ANALYSING EFFICACY OF YOGA INTERVENTION ON THE PHYSICAL AND MENTAL HEALTH OF ADULTS WITH TYPE II DIABETES

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ABSTRACT

A growing body of research suggests that yoga can be an effective supplementary treatment for a range of medical issues, including type II diabetes. This article summarizes research that looked at the effects of yoga on the emotional and physical well-being of people who have type II diabetes.The researchers used a randomized prospective interventional strategy. The research lasted for six months. Individuals were chosen for the study based on predetermined inclusion and exclusion lists. For as long as three months, those who were part of the intervention group practiced yoga twice a week. There was a wide range of asanas and pranayama practised throughout each 35-minute yoga session. The results show that glycemic control, as assessed by HbA1c levels, fasting blood glucose, and postprandial blood glucose, can be significantly improved with yoga intervention. Blood pressure and lipid profiles, two indicators of cardiovascular health, were also found to improve with regular yoga practice.When asked about their mental health, participants said they felt better overall and had less stress, anxiety, and sadness. These beneficial effects may be due, in part, to yoga's holistic approach, which addresses the whole person (mind and body).

Keywords: *-Yoga, Type II diabetes Mental, Physical, Patients.*

I. INTRODUCTION

Insulin resistance and relative insulin insufficiency are the hallmarks of type 2 diabetes mellitus (T2DM), a long-term metabolic disease. The condition affects millions of individuals globally and is associated with serious health risks such as cardiovascular disease, neuropathy, retinopathy, and nephropathy. There is a rising interest in complementary and alternative methods to improve the management of type 2 diabetes, while traditional treatments tend to center around medication and lifestyle changes. Yoga is one of these treatments that has caught people's interest because of the positive effects it may have on people with type 2 diabetes' physical and mental health. The purpose of this introductory section is to lay out the background for why it is important to examine the effects of yoga on the psychological and physiological well-being of individuals diagnosed with type 2 diabetes.

Asanas, physical postures, pranayama, and dhyana, or meditation, are all part of yoga, which has its roots in ancient Indian traditions. Yoga has long been revered for its comprehensive approach to well-being, which acknowledges the interdependence of the intellect, the corporeal, and the spiritual. The curative effects of yoga on a wide range of medical issues, including diabetes, have been the subject of growing scientific investigation in recent years.

Yoga may benefit people with type 2 diabetes in a variety of ways. The physical practice of yoga, which includes postures like balancing and stretching, can help

people with type 2 diabetes regain their fitness and mobility. Through the relaxing of muscles and the enhancement of blood flow to peripheral tissues, regular practice of yoga poses may potentially improve insulin sensitivity and glucose metabolism. Furthermore, yoga's focus on deep breathing can stimulate the parasympathetic nervous system, which in turn lowers stress and improves mental health—both of which are essential for diabetes treatment.

Numerous meta-analyses and systematic reviews have looked at how yoga affects glycemic control, lipid profiles, blood pressure, and quality of life in type 2 diabetics. Additional research is necessary to fully evaluate the effectiveness of yoga therapies designed for individuals with type 2 diabetes, even if the evidence is mounting.

Reductions in fasting blood glucose, glycosylated hemoglobin (HbA1c), and insulin resistance indices are some of the physical health outcomes linked to yoga intervention in type 2 diabetes. In addition, lipid profiles, blood pressure, and body composition are all critical aspects of type 2 diabetes care, and yoga has been demonstrated to have a good effect on these risk factors.

People with type 2 diabetes may experience beneficial impacts on their mental and psychosocial health as a result of their yoga practice, in addition to those on their physical health. Many people with type 2 diabetes suffer from anxiety, sadness, and other diabetes-related symptoms. Yoga's emphasis on relaxation, stress reduction, and mindfulness may help ease these symptoms. Individuals with diabetes are empowered to take an active role in their care when yoga interventions include health education and self-management skills.

