intercession techniques and activities utilizing explicit styles, colours, sounds, and mudras, we can create the recurrence of the subliminal of our own and draw in divine energy. Subsequently Psycho-neurobics encourages us to improve our psychological quality and resolve. It is a method of taking cosmic powers, that is known to mankind by the force of brain and after that trading it to intellectual capacities and neuro framework.

The human body consists of Chakras which are the sources of energy in our body. These chakras often get blocked and fail to perform their functions, hence leading to stress. Psycho neurobic exercises focus towards unblocking these chakras and converting passive energy to more active forms of energy. This not only restores the human body balance, but also maintains it further. This also improves metabolism and helps in staying healthier.

Circadian Cycle

The Circadian Cycle, also called the Circadian Rhythm thrives on the ideology humans as products of nature. It dictates our body rhythm to be in sync with the Sun. This is controlled by the master clock (suprachiasmatic), which in turn controls all the other aspects of our body such as heart, brain, immune system etc. If an individual is successful in syncing this master clock with the different phases of the sun, one can acquire control over all aspects of the human body, especially obesity and diabetes. Simple ways to experiment with this are:

- Eating earlier in the day.
- Bright sunlight exposure during the day and blocking the light at night.
- Emphasising on the quality and quantity of sleep.

2. LITERATURE REVIEW

Diabetes is a group of diseases characterized by the presence of chronic hyperglycemia. Maintenance of normal glucose homeostasis involves the action of a glucose sensor in the pancreatic β -cell that detects an increase in blood-glucose concentration and converts that into increased secretion of insulin. Increased circulating insulin concentration suppresses hepatic glucose output and stimulates glucose uptake by muscle and adipose tissue. Pathophysiological mechanisms leading to diabetes involve an inappropriate secretion of insulin, insulin resistance of the liver, muscle and adipose tissue or combined defects. The risk of an individual to develop diabetes involves a complex interaction between genetic and environmental factors. In addition to the consequences of abnormal metabolism of glucose, (e.g., hyperlipidemia, glycosylation of proteins, etc.) there are a number of long-term complications associated with the disease (**Salman, Mohammed, 2013**)

Neurobic recuperating is actually a multiyear old method which has re-emerged in present day times and has been creating leap forward results in restorative fields. This exceptional system uncovers the incredible power of our subliminal mind. It's an optional mending approach which must be possible sitting atone spot and is actually with no kind of reactions. A lot prepared and brain that is effective is not only ready to interface with the celestial vitality current in the Universe still in addition prepared to pull in it by charging. Human entire body is composed of an arrangement of Nadis and chakras. Chakras are actually the substantial areas which have concentrated vitality.

You will find 7 noteworthy Chakras. Notwithstanding Chakras, we've many sided systems of 72,000 Nadis. The cross purpose of Nadis can make up the Chakra. Both Chakras and Nadis framework are securely identified with our Endocrine framework which directs every single hormonal activity in the human body. Vibrational vitality

moves through these Chakras and Nadis to make human life. The lop sidedness of this vibrational vitality is actually the essential reason behind various ailments. Neurobic mending, utilizes the standard of Law of Attraction, to prepare the human brain and draw in the infinite vitality. **(Peeyush Jain, 2018)**

3. METHODOLOGY

A sample group was considered to conduct the following study research. Three different schedules were followed over a period of 45 days. Each schedule consisted of one variable, and its corresponding techniques to observe change in diabetes of the sample population considered. Each variable was tested using the following methodology to obtain results:

