International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 19s, 2025
https://www.theaspd.com/ijes.php

Effect Of An 8-Week Selected Yogasanas And Naḍi Shodhana Pranayama Training On Physio-Psychological Wellbeing Of Retired Persons

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Abstract

Background: *Retirement presents multifaceted challenges to the physical and psychological wellbeing of older adults. In India, retired individuals often face lifestyle-related issues such as stress, hypertension, and blood sugar imbalance, which negatively impact their quality of life. Yoga, as a holistic and culturally rooted practice, offers a non-pharmacological alternative to manage these challenges.*

Aim of the Study: *This study aimed to evaluate the effect of an 8-week intervention of selected Yogasanas and Naḍi Shodhana Pranayama on the physiological and psychological wellbeing of retired individuals aged 60–70 years.*

Methodology: *A quasi-experimental single-group pre- and post-test design was used. Thirty-five retired individuals from Bhubaneswar, Odisha, participated in an 8-week yoga program held six days per week. Assessments included BMI, blood pressure, random blood sugar levels, Perceived Stress Scale (PSS-14), and Beck Depression Inventory (BDI). Statistical analysis with Results:*

The study found statistically significant reductions in physiological variables: weight (mean reduced from 66.8 to 63.34 kg), BMI (26.52 to 25.14), systolic BP (152.29 to 147.14 mmHg), and random blood sugar (213.23 to 175.63 mg/dL) ($p < 0.0001$). Psychological variables also showed marked improvement: PSS scores dropped from 19.51 to 14.80 and BDI scores from 16.14 to 10.83 ($p < 0.0001$).

Conclusion: *The findings confirm that regular practice of selected Yogasanas and Naḍi Shodhana Pranayama significantly enhances physio-psychological wellbeing in retired individuals. Yoga can thus be recommended as an effective lifestyle intervention to promote healthy aging.*

Keywords: Yoga, Naḍi Shodhana Pranayama, Stress, Depression, Physiological Wellbeing, Psychological Wellbeing,

INTRODUCTION

Living into old age in the 21st century presents significant challenges and carries considerable risks, as the ability to age successfully and maintain good health largely depends on effectively managing the various life events that come with getting older. Studies on aging successfully, both mentally and physically, place a strong emphasis on well-being and have raised considerable concerns. The increase in life expectancy worldwide poses a difficult challenge for mental health professionals as they face the growing number of elderly individuals. Mental health and well-being are crucial elements of an individual's overall health and life satisfaction. Subjective well-being plays a key role in how individuals view their life quality, encompassing both negative emotions like depression and anxiety, and positive emotions such as contentment, satisfaction, and joy. However, an individual's mental state, including their health and well-being, can change due to genetic factors, environmental influences, or physical changes that happen throughout their life (Bonura, 2013). Consequently, well-being is frequently used as a benchmark for success across different populations, including clinical and non-clinical settings, and to assess the impact of treatments by comparing outcomes before and after treatment or evaluating the effectiveness of various treatment approaches. (McDowell, 2010).

Concept of Wellbeing and Psychological Wellbeing: Well-being is a comprehensive idea that includes various elements of a person's life. It covers the physical wellbeing, mental wellbeing, emotional wellbeing, social wellbeing economic wellbeing and environmental wellbeing of a person. Physical wellbeing involves health, fitness, and the lack of illness. Emotional wellbeing is about feeling good, being satisfied with life, and not experiencing negative emotions. Social wellbeing is related to the quality of one's communication with others, the support from friends and family, and being active in the community. Economic wellbeing is about having

money and feeling financially secured. Environmental wellbeing is about living in a place that is safe, healthy, and environmentally friendly. Psychological well-being is focused on the mental and emotional side of things, including self-acceptance. Self-Acceptance is about having a positive view of oneself and recognizing one's strengths. Besides all these aspects psychological wellbeing is also covers personal growth. purpose in life, environmental mastery, autonomy and positive relationship with others,

Personal Growth is about striving for self-improvement and realizing one's full potential. Purpose in Life is about having objectives and a clear path forward. Environmental mastery is about being able to handle life's challenges effectively. Autonomy is about being able to think or oneself and make independent choices. Positive relationships is about having strong, trusting, and supportive connections with others. While well-being is a broad term that includes many areas of life, psychological well-being specifically looks at mental health and emotional aspects. These two areas are closely linked, as positive conditions in physical, social, and economic areas and can improve psychological well-being, and vice versa.

