A STUDY TO EVALUATE THE ROLE OF SELECTED YOGIC PRACTICES IN PREVENTION OF DIABETES MELLITUS (MADHUMEHA)

Dr. Neeraj Kumar Joshi¹ and Dr. Neeru Nathani²*

¹Assistant Professor, Dept. of Swasthavritta, Ch. Brahm Prakash Ayurveda Charak Sansthan, New Delhi.
²*Assistant Professor, Dept. of Swasthavritta and Yoga, Faculty of Ayurveda, IMS, BHU, Varanasi.

ABSTRACT

Diabetes Mellitus is one of the major metabolic disorders, characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both. The prevalence of Diabetes in adults was estimated to be 4.0% in 1995 and to rise to 5.4% by year 2025 worldwide. Prediabetes is an important clinical condition in which blood glucose level is more than normal range and patients are at risk of developing Type II Diabetes Mellitus. Apathya Ahara-Vihara and stress are the chief etiological factors described for Prameha. In Ayurvedic classics the clear description of Purvarupa (Prodromal symptoms) of Prameha shows resemblance with Prediabetes. Early prevention of the disease by lifestyle interventions at this stage is better than lifelong treatment. Based on the above knowledge this study was conducted to evaluate the efficacy of selected Yogic Practices in the prevention of Diabetes Mellitus (Madhumeha). Total 25 subjects fulfilling the proposed criteria of selection were enrolled for clinical study. Assessment of the effect was based on both subjective and objective parameters reviewed at interval of every two months for total period of six months. The intra-group comparison was done to compare the findings at the time of registration and final follow-up. Statistically significant results were obtained in terms of most of the symptoms and objective parameters.

KEYWORDS: Madhumeha, Prediabetes, Purvarupa, Stress, Yogic Practices.
INTRODUCTION
Prediabetes is an important state between health and disease. In this stage patients are prone to develop Type-2 Diabetes Mellitus. Worldwide more than 300 million people are at increased risk of developing Diabetes Mellitus but they are unaware of it. The progression into Diabetes Mellitus from Prediabetes is approximately 25% over 3 to 5 years. In practice, Yoga is an applied science of balancing body and mind, which creates an internal environment to allow the individual to maintain his own state of dynamic balance or health. Extensive researches have shown the usefulness of Yoga as preventive measure in the management of various lifestyle related disorders like Hypertension, Diabetes, Depression, Anxiety etc. In modern era various medicaments for the management of Diabetes are available but no one is fully successful. The indigenous Yogic Practices are cost effective and without any side effects. This study was conducted to evaluate the role of selected Yogic Practices in prevention of Diabetes Mellitus (Madhumeha).

MATERIAL AND METHODS
The study was conducted in the Department of Swasthavritta and Yoga, SS Hospital, IMS, BHU, Varanasi. On the basis of proposed criteria of selection total 25 subjects of Prediabetes were registered for clinical evaluation. All cases were reviewed on the basis of subjective and objective parameters, at an interval of two months for total study period of six months. Out of 25 registered cases for the study, 22 cases turned up for all three follow-ups.

Inclusion Criteria
- Age 30-60 yrs.
- Family History of Diabetes.
- Fasting Blood Sugar (FBS): 100-125 mg/dl
- Post Prandial Blood Glucose (PPBS): 140-199 mg/dl

Exclusion Criteria
- Age <30yrs. and >60yrs.
- Patients of IDDM and NIDDM.
- Diabetes due to Phaeochromocytoma, Acromegaly, Cushing’s syndrome, Hyperthyroidism etc.
Advice given
All registered cases were advised to do Yogic Practices regularly in the morning in following order.

I. Asana
1. *Tiryakatrikonasana* : 10 rounds/day
2. *Paschimottanasana* : 5 rounds/day
3. *Ardhamatsyendrasana* : 5 rounds/day
4. *Mandukasana* : 5 rounds/day
5. *Pavanamuktasana* : 5 rounds/day
6. *Bhujangasana* : 5 rounds/day
7. *Shavasana* : Minimum 10 minutes

II. Pranayama
1. *Bhastrika* : 10 rounds/day
2. *Anuloma - Viloma (Nadishodhana)* : 20 rounds/day

Subjective Assessment was completely depended upon symptomatology (mainly the *Purvarupa* of *Prameha* given in classics) and grade depends on severity of symptoms told by patients. Objective assessment was done on the basis of Weight, Body Mass Index (BMI), Fasting Blood Sugar (FBS) and Post-Prandial Blood Sugar (PPBS) values.

SPSS software was used for application of statistical methods to analyze the data for finding the results. Intra-group comparison was done by Paired t test, for subjective and objective parameters at the time of registration (BT) and final follow-up (AT).