1. A daily schedule was provided by the researcher to the sample population, which was to be strictly followed over a course of 45 days. The schedule was as follows:
 - On waking up, express gratitude with morning prayer.
 - Take detox water or Hunza Tea.
 - 6-7 AM- Follow regimes of exercise or yoga or walking or meditation or psycho neurobic exercises.
 - 8-9 AM Have breakfast which includes soaked nuts, soaked dry fruits and also a good quantity of millets.
 - 11 AM- Eat any fruit topped with soaked seeds/sprouts either cooked, or raw.
 - 1-2 PM- Eat lunch which should consist of a plate of salad topped with seeds, Roti/Chappati (jowar/ bajri/ makki/ rice flour), veggies (prepared with minimum oil), dal (also called pulses) with ghee, and butter milk.
 - 4 PM- Hunza tea along with any fruit/sprout or bhel/makhana
 - 6-7 PM – Dinner (veg), preferably soup or anything light.
2. A special emphasis was payed on Millets as it is full of proteins and antioxidants. It has very low amounts of calories and very high amounts of fibre and bioactive compounds which are very beneficial for the human body.
3. A few set of separate instructions was also provided to monitor proper procedure. Such as a protocol sheet, which was to be filled by all participants among the sample population on a daily basis and monitored daily.

4. Another set of instructions was also given, which included the following advisory tips for the sample population, i.e.
 - Consume warm water while sitting (sip by sip)
 - Chew food at least 32 times.
 - Express gratitude before everything.
 - Keep both hands in Agni Mudra for 12 breaths along with expressing gratitude to go. This was to be followed before all meals of the day.
 - Complete 1000 steps daily, with both hands in Apan Vayu or Agni Mudra. The number of steps was increased every week by 1000. Hence, by the end of the experiment, a participant had to complete 4000 steps daily.
 - Not to hold phone in hand while walking.
 - Consume one tablespoon of isabgol with warm water before sleeping.
 - Strictly avoid non veg food.
 - Avoid maida, white sugar, white salt, fried food, packaged and junk food.
 - Minimize the consumption of wheat flour and wheat rice.
5. Along with the above steps, a one hour session was conducted daily for the sample population. It consisted of forty five minutes of yoga exercises and 15 minutes of psycho neurobic exercises. The 15 minutes included joyful and enlightening meditation. This ritual was continued for all 45 days on the experiment group. The Yoga asana used were following:
 6. **Kapal Bhati**: For this asana, one needs to sit straight, with legs folded in. Take slow deep breaths and pull in your stomach with every exhale. Kapal bhati clears the nadis i.e. the subtle energy channels of the body. It improves the digestive tract functioning and results in better assimilation of nutrients. It stimulates abdominal organs and thus is extremely beneficial for diabetic patients.
 7. **Supta Matsyendrasana**: Also called the Supine Spinal twist, this asana is performed on the floor in lying down position. Extend left leg out in front and bend right knee, hugging it to the chest. This is a restorative spinal twist and stimulates the internal detoxifying process, all while the body rests. This asana encourages fresh blood flow and provides deep relaxation.

8. **Dhanurasana**: Also called the bow pose, one needs to lie on stomach with feet wide apart for this asana. While inhaling, lift the chest off and pull the legs back up. This asana is a good stress and fatigue buster. It helps with renal (kidney) disorders and makes body more flexible.
9. **Paschimottasana**: Sit up with legs outstretched for this pose. Gradually raise both arms above the head, and direct them towards the toes. Ancient texts have claimed that this asana is very significant in dealing with obesity and gives a very deep calming effect to the nervous system.
10. **Ardhya Matsyendrasana**: This asana is done in a sitting position, with legs stretched in front. Bend the left leg and place its ankle next to the right hip. Ardhya Matsyendrasana makes the spine supple, increases its elasticity and opens the chest to increase the oxygen supply to the lungs.
11. **Shavasana**: This is one of the easiest asanas to perform as it requires one to just lie down straight on the back. This asana relaxes the body, causes awareness and leads to pratyahara. It is extremely beneficial for all ailments related to stress.
12. **Trikonasana**: Stand straight with feet wide apart. Turn the right foot outwards, and gradually bend the body sideways in its direction. This asana increases mental and physical equilibrium and also reduces hypertension, anxiety, fatigue back pain and sciatica.
13. **Bhujangasana**: Commonly known as the Cobra Pose, one needs to lie down on stomach for this asana. Place hands near chest and slowly lift the upper body while keeping navel aground. Bhujangasana has been very beneficial in improving the flexibility of upper and middle back. It tones the abdomen and is also very useful for people with respiratory diseases such as asthma.
14. **Matsyasana**: Lie on the back and slowly place hands underneath the hips, with palms facing downwards. Bring the elbows close to each other. This asana resembles to the structure of a fish. It relieves stress and tension. It has been proven very effective in toning the parathyroid, pituitary and pineal glands.

