

YOGA AS A HEALTHCARE INTERVENTION FOR METABOLIC SYNDROME- REVIEWING THE RECENT LITERATURE

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ABSTRACT

The paper aims to understand the role of Yoga as a healthcare intervention for metabolic syndrome. The method employed for analysis was narrative review, for which six papers were chosen. The literature was divided into three sections - Yoga intervention for people at risk of Metabolic Syndrome, Yoga as a healthcare Intervention for people with Metabolic Syndrome, Case Study of a person administered with Yoga Intervention for Metabolic Syndrome. The analysis suggested strong evidence in the use of a yoga-based health intervention for MetS. Five out of six papers reviewed suggested positive outcomes, from which one was a case study. The inclusion of a case study proposed that there was no difference seen in the administration of the intervention in an individualized way or in a group setting, both proved to provide positive changes in the risk reduction of MetS. Thus, Yoga, being an effective non-pharmacological lifestyle intervention, has been reported to have a significant impact on the treatment of Metabolic Syndrome.

Keyword: - Yoga, Yoga and Metabolic Syndrome, Yoga as a Health Intervention.

1. INTRODUCTION

The word 'Yoga' has its origin in Sanskrit, it is derived from 'yoke' which means 'to unite'. The existence of Yoga is found to have its roots in India from thousands of years ago. According to the ancient Yogic scriptures which provide one of the oldest explanations of Yoga, define it as a medium for the union of the consciousness of the individual with the universal consciousness. The person who achieves this union through the practice of Yoga is termed as a yogi and is said to experience a state of freedom, also called nirvana or mukti. This further defines the aim of Yoga, according to the ancient scriptures as 'self-realization', being free from all suffering and attaining liberation. However, each person practicing yoga has their own meaning and definition, which stems from individual motivations, socialization, past experiences, and the like. Pertaining to this subjectivity the defining characteristics of Yoga have also evolved over the years and are variable across the world. Some of the recent definitions include, Iyengar (2005) [1] who defined yoga as a way of working on the body. Jois (2010) [2] defined Yoga as a religion.

1.1 Components of Yoga

The practice of Yoga is generally composed of four basic and main components, irrespective of the type or kind of Yoga (Manincor et al., 2015) [3].

- Regulation of breathing - comprising of abdominal diaphragmatic breathing
- Postures - includes body movements coordinated with the flow of breath.
- Relaxation - focuses on positive visualizations, changing focus away from the mind and the thoughts by guiding attention to the physical body.
- Meditation - shifting focus to a specific concept, idea, or value which resonates positive energy.

1.2 Kinds of Yoga

Building upon these four basic tenets, different kinds of Yoga have been formulated over the past years, in accordance with different cultures and theories that are practiced all over the globe. These include Kundalini Yoga, Vinyasa Yoga, Hatha Yoga, Ashtanga Yoga, Yin Yoga, Iyengar Yoga, Bikram Yoga, Power Yoga, Sivananda Yoga, Restorative Yoga, Prenatal Yoga, Aerial Yoga, and Acro Yoga.

1.3 Yoga for Promotion of Health

The applications of Yoga are diverse, ranging from cognitive to psychological to physical. Specifically talking about it as a healthcare intervention, the practice of Yoga is pertinent in modern-day life and plays an important role in prevention and health promotion. It is a way to revitalize our heritage by aiding modernistic health care provisions in preventing many diseases (Sidappa, 2019) [4]. A tremendous amount of research work goes on to analyze the effect of Yoga on physical well-being in various dimensions such as, the practice of some yoga postures have shown to enhance intra gastric pressure which in turn improves blood circulation (Bhole & Karambelkar, 1969) [5]. There have been many studies showing positive results of the practice of Yoga in improving cardiovascular health. Bera and Rajapurkar (1993) [6] in their study showed that Yoga practice significantly improved cardiovascular endurance and anaerobic threshold. This is consistent with the results of another study by Muralidhara and Ranganathan (1982) [7] who supported the role of Yoga in cardiac recovery.