Psychological Wellbeing and Retirement Life: Retirement involves stepping away from one's career and stopping employment, typically due to reaching a certain age. This transition significantly impacts an individual's life in various aspects, including their overall well-being and awareness (Wang, (2013).). Over the past ten years, there has been a growing focus on the importance of well-being, particularly among those who have retired. Numerous studies have been carried out in Western nations to explore the quality of life experienced after retiring (Tuula Oksanen, 2011) (Westerlund H, 2010;)). A number of studies have found a strong negative link between retiring and happiness or self-esteem, and a weak link to increased mental health issues. Despite retirement often being seen as a time of greater well-being or extended life, it's increasingly seen as a burden. Miller suggests that retirement marks the end of a work-related identity (Miller S.M., (1984)). Post retirement is considered as the last stage of ego development and here the goal is to attain emotional integrity, which means understanding that life events have a purpose and meaning. Retirement negatively impacts both physical and mental health in a person.

A significant number of individuals who have already retired from their work, are still able to perform physical and mental works perfectly. Yet, in the society, they are often seen as elderly and are consistently referred to as senior citizens, which can result in a negative perception. This general perception of retired people as old individuals has been linked to their mental well-being (Shiva Shanker Reddy Mukku, October 2018,). A recent in-depth analysis of what factors influence how well people adjust to retirement found four main categories of factors. The most frequently mentioned factors were physical health, financial situation, psychological well-being, and certain personality traits. Other factors included hobbies, choosing to retire voluntarily, and the level of social interaction (Leonardo Martins Barbosa, April 2016,)

Role of Yoga in Psychological Wellbeing: Yoga has been extensively studied for its positive effects on psychological well-being. Yoga practices, particularly those involving mindfulness and breath control, have been shown to lower cortisol levels, a primary stress hormone. Regular practice of yoga improved HRV (Heart Rate Variability), indicating better stress resilience and autonomic nervous system balance, has been associated with regular yoga practice. A study done by Shu-Ling Lin et.al reveals that the outcomes of the study, which measured sympathetic nerve function, parasympathetic nerve function, and autonomic nerve activity using a non-invasive HRV monitor, revealed that the autonomic nerve activity of the participants in the yoga group showed an increase at both the midpoint (6 weeks) and post-test (12 weeks). It's worth mentioning that the reduction in autonomic nerve activity following the 6-week yoga session was greater than that following the 12-week session, although there was no significant difference between the two 6-week and 12-week analyses. This suggests that participating in a yoga class for at least 6 weeks could effectively enhance the autonomic nerve activity of the participants (Lin, 2015).

Regular yoga practice has been shown to improve attention, memory, and executive function, likely due to increased brain plasticity and reduced stress. Studies using brain imaging techniques have observed increased grey matter volume in brain regions associated with attention, self-control, and emotional regulation in yoga practitioners. A study done by Krishana Kumar et.al demonstrate that in experienced yoga practitioners, brain GABA levels increase after a session of yoga. This suggests that the practice of yoga should be explored as a treatment for disorders with low GABA levels such as depression and anxiety disorders. Future studies should

compare yoga to other forms of exercise to help determine whether yoga or exercise alone can alter GABA levels (Krishnakumar D, 2015).

Yoga can decrease activity in the amygdala, the brain's centre for emotional processing, leading to improved emotional regulation and reduced reactivity. Several studies show that incorporating yoga in daily life, increased activation of the prefrontal cortex, associated with decision-making and social behaviour, has been noted, facilitating better emotional control. Some scientific articles reveal that participants in yoga programs frequently report higher levels of subjective well-being and life satisfaction with improved sleep quality, which significantly impacts overall well-being.

NEED FOR THE STUDY:

With the growing elderly population, especially in India, retired persons face numerous health challenges such as physical inactivity, stress, anxiety, hypertension, and sleep disturbances due to lifestyle changes after the post-retirement. The biomedical approach alone often falls short in addressing these multidimensional issues. Yoga, as a holistic and culturally rooted practice, offers an integrative solution through Yogasanas and Pranayama, particularly Nadi Shodhana, known for its physiological and psychological benefits. However, empirical studies targeting retired individuals in the Indian context remain limited. A focused 6-week yoga module can serve as a practical, non-pharmacological intervention to improve the physio-psychological wellbeing in the retired persons. This study aims to fill that research gap by validating the impact of a yoga-based intervention on the health conditions of the retired persons, contributing to evidence-based geriatric care and promoting healthy aging through traditional Indian practices.

