Journal DOI : 10.36106/ijar
Print ISSN No. 2249 - 555X

An International Journal

INDIAN JOURNAL OF APPLIED RESEARCH

A Peer Reviewed, Referred, Refereed & Indexed International Journal

Impact Factor : 6.004

UGC Sr. No. 49333

Journal For All Subjects

www.ijar.in

Volume-12 | Issue-09 | September-2022

₹ 500

Original Research Paper

Volume - 12 | Issue - 09 | September - 2022 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Yoga

THERAPEUTIC POTENTIAL OF SELECTED YOGIC-PRACTICES IN THE MANAGEMENT OF TYPE-II DIABETES- A REVIEW

Anil Kothari* PhD Research Scholar, Uttarakhand Open University *Corresponding Author

Bhanu Prakash Joshi Assistant professor, Uttarakhand Open University, Haldwani, Uttarakhand

ABSTRACT **Background:** Diabetes is one of the rapidly growing serious health problems that impair the ability of pancreas to produce appropriate amount of insulin. In other situations the body cannot effectively use the insulin hormone and can lead to excess sugar in the blood. There is a growing interest in the role of certain Yogic practices such as asanas, pranayamas and kriyas in treating diabetes and is perfect alternative to insulin therapy and/or other diabetes drugs. **Objective:** The purpose of this study was to review randomized controlled trials, clinical trials and systematic reviews with meta-analysis using certain yogic practices in preventing and controlling Type-II Diabetes. **Materials and Method:** To identify relevant studies, search terms including yoga AND diabetes, pranayama (AND) diabetes and other relevant terms were entered in various search engines including Pubmed (Central), Cochrane and Google Scholar. A manual search on Google through reference lists of relevant studies was also conducted. The necessary literary material was also collected from Hatha Yoga texts such as Hatha Pradipika and Gheranda Samhita. Studies were selected if (i) they included yoga based intervention specifically asanas, pranayamas and kriyas, (ii) they were peer reviewed and randomized controlled trials or clinical trials or systematic reviews with meta-analysis having written in English, (iii) they included the evaluation of diabetes mellitus through the yogic practices. Exclusion Criteria- (i) Intervention not involving Yogic practices, (ii) They were not in English language, (iii) Unavailable full texts. **Result:** The review article provides evidence that the practice of selected yogic practices may reduce the symptoms associated with diabetes including the reduction in blood sugar. **Conclusion:** Results from this study suggest that certain yogic practices have a beneficial role in the prevention and management of diabetes and its further complications and promote healthy living.

KEYWORDS : Diabetes, Pancreas, Insulin, Yoga.

INTRODUCTION:

Diabetes refers to a group of metabolic disorders which causes blood sugar to rise (Hyperglycemia).According to the 10th edition of Diabetes Atlas 2021 of International Diabetes Federation (IDF), the estimated number of patients of diabetes between the age group of 20-79 years is 74.2 millions in year 2021 and it is estimated to be increased to 124.8 millions in year 2045.[1] There are three main types of diabetes: type 1, type 2, and gestational diabetes (diabetes while pregnant).[2]Among the three types of diabetes, Type-2 diabetes is the most prevalent and up to 95% of people with diabetes have Type 2.[3] Type 2 diabetes results from the body's ineffective use of insulin and is largely the result of excess body weight and physical inactivity.[4] Excess body weight can also lead to many other health issues such as obesity, hypertension, hyperlipidemia, heart attack and stroke including diabetes. Hence physical activity is essential to maintain the body weight under control. In present day, the yoga and any other physical exercises have become synonymous but yoga is not merely to burn calories and toning of different muscle groups rather it is aimed at self transformation by integrating mind, body and soul. Yoga typically combines asanas, pranayamas, meditation and kriyas as its therapeutic tools. Yoga-asanas are given highest importance in encouraging physical and psychological wellness. According to Swami Swatmarama, the practitioner of asana attains steadiness of the body and mind, freedom from disease and lightness of the limbs. **(HYP 1/17)** [5] Practice of asanas along with pranayamas and kriyas completely changes the lifestyle of diabetic patients by reducing sugar to optimal level and also provides mental strength. A growing body of evidence suggests that yogic practices can lead to manage diabetes and control the elevated level of sugar in the blood. The present review summarizes the role of selected yogic practices for the management of Type-2 diabetes through the evidence of various clinical studies.