15. **Mandukasana**: For this, one needs to sit in the position of Vajrasana. Seat your hands close to the belly and bend forward while exhaling. Ancient texts suggest that this asana increases the lung capacity and also gives relief from digestive disorders and especially diabetes.

16. A set of Psycho Neurobic Exercises was also conducted along with yoga. These included the following:

17. **Enlightening Meditation**: This meditation directly activates the third eye chakra. Its affirmation is 'I am an enlightened and truthful being. I am merged with god in the ocean of true knowledge'. This cures eye and brain disorders and improves the memory and mind power. It also strengthens our nervous system. These were practised in the form of the following mudras:
 18. **Pran Mudra**: This mudra symbolizes energy or spirit of life. Place the ring finger (earth element) and little finger (water element) together on the tip of the thumb. Pran Mudra is very beneficial in activating the dormant energy. It cleanses our aura and has special benefits for the eye.

 19. **Joyful Meditation**: This exercise activates the Manipura Chakra, also called solar plexus. Its affirmation is 'I am a joyful and contented being, I am merged with god in the ocean of joy and contentment. My fire element is perfectly balanced and my digestive system is healthy and strong'. This cleanses the metabolic waste from the body. It was performed using the following mudras:
 20. **Agni Mudra**: also known as the Surya mudra, this gesture is associated with the sun. This mudra must be practised empty stomach, in a sitting position. Fold the ring finger and touch its tip to the base of the thumb. It is very helpful in dissolving excess fat from the body, reduce cholesterol, control blood pressure and regulate the thyroid gland.

21. **Prithvi Mudra:** This mudra is practised by sitting down in lotus pose. Gently touch the ring finger of your hand with your thumb and apply slight pressure. This mudra is very helpful in reducing stress, increasing blood circulation and helps in weight management. It is a key method of guiding an individual towards spirituality.

22. These above mentioned asanas, along with the diet modifications were strictly followed by the sample population.

23. This research is an empirical form of research, hence, the response from the sample population was taken in the form of a questionnaire.

24. The questionnaire was filled by all participants once in the beginning of the experimental study, and once at the end of it.

25. Each questionnaire consisted of approximately 50 questions which monitored all aspects and variables of an individual's life and lifestyle.

26. The responses were collected from all the participants and categorized further for proper data analysis.

27. The data of both, before the study and after the study have been clubbed together to obtain results.

4. **DATA ANALYSIS**

For this study, a group of 50 participants was taken, along with a group of 100 non participants. The total subjects of study for this research paper were $50 + 100 = 150$ participants.

These participants were subjected to three variables (also called interventions)

- Psycho Neurobic Exercises
- Yoga
- Diet

These three interventions were tested on the selected group of 50 participants and the results obtained and tabulated on the basis of three variables as mentioned above. After this, the Pearson's Chi Square Test was performed on each of these variables and their data to check for the effectiveness of the variables and their impact on the lives of the participants.

Chi Square Test

The Chi Square Test is a statistical procedure used during empirical researches to examine the changes or differences between various variables among the same population. This test demonstrates how closely an obtained distribution matches with an expected distribution of the same subject. In simpler terms, it explains the factor of 'goodness-of-fit'. It is very helpful when collecting and organizing data from survey responses. For the sole purpose of various segments of a response, such as gender, age, profession etc. this test gives the analyzer a piece of information about whether or not the methodology undertaken is significant or not.

Points to be adhered to for Chi Square Test:

- It tests the impact or correlation of two or more variables in a yes or no format.
- It doesn't provide any information or resource explaining the degree of difference.
- It requires the researcher to use numerical values. This limits the flexibility of data.
- Any out of source data considered needs to be factually correct and taken into consideration at its lowest possible estimate.