OBJECTIVE OF THE STUDY:

The primary objective of this study is to assess the impact of a structured 6-week yoga intervention with selected Yogasanas and Naḍi Shodhana Pranayama on the physiological and psychological wellbeing of the retired persons.

MATERIALS AND METHODS:

The present study was a quasi-experimental study done by using one sample group for pre and post-test assessment. The effects of regular practice of selected Yogasanas and Naḍi Shodhana Pranayama for 6 weeks were studied on 35 cases of retired persons with age group of 60 to 70 years. The subject of study was selected from the nearby locality of Bishudhananda Nagar and Durgamadhaba Nagar of Bhubaneswar, Odisha through a personal interview. They have given details of their medical history and consent letter to go for a practice session of 6 weeks in the community centre of Durgamadhaba Nagar. Some of the participants had poor control over their blood pressure and random blood sugar even with hypertension drugs and blood sugar medicine. The subjects were selected through convenient sampling method.

THE INCLUSION CRITERIA

The following criteria were included in the study;

- Male and Female
- Age 60 to 70 years of old
- Having moderate stress and anxiety level.
- Without any cardiac surgery or heart problem

THE EXCLUSION CRITERIA:

- Thyroid disorder
- Any type of Hernia or Heart problem
- Severe Diabetes
- Alcoholic or any type of addiction
- Severe High Blood Pressure
- Kidney or Liver problem abnormally
- Yoga Practitioner

In the program 25 males and 10 females elderly persons were willingly participated. Their mean age is 63.13. Most of them having mild blood pressures and pre-diabetic condition and some of them were under medication.

TOOLS USED:

To find out stress level Perceived Stress Scale-14 is used to assess the stress before practice of the Yogasanas and Naḍi Shodhana Pranayama and after practice of Yogasanas and Naḍi Shodhana Pranayama. The PSS-14 is one of the more popular tools for measuring psychological stress. The reliability and validity of the questionnaire has already proved by many researchers and various researchers also using this questionnaire in their research. It is a self-reported questionnaire that was designed to measure "the degree to which individuals appraise situations in their lives as stressful." Similarly, to measure the anxiety level Blood pressure was measured and recorded by digital blood pressure machine. Random Blood Sugar level of each participant had taken before practice and after practice of the session. Beck Depression Inventory Questionnaire was used in the current research to measure anxiety/depression level of each participant. It is one of the most popular tools for evaluating depressive and anxiety symptoms in adults and teens is the Beck Depression Inventory.

The yogic intervention was given to subjects for eight weeks and 6 days in each week. A guided training session was conducted by the yoga instructor of the institute for 4 days, and then the subjects were practised themselves under the supervision.

Statically techniques used: To arrive at result of the study, the data was collected, tabulated and analysed by using excel sheet. Mean, Standard Deviation, paired t test for comparison of data and percentage calculation had been done.

INTERVENTION PROTOCOL:

The duration of the training for 8 weeks. The session started everyday from 6.30 Am to 7.30 Am at Durgamadhaba Nagar Community Centre under the supervision of a certified Yoga Instructor for 1 hours.

STRUCTURE OF THE SESSION:

- 5 minutes of prayer with short meditation.
- 10 minutes of warm-up: joint movements with Titali Asana, Skandha Chakra, Greeva Sanchalana, Pada Shanchalanasana, Supta Pawanamuktasana and Naukasana.
- 30 minutes of Yogasanas: Vajrasana, Marjari Asana, Shashanka-Bhujangasana, Tadasana, Vrikshasana, Trikonasana, Dhanurasana, Paschimottanasana, Mandukasana, Shavasana.
- 10 minutes of Nadi Shodhana Pranayama: 5 rounds of alternate nostril breathing, followed by slow expiration in 1st two weeks and then from third week onward they were doing 10 minutes of Nadi Shodhana Pranayama with kumbhaka.
- 5 minutes of Shantipatha with a short meditation.