1.4 Metabolic Syndrome

Metabolic Syndrome (MetS) is a cluster of cardiovascular risk factors which include uncontrolled blood pressure, obesity, insulin resistance, and dyslipidemia. It is prevalent in more than 40% of the Indian Adult population (Khan et al., 2018) [8]. MetS characterizes a pre-diabetic and pre cardiovascular condition which can further develop into cardiovascular disease and diabetes mellitus. As MetS is represented by pre pathological conditions which may further develop into diseases, change in lifestyle management becomes key for prevention.

2. METHOD AND AIM

This paper aims to analyze the role of Yoga in the management of Metabolic Syndrome through a thorough analysis of the literature. This was undertaken by using search engines like Google Scholar, Jstor, PubMed, Scimedirect, Researchgate, NCBI, and Taylor & Francis. The keywords used were, 'Yoga', 'Yoga and Metabolic Syndrome', 'Yoga as a health Intervention'.

For the analysis of the aim of the paper, six studies were chosen majorly from 2015 to the present day, which closely relate to Yoga as a health intervention for Metabolic Syndrome.

The narrative review is divided into sections involving,

- Yoga intervention for people at risk of Metabolic Syndrome
- Yoga as a healthcare Intervention for people with Metabolic Syndrome
- Case Study of a person administered with Yoga Intervention for Metabolic Syndrome. A case study was included in the review as it gives a more individualized approach of how yoga affects MetS, which would thus provide a newer perspective to analyze if there are any differences in an individualized or a group setting intervention.

3. REVIEW OF LITERATURE

3.1 Yoga intervention for people at risk of Metabolic Syndrome

Sohl et al. (2016) [9] conducted a comparative study of 12-week Yoga Intervention with Health Education (HED) vs Health Education individually, to see their effect on Metabolic Syndrome risk. 66 participants were selected based on baseline criteria and randomly assigned to either Yoga intervention with HED or HED alone. The Yoga plus Health Education intervention consisted of 60 to 75 minutes of class, divided into two sections. In the Yoga program - postures, breathing, and meditation based on yoga from the Krishnamacharya tradition were instructed by certified yoga trainers. Followed by the HED segment, delivered by professional dieticians. Here the Group Lifestyle program was used, where the importance of physical activity and diet were explained

with specific emphasis on Yoga for physical activity for this group. On the other hand, the Health Education group was just introduced to the health segment by dieticians without Yoga training. Both the groups were called in for their respective sessions once a week. At the end of the 12-week intervention, the study result observed increased improvement in the Yoga plus HED group in two dimensions – physical and general health perceptions in comparison to the HED alone. It was also seen that psychological well-being was also enhanced in this group, which was the secondary aim of the study.

A comparable pilot study that analyzed the effect of a 12-week Yoga Intervention with lifestyle education vs lifestyle education alone for at-risk individuals of MetS, delivered different results. (Birdee et al., 2015) [10]. Suggesting that both the groups - intervention, and control, delivered similar improvements in dimensions like blood pressure, fasting lipids, body weight. Inferring that yoga practice did not provide specific positive results. However, this was attributed to the limitations of the study and the authors did direct future research feasibility in assessing cardiometabolic risk reduction through yoga for at-risk MetS individuals.

This is taken up in the next section of the literature review.

3.2 Yoga as a healthcare Intervention for people with Metabolic Syndrome

In this section three Intervention studies were chosen which developed a specific yoga intervention plan for MetS, catering to the respective populations. These three studies used different kinds of Yoga and different timelines for the intervention to be followed. A Yoga Intervention plan of 12 weeks, for the Hong Kong Chinese population, was performed to assess Metabolic Risk (primary objective) and Quality of life (secondary objective), which showcased that Yoga improves both, metabolic risk as well as the quality of life (Lau et al., 2015) [11]. In this study, an intervention plan was established with proper adherence to inclusion and exclusion criteria for the participants, after which 173 Chinese men and women of age 18 or above were selected. This was a non-blinded, comparative study where 87 participants were grouped for the yoga intervention, whereas 86 in the control group through quota sampling.

The Yoga intervention plan entailed 60 minutes of Hatha Yoga, once a week for 12 weeks, by an experienced registered Yoga Teacher. The session comprised of breathing techniques and 57 yogic poses. Apart from this, the participants were encouraged to practice yoga sessions at home for which handouts were provided, also they were asked not to begin with other forms of exercise. On the other hand, the control group was requested not to start with any form of physical exercise during the course of the study. On analysis, after the completion of the program, it was found that there was a significant positive result in the reduction of Metabolic risk factors which include reduced waist circumference, fasting glucose, and triglyceride levels. A positive outcome was also observed in MetS z score and Health-Related Quality of Life (assessed by the Medical Outcomes Study (MOS) 36-item Short-Form Health Survey (SF-36)).