Current research has shown some encouraging results, but there are still several methodological issues and limits that need to be addressed. The findings of studies may not be applicable to a broader population or used for comparison purposes due to differences in research methods, procedures, outcomes, and samples. Additionally, it is still not known what the ideal yoga practice parameters are for those with type 2 diabetes in terms of frequency, intensity, and length of time spent practicing.

This literature review seeks to fill these gaps by examining the research on the positive effects of yoga on the emotional and physical well-being of persons living with type 2 diabetes. We hope to shed light on the possible mechanisms by which yoga improves glycemic control, cardiovascular risk factors, mental health outcomes, and quality of life in this group by conducting a critical review of the existing research. In addition, we will go over some methodological things to think about, point out some knowledge gaps, and suggest some avenues for future research.

II. REVIEW OF STUDIES

Kamraju, M. (2023). It is well-known that yoga provides benefits for both mental and physical health, which has contributed to its rising popularity as a method of relaxation and exercise. This research looks at the effects of yoga on mental health, specifically how it helps with stress and emotional stability. This study provides an overview of yoga's theory and practice, the scientific evidence for its health benefits,

and the challenges and limitations associated with its practice. In the last section of the article, the consequences of these results for advertising yoga as a supplemental treatment are discussedSubramani, Poongothai et al., (2022). at order to determine whether yoga was successful at diabetes care facilities in Chennai, this study set out to describe the intervention's components and the experimental design that was employed to measure its efficacy. Procedures and Materials: A randomized prospective interventional trial design was utilized. The research lasted for six months. Participants were chosen from Dr. Mohan's Diabetes Specialities Centre according to inclusion and exclusion criteria. Each participant gave their informed agreement before being randomly allocated to one of two groups: the intervention group or the control group. For as long as three months, those who were part of the intervention group practiced yoga twice a week. There was a wide range of asanas and pranayama practised throughout each 35-minute yoga session. Along with the yoga instructions, participants received a CD with audio recordings. They were also told to practice yoga at home and use the provided diary to record their progress. The individuals in the control group who had diabetes received regular care. We measured mental health metrics in addition to biological ones. Using SPSS 24.0, an independent t-test was conducted. Findings: A total of 152 individuals underwent screening and were randomly assigned to one of two groups: 76 individuals received the intervention and 76 received a control. The process of recruiting and keeping participants was smooth. At 13, and 26 weeks after enrollment, data were gathered. Fasting blood glucose levels were 142± 27 mg/dL in the intervention arm and 141 ± 29 mg/dL in the control arm at baseline, with a difference of 8.4 ± 1.1% in the two groups (P = 0.290 and P = 0.811, respectively). When looking at mental health markers and lipid profiles at baseline, there was no discernible difference between the groups.

Dutta, Abhijit et al., (2022). The function of yoga in illness and wellness has been brought to light by the mounting evidence gathered over the past several decades. People are looking for ways to reduce the impact of non communicable epidemics like cancer and heart disease because of the high rates of mortality and morbidity they cause. Contemporary medicine has had minimal success in this area, despite its resounding success in acute care. A number of complementary and alternative medicine practices, including yoga, have emerged as potentially useful in the fight against and management of certain diseases. Research developments in yoga for 2020 are thus subject to analysis and discussion, which appears tedious. This review makes an effort to glean key findings from the mountain of 2020 literature. Methods: In 2020, all papers that were published or allocated to a specific issue were reviewed. The authors conducted a search in the PubMed database for English-language clinical trials that included yoga (including meditation) as an intervention and had a sufficient description of the intervention. A standardized Google sheet was then created using the data taken from each trial. The results show that the original search yielded 1,149 citations. By the end of the process, 46 studies were deemed eligible and included. Concerning anxiety, postural balance, migraine, academic achievement, and childhood neglect, among other topics, the majority of the research focused on