RESULTS:

All data was collected before practice through physical examination, PSS-14 questionnaire and BDI questionnaire through personal query. The collected data was organised, tabulated and analysed by descriptive and inferential analysis

FINDING-1: Analysis of Physiological Variables

a) The Table -I reveals that among the participants 60% are in the age group of 60-65 and 40% were within the age group 66 to 70.

Table-1: Distribution of Participants According to Age

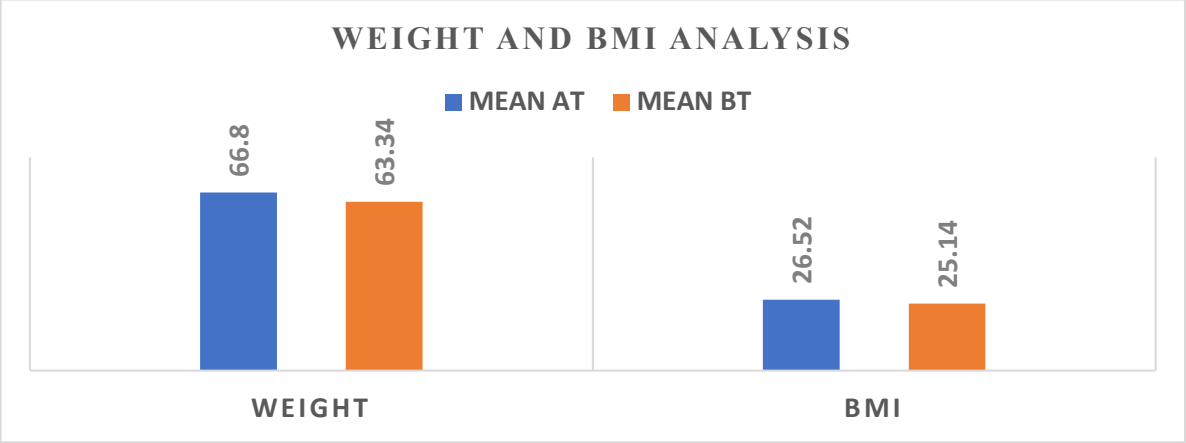
Age	Number of subjects	%(percentage)
60to65	21	60%
66to70	14	40%
	35	100%

b) Height, Weight, BMI analysis

TABLE-II, Height, Weight, BMI Analysis

Details	Mean	Standard Deviation		

Height	160.91	±6.48	T Score	P- Value
Weight B T	66.8	±4.05		
Weight A T	63.34	±3.26	14.1849	<0.0001
BMI.BT	26.52	±1.55	15.8787	<0.0001
BMI.AT	25.14	±1.43		



From the above table and graph, it shows that the average height of the participants was 160.91cm with a standard deviation of ±6.40 cm. Out of 35 participants 10 were female with medium and small heights and some male participants had also medium height. So, the mean height is within the medium range.

"The weight of the participants before training and after training of eight weeks showed a decreasing trend from 66.8 mean to 63.34 mean values with a standard deviation value decreased from ±4.05 to± 3.26." The paired T test value is t = 14.1849 df = 34, standard error of difference = 0.244. The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant.

Similarly, The B.M.I shows a decreasing trend after 8 -week practice of Yogasana and Nadi Shodhan Pranayama. The BMI of the participants before training and after training of eight weeks showed a decreasing trend from 26.52 mean value to 25.12 mean values with a standard deviation value decreased from ±1.55 to± 1.43." The paired T test value is t = 15.8787, df = 68, standard error of difference = 0.087. The two-tailed P value is less than 0.0001

By conventional criteria, this difference is considered to be extremely statistically significant.