Disease Review [6] Diabetes is a chronic health condition that is related to the dysfunctioning of body either doesn't make enough insulin or can't use it as well as it should. Type-2 diabetes develops over many years and can be prevented with healthy life style choices. The body in case of Type-2 diabetes doesn't use insulin well and due to this the sugar level becomes raised in the bloodstream.

Symptoms of Type-2 Diabetes:

[7] The general symptoms of diabetes include the following;

1. Excessive urination , thirst and hunger
2. Weight loss
3. Increased susceptibility to infections

Risk Factors of Diabetes: [8] The risk factors of diabetes are following;

1. Being physically inactive
2. Having excess weight or obesity
3. Having a family history of Type-2 diabetes
4. Having pre-diabetes (When the level of blood sugar is higher than normal range but not enough to be diagnosed as diabetes)

Management of Type-II Diabetes Mellitus (T2DM) with Yoga-asanas:

Asana means a state of being in which one can remain physically and mentally steady, calm, quiet and comfortable. [9] In the Patanjal Yoga Darshan, Maharshi Patanjali describes the nature of asana as- "Sthir sukham aasanam" meaning that the position is steady and comfortable. Incorporation of certain yogic postures in daily life may promote significant improvements in symptoms of Type2 diabetes. Various studies have documented reductions in blood sugar after the practice of yoga-asana. The best yoga-asanas for diabetes management are as under;

1. Surya Namaskar, 2. Dhanurasana, 3. Ardha-Matsyendrasana, 4. Paschimottanasana, 5. Mayurasana, 6. Shashankasana, 7.Mandukasana.

Management of Type-II Diabetes Mellitus (T2DM) with Pranayamas:

Pranayama is most essential and prerequisite phase of Pratyahara in the Ashtanga yoga system of Patanjali. Swami Swatmarama, the author of Hatha Pradipika (Compiled by Muktibodhananda S, 2000), goes on the say that pranayama should be practiced according to the instruction of the Guru (HYP 2/1) and should be done daily with a sattvic state of mind, so that the impurities are driven out of sushumna nadi and purification occurs (HYP 2/6). By proper practice of pranayama, all diseases are eradicated (HYP 2/16). Practice of asanas combined with pranayamas or yogic breathing may improve metabolic health and play a vital role in controlling blood sugar by regulating the functioning of pancreas. The various research studies have evaluated the role of specific pranayamas on diabetes and these are as under;

1. Anulom- Vilom, 2. Bhramari, 3. Bhastrika, 4. Ujjayi, 5.Shitali Pranayama

Management of Type-II Diabetes Mellitus (T2DM) with Shatkriya:

The shatkarma or shatkriyas are a set of six purificatory processes (Neti, Dhauti, Basti, Trataka, Nauli and Kapalbhati, described by Hatha Yoga texts) which cleanse the specific organs of the body by detoxifying them [10] for maintaining a disease free body or enhancing the effect of asanas, pranayamas and meditation. Of these, Vaman Dhauti, Kapalbhati and Shankha-prakshalana are found to increase the

functional capacity of pancreas. Kriyas become the essential component to cleanse the inner cavities and entire gastrointestinal tract. The detailed procedures of shatkriyas are described in Hatha yoga texts for promoting health and well being.

Summary of Scientific Evidences:

Diabetes is caused due to dysfunctioning of pancreas and certain yoga-asanas (preferably described above) help in alleviating various symptoms associated with Type-2 diabetes. The results of various studies suggest that Yoga-asana is an important component in the treatment of Type-2 diabetes. In a study conducted by Malhotra V, et al. (2002) on 20 diabetic subjects, it was concluded that selected yoga-asanas including Suryanamskar, Paschimottanasana, Ardhamatsyendrasana and Shashankasana have a beneficial effect on glycemic control in mild to moderate Type 2 diabetes.[11] In another study, the role of selected yoga-asanas such as Surya namaskar (Sun salutation), Paschimottanasana (Posterior stretch), Ardhamatsyendrasana (Half spinal twist) and Dhanurasana (Bow pose) were studied till 40 days. Results showed statistically significant decrease in fasting blood glucose. These findings suggest that Yoga-asanas have a beneficial effect on glycemic control in case of mild to moderate Type 2 diabetes.[12]Ardhamatsyendrasana stimulates the functioning of pancreas and hence manages the associated symptoms of diabetes.[13] In one study, yoga group were put through Mandukasana for 40 days and concluded that Mandukasana helps in decreasing blood sugar level either fasting blood glucose or post-prandial blood glucose and keep the diabetes in control.[14] The Matsyendrasana and Dhanurasana were found to be effective by Sahay in reducing the hyperglycemic index of diabetics.[15] Another study on Matsyendrasana and Dhanurasana was conducted to examine their role in diabetes by releasing insulin from the pancreas. 20 healthy volunteers who performed Dhanurasana and Matsyendrasana were observed by suggesting that the performance of asanas led to increased sensitivity of the B cells of the pancreas to the glucose signal and help in treating the symptoms associated with Type 2 diabetes. [16] The practice of Dhanurasana cures constipation and improves the functioning of liver and pancreas. [17] The practice of Mayurasana destroys all diseases, and removes abdominal disorders. [5] In a study conducted by Santhi Sri KV, et al (2014) [18] in Acharya Nagarjuna University, Guntur on 60 diabetes patients for six months, the subjects were instructed to practice Anuloma- Vilom, Bhramari, Bhastrika, Ujjayi, Sheetali pranayama and kapalbhati kriya for an hour daily. The results showed significant decrease in various metabolic parameters and anthropometric measurements in type-2 diabetic patients. In another study, effectiveness of 12 weeks pranayama in type-2 diabetes was assessed by Kalamadhuri et al (2018) [19]. Results showed significant decrease in fasting and postprandial blood glucose followed by alternate nostril breathing pranayama training. In one study [20] the data was collected on 70 subjects to evaluate the impact of shatkarma practice on serum glucose level. The subjects practiced Dhauti, Neti and Kapalbhati for 90 days and the results showed significant reduction in serum glucose level and serum cholesterol level. In a case study conducted by Ketaki H.Patil, et al (2022) [21], a 51 year old female patient was provided one year yoga module including Suryanamskar, Halasana, Sarvangasana, Matsyasana, Dhanurasana, Mandukasana, Anulom Vilom, Suryavedi, Ujjayi, Sheetali, Bhastrika, Bhramari, Kapalbhati, Agnisara, Vaman-Dhauti, Varisaar kriya with Uddiyan, Mool and Jalandhar Bandha.

After one year, fasting and post-prandial blood sugar dropped remarkably. In one study, fifty (n=50) subjects were selected with age ranged 30-55 years, pre-diagnosed with type-2 diabetes mellitus, to evaluate and compare the effects of Bhastrika and Kapalbhati on Blood Glucose level. Result demonstrates a statistically significant decrease in both fasting and post-prandial blood glucose levels after 30 days of practice and also concluded that Bhastrika pranayama group generated better outcome in comparison to Kapalbhati group. [22]

In another study, forty patients were selected by Garg G, et al (2016) to evaluate the efficacy of Shankha-prakshalana, Asana and Spico-Kalp in the patients of diabetes. After 2 months of practice, marked relief was observed in both fast and post-prandial blood sugar levels and/or etc. [23] Several scientific investigations have shown that Yoga intervention(Asanas, Pranayamas, Kriyas and Meditation) improves fasting and post-prandial blood sugar of diabetic patients and also manages associated symptoms and in turn improves their quality of life [24, 25, 26, 27, 28, 29, 30] Hence it is suggested that selected yogic practices can be beneficial for Type-2 diabetes.

CONCLUSION:

The present study showed that the package of asanas, pranayamas with kriya might improve the functioning of pancreas to supply appropriate level of insulin in the blood stream and/or reduce the blood glucose levels in patients with T2DM. Furthermore, future research studies with adequate sample size are needed to recommend selected yogic practices specifically asanas, pranayamas and kriyas as a perfect and safe option for the patients of diabetes.