4.1 Chi Square Test for Variable 1: Psycho Neurobic Exercises

Variable	Change in Diabetes and its symptoms	No Change	Total
Psycho Neurobic Exercises	39	11	50
No Psycho Neurobics Exercises	10	90	100

Considering the above data obtained after survey responses, two hypotheses were assumed to check for effectiveness of Psycho Neurobic Exercises in aiding Diabetes.

Original Hypothesis H₀ : Psycho Neurobics is not effective

Alternate Hypothesis H_A : Psycho Neurobics is effective.

Now chi square formula equates to,

$$\chi^2 = \sum \left(\frac{(O - E)^2}{E} \right)$$

Using this formula, we obtain a relation of the original and expected values in the table as follows:

Variable	Change in Diabetes and its symptoms(O)	Expected Data (E)	No Change (O)	Expected Data (E)
Psycho Neurobics	39	16.33	11	33.66
No Psycho Neurobics	10	32.66	90	67.33

Expected values have been obtained as follows:

$$E = \frac{\text{ROW TOTAL} \times \text{COLUMN TOTAL}}{\text{TOTAL PARTICIPANTS}}$$

Hence, $\chi^2 = 31.47 + 15.73 + 15.26 + 7.63$

$$\chi^2 = 70.09$$

Now, $v = (c-1)(r-1)$ where c = number of columns, and r = number of rows.

$$V = (2-1)(2-1)$$

$$V = 1$$

Hence $V = \text{Degree of Freedom} = 1$

For no value of significance mentioned, we by default take 5% as the value of significance.

Hence, $\chi^2_{0.05} = 3.84$ (value obtained from Chi Test Tables)

And, χ^2 (calculated) = 70.09

We observe that the calculated value $>$ tabulated value.

Therefore, the Original Hypothesis H_0 fails.

And Alternate Hypothesis H_A passes successfully.

This indicates that Psycho Neurobics is effective in healing Diabetes.

4.2 Chi Square Test For Variable 2: Yoga

Variable	Change in Diabetes and its symptoms	No Change	Total
Yoga	27	23	50
No Yoga	10	90	100

Considering the above data obtained after survey responses, two hypotheses were assumed to check for effectiveness of Yoga in aiding Diabetes.

Original Hypothesis H_0 : Yoga is not effective

Alternate Hypothesis H_A : Yoga is effective.

Now chi square formula equates to,

$$\chi^2 = \sum \left(\frac{(O - E)^2}{E} \right)$$

Using this formula, we obtain a relation of the original and expected values in the table as follows:

Variable	Change In Diabetes and symptoms (O)	Expected Data (E)	No Change (O)	Expected Data (E)
Yoga	27	12.33	23	37.66
No Yoga	10	24.66	90	75.33

Expected values have been obtained as follows:

$$E = \frac{\text{ROW TOTAL} \times \text{COLUMN TOTAL}}{\text{TOTAL PARTICIPANTS}}$$

Hence, $\chi^2 = 17.45 + 8.72 + 5.71 + 2.85$

$$\chi^2 = 34.73$$

Now, $v = (c-1)(r-1)$ where c = number of columns, and r = number of rows.

$$V = (2-1)(2-1)$$

$$V = 1$$

Hence $V = \text{Degree of Freedom} = 1$

For no value of significance mentioned, we by default take 5% as the value of significance.

Hence, $\chi_{0.05}^2 = 3.84$ (value obtained from Chi Test Tables)

And, χ^2 (calculated) = 34.73

We observe that the calculated value $>$ tabulated value.

Therefore, the Original Hypothesis H_0 fails.

And Alternate Hypothesis H_A passes successfully.

This indicates that Yoga is effective in healing Diabetes.

4.3 Chi Square Test for Variable 3: Diet

Variable	Change in Diabetes and its symptoms	No Change	Total
Diet Followed	31	19	50
No Diet Followed	10	90	100

Considering the above data obtained after survey responses, two hypotheses were assumed to check for effectiveness of Diet in aiding Diabetes.