High Blood Pressure Analysis

Analysis of Systolic High Blood Pressure

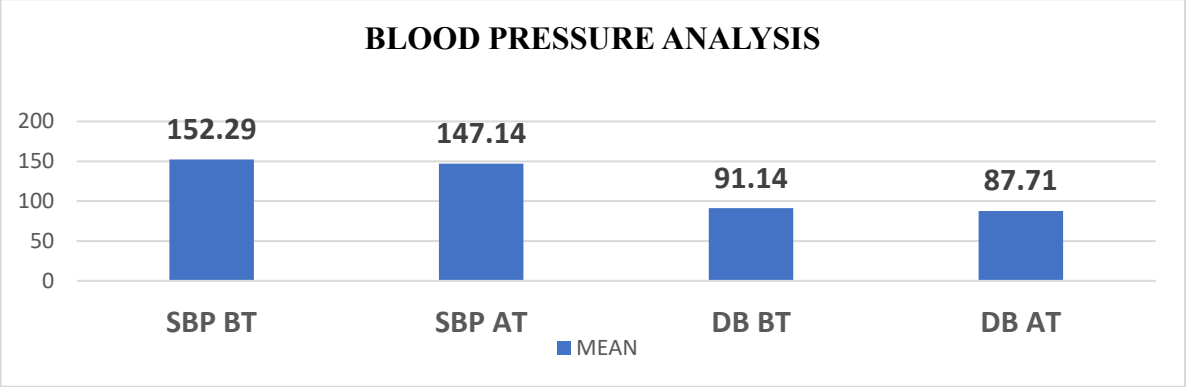
TABLE-III, Analysis of Systolic High Blood Pressure

	Mean	Standard Deviation	T value	P Value
S B P B T	152.29	±4.06	13.6758	<0.0001
S B P A T	147.14	±4.18		Significant

Diastolic Blood Pressure Analysis:

TABLE-IV, Diastolic Blood Pressure Analysis

	Mean	Standard Deviation	T- Value	P Value
D B P B T	91.14	±1.70		
D B P A T	87.71	±2.18	11.3509	< 0.0001



"The Systolic Blood Pressure of the participants before training and after training of eight weeks showed a decreasing trend from 152.29 mean value to 147.14 mean values with a standard deviation value decreased from± 4.06 to± 4.18. This data revealed that there was a decrease in systolic blood pressure after the yoga intervention but not significantly". The paired T value is t = 13.6758 with df = 68 and standard error of difference = 0. 376.The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be statistically significant enough.

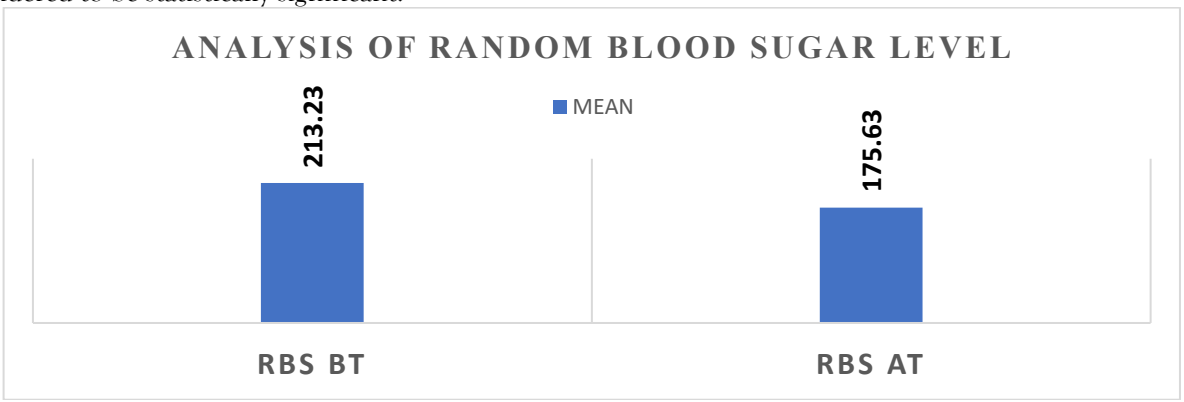
Similarly, from the above "descriptive analysis and 'Bar diagram analysis', it was presumed that the mean value of diastolic pressure of the participants before eight weeks of training was 90.93 and after training was 87.70 with std. dev. showed an increasing trend from ±2.11 to ±2.45. But overall mean values showed a decreasing trend but not so significant".

c) Analysis of Random Blood Sugar Level:

TABLE-V. Analysis of Random Blood Sugar Level

	Mean	Standard Deviation	T value	P- Value
RBS BT	213.23	±25.05	17.5433	< 0.0001
RBS AT	175.63	±18.48		

The Table no V shows that the mean values of sugar level with standard deviation before and after practice are 213.23, ±25.05 and 175.63±18.48 respectively". The paired T value was 17.5433 with df =68 and standard error of difference = 2.143. The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be statistically significant.