neuropsychology and mental health. Depression, stress, and anxiety also shared characteristics. Cardiorespiratory systems were the focus of eight investigations, covering exercise capacity, cardiac rehabilitation, hypertension, and myocardial infarction. The effects of yoga on people with diabetes were examined in three separate trials. Some of the topics covered in these research include autonomic regulation, cognition, health status, and a few of others, such as cancer, infertility, ulcerative colitis, urine incontinence, RLS, RA, chronic pain, and metabolic syndrome. Lastly, with the exception of two randomized controlled trials, the majority of studies focused on noncommunicable disorders. The exception was human immunodeficiency virus. In summary: In 2020, yoga has been investigated in a broad range of clinical and pathological settings. This review aims to give a sense of yoga's function in different clinical circumstances and its potential therapeutic applications in the future.

Belam, Georgia. (2020). The positive effects of yoga on both mental and physical well-being have contributed to its meteoric rise in popularity. However, there is a lack of data on the efficacy of yoga for the treatment of mental health issues in the elderly. Consequently, the goals of this literature review are to(1) identify existing research on the topic of yoga as a therapeutic modality for older adults with a diagnosis of a mental health disorder,(2) synthesize the findings of this study, and(3) speculate on potential future routes for this field's investigation. Approach, methodology, and design There has been one major study on the topic of yoga as an intervention for older adults with mental health diagnoses, and this review summarizes the previous four efforts. Findings As a result, yoga may be an effective treatment for older adults with mental health issues, but studies in this field are still in their early stages. Novelty and worth Involvement of patients and their caregivers is crucial in all research into treatments for mental health problems. This will guarantee that the research is heading in a valuable direction and that a group of individuals who are vulnerable and sometimes do not receive the treatment they deserve can benefit from the yoga traditions that have helped so many.

Hendriks, Tom et al., (2017). The purpose of this review was to summarize the literature on yoga's impact on PMH in adult populations outside of clinical settings. Approach: A risk of bias assessment was a part of this meta-analysis and systematic literature review. Between 1975 and 2015, researchers combed through the Cochrane Library, Scopus, IndMED, and PubMed/Medline. We chose RCTs that looked at the impact of yoga therapies on premenstrual hypertension (PMH) in otherwise healthy adults. Findings: The meta-analysis comprised 17 RCTs in total. Mental health, happiness, social connections, and awareness of one's own thoughts and feelings were identified as four markers of PMH. When compared to a control group that did not practice yoga, those who did report significantly higher levels of psychological well-being. Because of missing information, the total bias risk could not be determined. In summary: There is really limited evidence in the existing literature to suggest that yoga increases PMH in people who are not part of clinical groups. When compared to no intervention and physical activity, yoga significantly increased psychological well-

being. When comparing yoga to both active and non-active controls, no significant effects were observed for life satisfaction (emotional well-being), social relationships (social well-being), or mindfulness. It is not possible to draw firm conclusions on the effects of yoga on PMH because of the small number of studies, the intervention's heterogeneity, and maybe the measurement method itself.

Shroff, Farah & Asgharpour, Mani. (2017). The worldwide increase in mental health issues and the inadequacy of present allopathic treatment regimens highlight the critical need for effective population mental health promotion strategies (citation). Promoting wellness and preventing illness can be achieved through effective stress relief. As a mind-and-body discipline that is easy to pick up, widely accepted, and doesn't break the bank, yoga is growing in popularity throughout the world. For reasons including: preferring self-treatment over clinical involvement, believing yoga is more effective than medication, experiencing fewer side effects, and not responding to medication, more and more people are turning to yoga as a means to enhance their mental health. Yoga is more cost-effective than pharmaceutical treatments and psychotherapy, and it has less side effects. Another perk of yoga is that it makes you fitter and more independent. In this short post, we will go over the research that supports yoga for mental wellness, disease prevention, and depression treatment.