REFERENCES

1. http://loksabhaph.nic.in/Questions/QResult15.aspx?qref=28768&lsno=17
2. https://www.cdc.gov/diabetes/basics/diabetes.html
3. https://my.clevelandclinic.org/health/diseases/7104-diabetes-mellitus-an-overview
4. https://www.who.int/news-room/fact-sheets/detail/diabetes
5. Muktibodhananda S. (2000). Hatha Yoga Pradipika. Munger Bihar. Yoga Publication Trust.
6. https://www.cdc.gov/diabetes/basics/diabetes.html
7. https://www.health.harvard.edu/a_to_z/type-2-diabetes-mellitus-a-to-z
8. https://www.bhf.org.uk/informationsupport/risk-factors/diabetes#heading3
9. Saraswati S. (2002). Asana Pranayama Mudra Bandha. Munger Bihar. Yoga Publication Trust.
10. Islam B, et al. (2015). Yoga A Healthy Way of Living Secondary Stage. National Council of Educational Research and Training.
11. Malhotra V, Singh S, Tandon OP, et al (2002).Effect of Yoga asanas on nerve conduction in type 2 diabetes. Indian J Physiol Pharmacol. 46(3): 298-306.
12. Malhotra V, Singh S, et al (2004). Effects of Yoga Asanas and Pranayama in Non-Insulin Dependent Diabetes Mellitus. Indian J Tradit Know. 3(2): 162– 67.
13. Borg –Olivier S, Machliss B (2007). Applied Anatomy and Physiology of Yoga. USA. Yoga Synergy Pty Ltd. Page no- 22, 26.
14. Menariya R, et al (2021) Prophylactic role of Mandukasana and Om chanting patients who survives with diabetes. Journal of drug delivery and therapeutics. 11(5):5-7.
15. Sahay BK (1986). Yoga and Diabetes. J Assoc Physicians India. 34: 645-648.
16. Manjunatha S (2005). An investigation into the acute and long-term effects of selected postures on fasting and postprandial glycemia and insulinemia in healthy young subjects. Indian J Physiol Pharmacol. 49 (3): 319-324.
17. Dalal N (1992). Yoga for rejuvenation. Hyderabad. Orient Black Swan.
18. Santhi Sri KV, Kasturi K, Sivannarayana G (2014). Impact of Pranayama and Amla, an approach towards the control of Diabetes mellitus. Int. J. Pharm Tech Res. 6 (3): 1157-1161.
19. Narayanapu K, Bandaru SD, Balakrishna (2018). Effect of 12-week pranayama in the management of type-2 diabetes. Natl J Physiol Pharmacol 8 (5): 732-734.
20. Pokhariyal KP, Kumar K. (2013). Effect of Shatkarma practices on serum glucose and serum cholesterol level of the Human subjects: An Observation. International Journal of Yoga and Allied sciences. 2 (1): 10-13.
21. Patil KH, Wasnik (Thatere) V, Patrikar VG (2021). Effect of long term Yogic practices in type 2 diabetes mellitus: A single case study. J Indian Sys Medicine. 9:135-9.
22. Varun V (2018). Evaluation of the effect of Bhastrika and Kapalbhati Pranayama on Blood Glucose Level in Type 2 Diabetes Mellitus. Master's thesis, Government Yoga and Naturopathy Medical College, Chennai.
23. Garg G, Mangal G, Chundawat NS (2016). A Comparative Study of Yogic Karma (Shankha-Prakshalana & Asana) and Spico-Kalp in the management of Madhumeha (DM Type 2). International Ayurvedic Medical Journal. 4 (5).
24. Singh A, Tekur P, Metri K et al (2017). Effect of a Residential Yoga Program on Blood Glucose Levels, Physiological Variables and Anti-Diabetic Medication Score of Patients with Type 2 Diabetes Mellitus: A Retrospective Study. Integrative Medicine International. 4 (3-4): 181- 186.
25. Dubey N, Mishra SS, Khare R (2014). Effect of Yogic exercise on blood sugar and blood pressure level in patients of Diabetes mellitus type 2: A Pre and Post interventional study. Int J Med Sci Public Health. 3: 1297-1299.
26. Yang K, Bernardo LM, Sereika SM, et al (2011). Utilization of 3- Month Yoga Program for Adults at High Risk for Type 2 Diabetes: A Pilot Study. Evidence Based Complementary and Alternative Medicine. E CAM, 2011, 257891.
27. Sahay BK (2007). Role of Yoga in Diabetes. J Assoc Physicians India. 55:121-6.
28. Jali MV, Deginal RB, Ghagane SC, et al (2017). The influence of yoga therapy in adults with Type 2 Diabetes Mellitus: A single center study. Yoga Mimamsa. 49: 9-12.
29. Hegde SV, Adhikari P, Kotian S, et al (2011). Effect of 3- Month Yoga on Oxidative Stress in Type 2 Diabetes with or without complications: A Controlled Clinical Trial. Diabetes Care. 34 (10): 2208-2210.
30. Yuniartika W, Sudaryanto A, Muhlisin A, et al (2021). Effects of Yoga Therapy and Walking Therapy in Reducing Blood Sugar Levels on Diabetes Mellitus Patients in the Community. Open Access Maced J Med Sci. 25; 9 (E): 906-12.