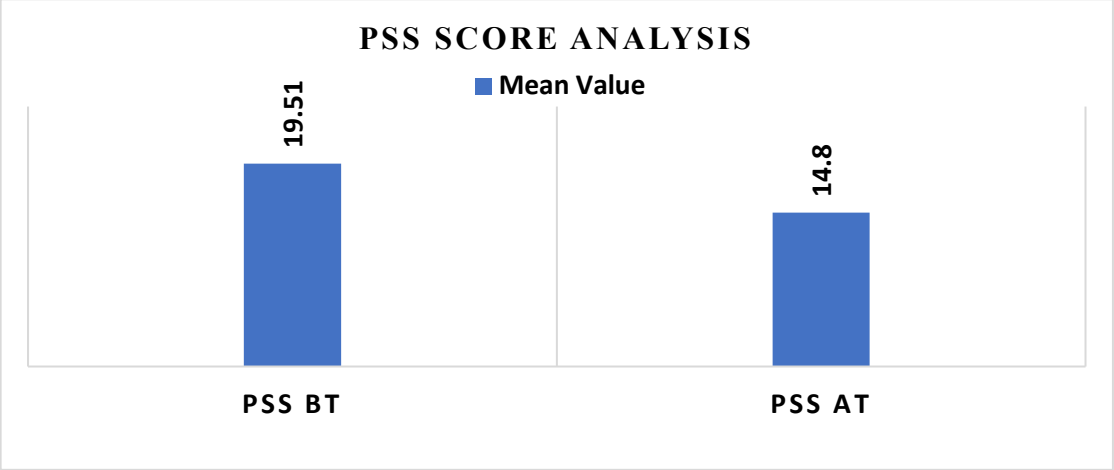


Finding-2: Analysis of Psychological Variables:

a) PSS Score Analysis:

TABLE-VI, PSS Score Analysis

Score	MEAN	Standard Deviation	T value	P- Value
PSS BT	19.51	±2.99	8.0676	<0.0001
PSS AT	14.80	±1.73		

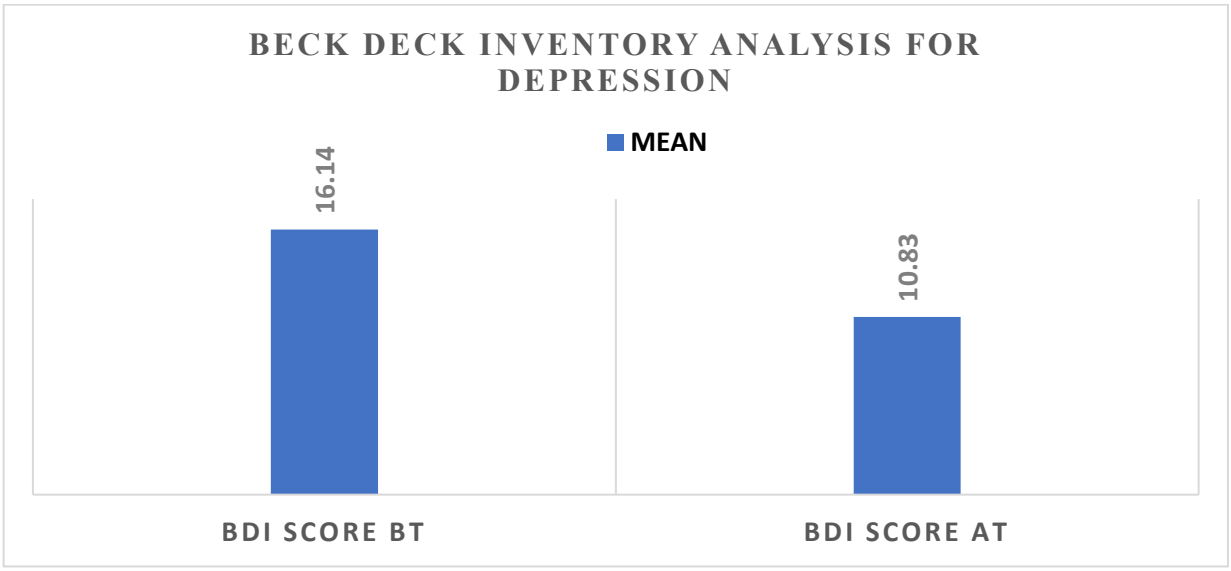


The above table and graph analysis shows mean value before practice and after practice are 19.51±2.99 and 14.80±1.73. By seeing the difference in mean values, it can be ascertained there was a significant decrease in stress level by using Yoga intervention". After testing of the hypothesis through paired T- test, the T value was calculated 8.0676 with df 68 and standard error of difference = 0.584. The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant.