A similar study was also conducted on the Indian population at AIIMS, Delhi, which compared Yoga intervention vs the result of only Dietary intervention on Adults with Metabolic Syndrome (Yadav et al., 2019) [12]. This study is a comparative, non-blinded, randomized intervention. The inclusion criteria for the participants included age group 20-45 years and being diagnosed with Metabolic Syndrome. Based on these criteria 260 participants were finally chosen and were randomly assigned to either yoga-based lifestyle intervention (130) or Dietary intervention (130) programs. The Yoga-based lifestyle intervention program (YBLI) was characterized by 2 hours of yoga session for 5 days a week which included theory and practice of yoga asanas, based on Patanjali Asthana Yoga. Each session comprised of yoga asana, pranayama, relaxation techniques which were followed by educative informative lectures on yoga-based lifestyle management, management of chronic diseases, group support, and the like. This was followed at AIIMS for the initial two weeks, by a certified trained Yoga teacher under the supervision of medical experts. In addition, an individualized diet intervention plan was given to the YBLI group as well to maintain a control group setting for the DI group. On completion of two weeks, this program was assisted to be carried out at home by the participants, for which resources were provided. After analysis, the result pointed out in the direction of YBLI group to be recovered in higher percentage from Metabolic Syndrome than the DI group, which was characterized by reduced waist circumference, reduced fasting insulin levels.

Another study that signaled the long-term effects of Yoga on Metabolic Syndrome was conducted by Siu et al. (2015) [13]. Per the inclusion criteria of the study 182 participants were chosen in the age range 30 and 80 who were diagnosed with MetS using National Cholesterol Education Program (NCEP). The Yoga Intervention characterized a 60-minute yoga session, 3 days a week for 1 year. It comprised of warm-up exercises, Hatha Yoga, breathing, and relaxation exercises under the supervision of a trained yoga instructor. For analysis, a pre

and post-intervention check-up was scheduled along with a check at 6 months for both the control and intervention group. Along with monthly phone call checks with the intervention group. The results supported Yoga as an intervention in dealing with MetS by showing reduced waist circumference, systolic blood pressure after the implementation of the intervention.

3.3 Case Study of a person administered with Yoga Intervention for Metabolic Syndrome

For the literature review, a case study was taken up which also showed positive effects of yoga intervention in treating MetS. (Gowda et al., 2016) [14].

This was a case of a 50-year-old male who was admitted to a healthcare facility in Bangalore. He was living an unhealthy lifestyle, was overweight, had knee pain, diabetes, hypertension, and hypothyroidism, with no family history of MetS. After proper case history, an intervention was developed focussing on yoga and naturopathy for 6 weeks (during which the patient was admitted to the hospital itself). The Yoga Intervention included asanas, pranayama, meditation, relaxation techniques, kriyas, and educative yoga lectures. There was a medical check at 6 weeks, at the time of discharge where dietary intake and yoga exercises were explained to be practiced at home. Followed by 2 follow-up sessions, 2 months after discharge and 3 months after discharge. The outcomes showed optimistic results towards the efficacy of the intervention. It was observed that there was a significant reduction in weight, total cholesterol, fasting blood glucose, HbA1c, and TSH. Medications to control these were not required to be continued.

A noteworthy result was found that the follow-up data indicated a good long-term and sustained effect of the intervention.

4. DISCUSSION

Yoga has been long known to aid the healthcare sector in reducing the risk of various diseases (Sidappa, 2019) [4]. According to the National Health Interview Survey, 8.9% of U.S. adults practiced yoga for a better health outcome (Zhang, 2014) [15]. Since the inception of yoga, it has been benefitting individuals in expanding oxygen capacity, flexibility, posture, and many others alike. The aim of the paper was to focus on Yoga as a healthcare intervention for Metabolic Syndrome, specifically. All the six papers chosen, successfully elaborate on the intervention. The basic outline of the interventions developed in the studies was that they were explicitly designed for the respective populations for different timelines. They were structurally organized. Different studies used different kinds of yoga to be used for practice. This points out the fact that irrespective of the kind or type of yoga chosen, all show positive results for the outcome.