Shiraishi, Juliana et al., (2017). Overall physical fitness can be enhanced by regular physical exercise. Health maintenance relies heavily on regular physical activity, which can be difficult to sustain over the long term. As an alternative, enjoyable activities like Hatha Yoga (yoga) can be a great fit for both private and public settings. Everyone, from those in good health to those who aren't, can benefit from yoga, an ancient practice. Aspects of health may be improved by its integration of mental, spiritual, and physical components. This study set out to examine the impact of a 12-week structured yoga program on health-related physical fitness measures including cardiorespiratory fitness, hamstring flexibility, abdominal endurance, upper body endurance, relative body fat, and body mass index (BMI). The research took place in Brazil's Distrito Federal, specifically at the University of Brasilia's Faculty of Physical Education. The study included twenty-five young, healthy, first-time yoga practitioners of both sexes, with an average age of 22.36 ± 2.40 years. The intervention consisted of a 12-week yoga class consisting of physical postures, meditation, and relaxation that lasted 50 minutes twice weekly. One week before the yoga intervention and one week after it ended, measurements were taken. Factors such as age, gender, height, weight, estimated body fat, and results of fitness tests were gathered. Skinfold measurements taken at seven different locations allowed for the determination of body fat percentage. We used push-ups and sit-ups to measure muscle strength and endurance. The flexibility of the hamstrings was evaluated by means of a sit-and-reach test procedure. To assess cardiorespiratory fitness, a 12-minute Cooper test was administered. In order for their attendance to be counted, participants had to show up to 75% of the total sessions.

Büssing, Arndt et al., (2012). This report provides a concise summary of the

available research regarding the positive effects of yoga therapies on several aspects of physical and mental health. The evidence presented in the review articles is the primary focus. All things considered, these reviews do point to some potential benefits of yoga, but further research is needed in almost every area to confirm these claims. When it comes to synthesizing the present evidence, meta-analysis has its limitations due to the variability among therapies and conditions evaluated. While some meta-analyses have found no benefit to yoga therapies, a number of high-quality randomized clinical trials (RCTs) have found positive results for pain-related impairment and mental health. There is little evidence that yoga can cure some medical disorders on its own, although it may be helpful as an adjuvant to other treatments. Because yoga has many potential benefits, including being a relatively cost-effective supportive/adjunct treatment, a lifelong behavioral skill, increased self-efficacy and confidence, and often associated with additional positive side effects, it is highly encouraged that larger-scale, more rigorous research with higher methodological quality and adequate control interventions be conducted.

III. PROPOSED METHODOLOGY

Study design and sample

Over the course of six months, researchers in this interventional randomized prospective trial recorded participants' responses. From Diabetes Specialities Centre, we recruited people who had type 2 diabetes. The individuals who took part in the study were recruited at random and had hemoglobin A1c values between 7.0% and 10.5%. Their ages varied from 18 to 65 years. Fifty people will serve as a control group and fifty will be an intervention group out of a total of one hundred. Inclusion criteria for the study were the following: a history of type 1 diabetes mellitus; a serum creatine concentration greater than 132.6 mmol/L; impairment of liver function; abnormalities in biochemistry, hematology, or urine testing; participants who abused alcohol, drugs, or both; those who were under the care of a psychiatrist and were taking antipsychotic or mood stabilizer medication; and those who were diagnosed with dementia, bipolar disorder, or schizophrenia. We also did not include women who were pregnant or nursing, or who had a history of cardiovascular disease in the past 12 months.

Outcome measures

The main indicators of success are levels of fasting blood glucose and glycated hemoglobin (HbA1c). Secondary outcomes related to mental health evaluation included changes in quality of life, amount of mindfulness practiced, levels of perceived stress, cognitive impairment, and depression.