b) Analysis for Beck Depression Inventory (BDI) to measure Depression Level:

TABLE-VII, Analysis of Depression Level

Score	Mean	Standard Deviation	T value	P- Value
BDI Score BT	16.14	±2.02		
BDI Score AT	10.83	±1.60	12.2146	<0.0001



The above table and graph show the mean value of depression score of 35 participants before practice of Yoga is 16.14 with standard deviation ± 2.02 and after yoga intervention is 108.with standard deviation ± 1.60. For testing the hypothesis paired T test is done taking significance level 0.05. The value of T test is 12.2146 with df 68 and standard error of difference = 0.435. The two-tailed P value is less than 0.0001. By conventional criteria, this difference is considered to be extremely statistically significant.

"Beck Deck Inventory is a questionnaire-based instrument to assess the depression and index level. The points obtained from participants through the questionnaires showed a declined trend from the point obtained after *Yoga* Intervention. The result revealed that there was a reduction of stress and anxiety level of the participants due to incorporating yoga in their life".

DISCUSSION:

The findings of this study provide substantial support for the role of yoga in enhancing Physio-psychological well-being. In alignment with previous experimental and neurophysiological research, the outcomes of our intervention underscore that consistent yogic practices significantly improve autonomic nervous system functioning, emotional regulation, and cognitive performance.

According to Hadaye, et.al, Yoga has been shown to be a successful, secure, and more affordable adjunct therapy for the treatment of hypertension. Yoga was discovered to be successful at lowering stress levels. The control and prevention of hypertension can be greatly aided by dietary changes and physical activity. (Hadaye, 2021)

Similarly. a study conducted by Muller et. al reveals 'Improvements in glycemic control brought on by an increase in insulin dosage or the use of anti-diabetic drugs, however, do not prevent weight gain in type 2 diabetic patients when food and exercise are not controlled. *Yoga*, on the other hand, enhances glycemic control while without adding to body weight, and some studies have even concluded that it does so". (Mullur RS, 2016)

The current findings are also supported by recent studies, such as:

Streeter et al. (2020), who found yoga to be more effective than walking in improving mood and anxiety levels, attributed to increased GABA activity (Streeter, 2020). Cramer et al. (2022), who conducted a meta-analysis confirming that yoga interventions significantly reduced depressive symptoms and improved quality of life across diverse populations (Cramer, 2022). Gard et al., who highlighted the integrative benefits of yoga on cognitive flexibility, emotional balance, and psychological resilience (Gard, 2021).

The hypothesis of the current study reveals that "there would be significant difference on the selected parameters taken in the experiment due to yogic intervention. All the parameters were physiological, psychological in the nature". The results shown in all the graphs and tables for data analysis reveal that there was a significant improvement after eight weeks of yoga practice in terms of physiological parameters like "BMI, systolic and diastolic blood pressure, random blood sugar level, stress, and anxiety".

Further the current study evidenced that the 8-week yoga programme based on some selected Yogasana and Nadi Shodhana Pranayama had a profound effect on the participants' physical and psychological health as they adhere all the rules and regulation and the yogi diet sincerely. The participants report and shared their experiences as follows:

- Feeling Relaxed
- Reduction in anxiety and stress level
- Improvement in their movement and their work efficiency increased
- Reduction of their anger level.

Those having hypertension, diabetics, migraine and gastritis who came at a beginning period of the problem showed a better improvement than others suffering from a long period. Above all the participants were happy and expressed their positive view for the Yoga Programme

CONCLUSION:

From the findings of the present study, it may be concluded that regular practice of some specific Yogasana with Nadi Shodhana Pranayama by the elderly may have effect on physio-psychological variables like blood pressure, sugar level and stress and depression level. They may overcome most of their most of the psychological issues by incorporating yoga and pranayama in their life style.

Acknowledgement: none

Conflict of interest: nil

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