Original Hypothesis H_0 : Diet is not effective

Alternate Hypothesis H_A : Diet is effective.

Now chi square formula equates to,

$$\chi^2 = \sum \left(\frac{(O - E)^2}{E} \right)$$

Using this formula, we obtain a relation of the original and expected values in the table as follows:

Variable	Change In Diabetes and symptoms (O)	Expected Data (E)	No Change (O)	Expected Data (E)
Diet Followed	31	13.66	19	36.33
No Diet Followed	10	27.33	90	72.66

Expected values have been obtained as follows:

$$E = \frac{\text{ROW TOTAL} \times \text{COLUMN TOTAL}}{\text{TOTAL PARTICIPANTS}}$$

$$\text{Hence, } x^2 = 22.01 + 11 + 8.27 + 4.13$$

$$x^2 = 45.41$$

Now, $v = (c-1)(r-1)$ where c = number of columns, and r = number of rows.

$$V = (2-1)(2-1)$$

$$V = 1$$

Hence V = Degree of Freedom = 1

For no value of significance mentioned, we by default take 5% as the value of significance.

Hence, $x^2_{0.05} = 3.84$ (value obtained from Chi Test Tables)

And, x^2 (calculated) = 45.41

We observe that the calculated value $>$ tabulated value.

Therefore, the Original Hypothesis H_0 fails.

And Alternate Hypothesis H_A passes successfully.

This indicates that Diet is effective in healing Diabetes.

CONCLUSION : ALL THE THREE INTERVENTIONS I.E PSYCHO NEUROBICS, YOGA AND DIET HAVE BEEN PROVEN SUCCESSFUL IN DEALING WITH DIABETES.

5. RESULT AND CONCLUSION

The three alternate Hypotheses considered above i.e.

H_A = Psycho Neurobics is effective in dealing with Diabetes.

H_A = Yoga is effective in dealing with Diabetes

H_A = Diet is effective in dealing with Diabetes, have been proven successful. This indicates that the sample population was majorly affected by the impact of these three variables over a period of 45 days.

The value obtained for the Chi Square Coefficient by Psycho Neurobics is significantly larger than that of the value obtained by Diet and Yoga, individually. This proves that:

Psycho Neurobics is more influential in curing Diabetes as compared to Diet Management ad Yoga Practices, alone.

6. LIMITATIONS OF THE STUDY

- i. The main drawback of the study is that there are chances that the respondents will not be able to continue with the daily practices of diet management, yoga practices and psycho-neurobic strictly, which may have a insignificant impact on the diabetes management and obesity control.
- ii. The sample size will be selected on random basis, which will not help in generalizing the results of the study.
- iii. The role of intervening variables, which may even influence the dependent variables, apart from the independent variables are not taken into consideration.
- iv. There is no guarantee that the subjects may continue practicing different therapies lifelong, hence the results (even if achieved successfully) may revert over a long duration.

The experiment was performed daily over a period of 45 days and proved to be successful. All the three hypotheses assumed have been verified by the Chi Square test and clearly indicate that Psycho Neurobics, Yoga and Diet are very effective in dealing with Diabetes. These are very easy to perform regimes and cause long terms benefits, if done regularly.

CONCLUSION: ALL THE THREE INTERVENTIONS I.E PSYCHO NEUROBICS, YOGA AND DIET HAVE BEEN PROVEN SUCCESSFUL IN DEALING WITH OBESITY.

7. SCOPE OF FUTURE STUDIES

Given the promising evidence that combined yoga, psycho neurobics and dietary control have shown, these are effective in promoting weight loss and minimising other health risks also. The scope of study was very limited in this condition due to time constraints, number of participants of city Ahmedabad and many other reasons. There is insufficient data and research done to prove this method as a more effective approach, we suggest that a longitudinal study must be carried out with random controlled interventions and follow up periods of at least two years.

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