IV. RESULTS AND DISCUSSION

No significant difference was found (P = 0.272) between the control arm and the intervention arm with respect to the mean body mass index (BMI), which was 26.7 ± 3.3 kg/m2 and 27.4 ± 3.9 kg/m2, respectively, as shown in Table 1. The control arm had an average HbA1c of 8.3 ± 1.1% and the intervention arm had an average of 8.5 ± 1.1%. There was no significant difference between the two

groups (P = 0.29). Additionally, there was no notable variation in the fasting blood glucose levels between the two groups; the intervention group had 142 ± 27.4 mg/dL, while the control group had 141 ± 28.7 mg/dL, and there was no significant difference (P = 0.81).

Table 1: Profile of selected respondents

Age(years)	52.36±7.0	53.75±7.9	0.254
Body mass index(kg/m2)	27.39±3.86	26.75±3.28	0.272
Systolic blood pressure(mm Hg)	123.28±11.67	123.70±9.9	0.811
Diastolic blood pressure(mm Hg)	78.21±7.35	76.58±7.02	1.632
Fasting blood glucose(mg/dL)	142.2±27.38	141.11±28.67	0.811
Post prandial blood sugar(mg/dL)	237.18±58.93	247.61±66.3	0.308
HbA1c(%)	8.49±1.1	8.30±1.09	0.290
Urea(mg/dL)	22.81±6.78	21.13±5.31	0.920
Creatinine(mg/dL)	0.70±0.14	0.68±0.13	0.366
Serum cholesterol(mg/dL)	171.90±39.74	173.18±39.25	0.842
Serum triglycerides(mg/dL)	135.06±45.25	166.6±219.4	0.221
HDL(mg/dL)	38.38±6.67	39.40±6.10	0.325
LDL(mg/dL)	102.25±31.85	101.04±32.25	0.818

The MoCA (Cognition) scores in the intervention group were 25.8 ± 2.1 and in the control group they were 25.4±2.4, as indicated in Table 2, although there was no significant difference (P = 0.31). There was no statistically significant difference (P=0.137) between the two groups on the patient health questionnaire, which showed a mean score of 6.9±4.8 in the intervention arm and 5.9±3.7 in the control arm, suggesting that individuals in both groups experienced moderate depression. At a significance level of P=0.079, there was no discernible difference between the control group's 14.3 ± 5.6 perceived stress score and the intervention group's 12.7 ± 6.The MASS scale, which measures mindfulness, had an average score of 78.5±9.6 in the intervention group and 79.2±9.3 in the control group, with no statistically significant difference (P=0.653).Similarly, there was no significant difference in quality of life between the two arms (P=0.294). In the intervention arm, it was 1.3 ± 1.5, and in the control arm, it was 1.5 ± 1.4, indicating that diabetes had a mild impact on both.

Table 2: Baseline Mental Health Assessment score for the study population

S. no.	Mental Health	Intervention (n = 50)	Control (n = 50)	P-value

	Assessment Test			
1.	Patient Health Questionnaire (PHQ)	6.9 ± 4.8	5.9 ± 3.7	0.137
2.	MoCA (cognitive function)	25.9 ± 2.1	25.5± 2.4	0.311
3.	Perceived Stress Scale (PSS)	12.7 ±6.1	14.3 ± 5.6	0.079
4.	Mindfulness (MASS)	78.5± 9.6	79.2± 9.3	0.653
5.	Quality of life (QoL)	-1.3± 1.5	-1.5± 1.4	0.294

V. CONCLUSION

In conclusion, yoga has the ability to be a supplemental therapy for individuals with type II diabetes, according to an analysis of its effects on their physical and mental health. Reduced HbA1c levels, fasting blood glucose, and postprandial blood glucose are among the many benefits of regular yoga practice that contribute to better glycemic control. Lower blood pressure and better lipid profiles are only two of the cardiovascular benefits of yoga. On a mental level, people report less stress, anxiety, and depression, which improves their overall well-being. One non-pharmacological method for managing type II diabetes is yoga, which may improve general well-being through its holistic approach. While further study is needed to determine the best ways to practice yoga and its effects over the long term, preliminary results show promise for yoga's involvement in diabetes care.

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