OBSERVATIONS AND RESULTS

**Effect of Yogic Practices on Subjective Parameters**

<table>
<thead>
<tr>
<th>Subjective Parameters</th>
<th>Mean ±SD</th>
<th>Mean diff.</th>
<th>Paired t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Prabhuta Mutrata</em> (in Quantity)</td>
<td>1.37±1.38</td>
<td>0.47±0.70</td>
<td>0.89±1.10</td>
<td>3.54</td>
</tr>
<tr>
<td><em>Prabhuta Mutrata</em> (in Frequency)</td>
<td>1.32±1.45</td>
<td>0.21±0.54</td>
<td>1.10±1.33</td>
<td>4.02</td>
</tr>
<tr>
<td><em>Pipasa</em></td>
<td>1.89±1.24</td>
<td>0.74±0.73</td>
<td>1.15±1.21</td>
<td>4.16</td>
</tr>
<tr>
<td><em>Kara-Pada Daha</em></td>
<td>1.53±1.18</td>
<td>0.79±0.71</td>
<td>0.74±0.73</td>
<td>4.38</td>
</tr>
<tr>
<td><em>Sveda Pravriti</em></td>
<td>1.37±1.26</td>
<td>0.47±0.61</td>
<td>0.90±1.04</td>
<td>3.72</td>
</tr>
</tbody>
</table>
(BT = Before Trial, AT = After Trial)

This table shows that the effects of prescribed Yogic Practices were promising. On intra group comparison (between BT and AT), the results were highly significant (p < 0.001 or p<0.01) for maximum number of parameters viz. Prabhuta Mutrata (in Frequency), Pipasa, Karapada-daha and Sveda-Pravriti. The results were significant (p<0.05) in terms of Prabhuta Mutrata (in Quantity).

**Effect of Yogic Practices on Objective Parameters**

<table>
<thead>
<tr>
<th>Objective Parameters</th>
<th>Mean ± SD</th>
<th>Mean Difference</th>
<th>Paired t value</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>66.18±9.79</td>
<td>61.82±8.22</td>
<td>4.36±3.29</td>
<td>6.22</td>
</tr>
<tr>
<td>BMI</td>
<td>25.10±4.00</td>
<td>23.55±3.29</td>
<td>1.55±1.29</td>
<td>5.66</td>
</tr>
<tr>
<td>FBS</td>
<td>111.74±8.87</td>
<td>100.22±9.80</td>
<td>11.52±8.14</td>
<td>6.64</td>
</tr>
<tr>
<td>PPBS</td>
<td>165.28±18.74</td>
<td>143.75±12.70</td>
<td>21.52±18.88</td>
<td>5.35</td>
</tr>
</tbody>
</table>

On intra group comparison (between BT and AT), the results were highly significant (p < 0.001) for Mean ± SD values of Weight, BMI, FBS and PPBS. In case of Fasting Blood Sugar the initial mean ± SD was 111.74±8.87 and reduced to 100.22±9.80 after complete follow-ups. In case of Post Prandial Blood Sugar initial mean ± SD was 165.28±18.74 which was decreased to 143.75±12.70 at the end of study. After practice of Yoga there was notable reduction in Mean ± SD of Weight and BMI.

**DISCUSSION**

Diabetes Mellitus (Madhumeha), a lifestyle disorder showing upward trend of prevalence. Yogic practices could help to prevent this disease in different ways. Muscular contraction and relaxation and twisting during prescribed asanas can promote blood supply to muscles, which might enhance insulin receptor expression causing increased glucose uptake by muscles and thus reducing blood sugar. Asanas like Pavanamuktasana, Paschimottanasana etc decrease blood glucose level by increasing glucose utilization in muscles of Diabetic patients (Udupa and Singh 1972, Kosthi et al. 1971). Obesity is a predisposing factor for Diabetes. Regular practice of Yoga helps to maintain normal weight. In this study we also found statistically highly significant reduction in body weight and BMI. Stress is a major risk factor for Diabetes Mellitus. During stress glucagon and epinephrine secretions increase and more glucose releases from liver. On other hands cortisol level rises, causing muscles and fats to be less sensitive to insulin. As a result, glucose level become high in blood stream. Yoga decreases the sympathetic arousal, the brain becomes calm and less responsive to stress.
Relaxing practices especially Shavasana effectively reduce stress, thereby reduce glucagon and cortisol secretion and improves insulin action. In this way normal glucose level is maintained in blood and disease could be prevented.

CONCLUSION

In recent years, Yoga is being looked upon as great solace against many problems arising out of our complicated and sedentary lifestyle. Daily practice of selected Yogasana and Pranayama decreases blood sugar level by removing stress and decreasing sympathetic activity of nervous system. In this study group of Prediabetics the significant effect of selected yogic practices was observed with respect to subjective and objective parameters. This study reveals that every individual, either healthy or prediabetic, should practice Yoga for prevention of Diabetes Mellitus (Madhumeha).

ACKNOWLEDGEMENT

We pay our gratitude to Prof. Ram Harsh Singh Sir, Distinguished Professor, Faculty of Ayurveda, IMS, BHU, Varanasi, for his valuable guidance and continuous support during this research work.

REFERENCES