In the literature obtained, one of the studies included was conducted by Lau et al. (2015) [11], they developed a 12-week Hatha Yoga Intervention for the Hong Kong Chinese population of age range 18 or above, who were diagnosed with MetS. The intervention that they developed involved a one-hour session weekly for 12 weeks by a trained Yoga teacher. This hourly practice included breathing techniques and 57 yogic poses based on Hatha Yoga. To form a comparison there was also a control group that was not assisted with the intervention. The results of this study showed significant positive effects of yoga on the symptoms of MetS.

Other studies which were included, developed their intervention on similar lines. A comparable study by Yadav et al. (2019) [12] also developed a 12-week yoga practice intervention but based on Patanjali Asthana Yoga for the Indian population. The duration however was much lengthier, it required 2 hours of practice for 5 days a week for a total of 12 weeks. Another study that assessed the long-term effects of Yoga required practice of one hour, three days a week for one full year (Siu et al., 2015) [13]. There was a study that coupled Yoga practice and Health education as the intervention and health education alone for comparison (Sohl et al., 2016) [9] the timeline for this study was 12 weeks where along with Yoga health education lectures were also given. However, there was one pilot study included, which did not show a significant difference in the control vs yoga intervention group but the authors attributed it to the limitations of the study. A noteworthy observation from the studies was observed that when the practice of Yoga was to be carried out individually at home, there was a difference in the health outcomes assessed during follow-up sessions, indicating that a proper environment along with a trained teacher is required for desired outcomes.

Analyzing the different yet similar intervention studies which have been developed, it can be observed that Yoga poses as a successful method for reducing the risk for Metabolic Syndrome. The International Diabetes Federation (IDF) says that people with MetS have a greater susceptibility of developing type 2 diabetes and are

more likely to be affected by heart attack or stroke. Looking into the gravity of this close association between MetS and diabetes, prevention is crucial by the use of appropriate intervention.

Amid all the existing treatments for MetS, lifestyle management is the most successful (Fappa et al., 2008) [16]. Lakka and Laaksonen (2007) [17] say that within lifestyle management the most critical component is physical activity since adults and people in old age are at the most risk of MetS and they generally cannot perform high-intensity exercises such as running. Yoga as a physical exercise thus proves to be the most rewarding. Another very important concern and a prevalent symptom of MetS is central obesity. Various recent studies point out the optimistic results of Yoga to treat obesity. Seo et al., (2018) [18] showed that 8 weeks of yoga training resulted in reduced body weight, body mass index.

Yoga as a healthcare intervention is concluded to be a successful lifestyle intervention for middle-aged and older people with Metabolic Syndrome.

5. CONCLUSION

The aim of the study was to see the effect of Yoga as a healthcare intervention for Metabolic Syndrome. On account of the literature review carried out, which was viewed from three perspectives - at-risk individuals, people with MetS, and Case studies. The analysis suggests strong evidence in the use of a yoga-based health intervention for MetS. Five out of six papers reviewed suggested positive outcomes, from which one was a case study. The inclusion of a case study proposed that there was no difference seen in the administration of the intervention in an individualized way or in a group setting, both proved to provide positive changes in the risk reduction of MetS.

Thus, Yoga, being an effective non-pharmacological lifestyle intervention, has been reported to have a significant impact on the treatment of Metabolic Syndrome.

5.1 Limitations and Future Directions in research

On the basis of the literature collected it was observed that, since the yoga intervention studies cannot be blinded, the placebo effect may have a significant impact. Studies indicate that participants may believe yoga can improve their health irrespective of their health status. This raises a very important aspect of how self-perceived health may predict a person's capacity to manage the disease thus improving their metabolic profile.

Another important point to note was that there was a significant difference in the health status of individuals in the follow-up sessions of the yoga intervention, once they were asked to continue the practice at home. This is indicative of the fact that a proper environment and a yoga teacher are crucial for the successful completion of the intervention and for accurate results and positive changes in the health status brought by the yoga practice.

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