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A study to assess the effectiveness of yoga therapy on RBS count among patient with diabetes mellitus

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Abstract
Background: Diabetes mellitus is known to the human beings for many years. Diabetes mellitus is a group of metabolic disease characterized by increased levels of glucose in the blood, resulting from defects in insulin secretion, insulin action or both. Yoga was practiced by Lord Shiva and other sage and it is a gift to Indian culture and heritage of it. It has a great role in upholding of our body and health.
Methodology: A quantitative approach research design was used.60 sample were selected by using convenient sampling technique. The demographic data was collected and pre-test value of random blood glucose was checked. Followed by yoga therapy that was taught to the patients and it continued for one week. After 1 week the post-test value of RBS was checked.
Result: The result of the study revealed that, the post-test mean value was lower than the pre - test. The paired 't' value found statistically significant and it shows that yoga therapy is effective on reducing random blood sugar Level. The present study shows that the demographic variables sex, type of family and family history of diabetes had shown statistically significant association with post-test level of RBS at p <0.05 level and the other demographic variables had not shown statistically significant association with post-test level of RBS among diabetes patients.
Conclusion: The study findings concluded that teaching yoga to all the people of all the ages, not only bring a better health but also a significant improvement in their life.

Keywords: yoga therapy, diabetes mellitus, random blood sugar.

Introduction
The WHO definition of health is a state of complete physical, mental, social well-being and not merely absence of disease or infirmity. Diabetes mellitus is a syndrome resulting from a variable interaction of hereditary and environmental factors, and characterized by abnormal insulin secretion and a variety of metabolic and vascular manifestation reflected in a tendency toward inappropriately elevated blood glucose level, thickened capillary basal lamina neuropathy [1].

Diabetes mellitus is known to the human beings for many years. Diabetes was first identified by Egyptians, about 350 medical books of the ancient civilization of Egypt, Greece, Indians have been mentioned that the disease is associated with polyuria and the melting down of the flesh and limb [3]. Shruti, a well-known Ayurvedic physician, described that the diabetes as the amount that is rain of honey, so they have named Diabetes mellitus as "Mahomet". Aratus referred as unquenchable thirst. Willis referred as pissing evil the urine was wonderfully sweet as if imbued with honey or sugar. Dobson was the first to demonstrate presence of sugar in urine. Carole related the disease is due disorder of pancreas. It was recognized since antiquity, and its treatments were known since diabetes occurred mainly in the 20th century and it is the one of the most common disease in the world at present [2].

Prevention is better than cure.' The preventive measures comprise maintenances of normal body weight through adoption of healthy nutritional habits and physical exercise. When diabetes is detected, it must be treated. The aims of the treatment are to maintain blood glucose level and maintain ideal body weight. Treatment is based on diet alone, diet and oral ant diabetic drug, diet and insulin. Good control of blood glucose protects against the development of complication. Diabetes and hypertension are most common lifestyle disorders now a day. India is likely to become global capital of diabetes in next few years [5].

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Yoga practiced by Lord Shiva and other sages and it is a gift to Indian culture and heritage and it has a great role in upholding of our body and health. Among Ashtang Yoga described by 'Patanjali' Aasana and Pranayama are being widely accepted globally. Indian physicians Sushruta and Charaka in 400-500 BC were well known that the type 1 diabetes is associated with youth and type 2 with obesity. Diabetes mellitus is a disease that averts the body from proper utilization of the energy from the diet. So to find out the beneficial effects of Aasana and Pranayama for diabetic patient this study was initiated and thorough literature related to topic was reviewed from all available sources. Aasanas and Pranayama have great prospective to alter pathophysiology of our body. Both can increase the blood and oxygen supply to various organs which also increase the efficiency and functioning of them [4]. Diabetes is chiefly associated with malfunction of endocrine part of pancreas. So the Aasanas like Halasana, Sarvangasana, Matsyasana, Ardhamatsyendrasana, Shirshasana, Vajrasana, Dhanurasna, Chakrasana and Ushtrasana are very effective for stimulating the functions of pancreas. Similarly Pranayama like Bhrastrika, Bhramari, Kapalbhati and Nadishodhan are effective in cases of diabetes mellitus. The Aasanas and Pranayama effectively relieve physical and mental body stress. Bhrasrika is revitalizing Pranayama which increases oxygen levels and reduces carbon dioxide levels in the blood. The Aasana which create some pressure over pancreas and abdominal viscera by anatomical view are more helpful in controlling of blood sugar. Physical and mental stress is relieved by Pranayama helps to correct the pathology of diabetes [4]. Diabetes mellitus is a group of metabolic disease characterized by increased levels of glucose in the blood, resulting from defects in insulin secretion, insulin action or both. The major classification of diabetes are type 1 diabetes, type2 diabetes, gestational diabetes and diabetes mellitus associated with others condition or syndromes. Diabetes is the third leading cause of the death from diseases, primarily because of the high rate of cardio vascular disease such as myocardial infraction, stroke and peripheral vascular disease. Clinical manifestations of all types of diabetes include the three Ps', polyuria, polydipsia and polyphagia [6]. The world health organization estimated that the global number of the people with diabetes is expected to be at least 220 million in 2010. WHO and the international diabetes Federation predict that the number of diabetics in Asia could increase to 160 million by the year 2025. It was projected that by the year 2025,250 million people world over will be affected, of these 75% will be from developing countries. But in the year 2008, it is projected that 300 million people with diabetes is expected by the year 2025' [18]. The purpose of the study is [1] to assess the demographic variables among patient with diabetes mellitus [2]. To assess the pre-test and post-test level of random blood glucose level among patients with diabetes mellitus [3]. To determine the effectiveness of yoga therapy among patients with diabetes mellitus [4]. To find the association between the post-test level of random blood glucose level and its demographic variables among patients with diabetes mellitus.

Methods and materials
A qualitative approach with one group pre test and post test design was used to conduct the study in vadapalani, urban health center, Chennai. 60 samples were selected by using a convenient sampling technique. The criteria for sample selection are, Patient who were having diabetes mellitus between 45-65 years, Patients who could read and write Tamil, those who present at the time of data collection. The exclusion for samples are Patients who were physically challenged, Patients who are not willing to participate, those who were not able to read and write Tamil, those who were absent during data collection. Before commencing the data collection, authorized setting permission was obtained from the authorities of selected urban health center. The data was collected for one week in the month of November 2019 from patients with diabetes. The investigator introduced and explained the purpose of the study to the sample and obtained the written consent. The demographic data was collected using self-administered structured questionnaire for patients and the pretest level of random blood sugar was also assessed. Then yoga therapy taught to the patients and it continued for one week. After 1 week, the level of random blood sugar was re- assessed among patients. The data were analyzed using descriptive and inferential statistics. The sample characteristics were described using frequency and percentage. Paired 't' test was used to assess the effectiveness of yoga therapy among patients. Chi square was used to associate the post-test level of random blood sugar with the selected demographic variables.

Results & discussion
Section-A: Demographic characteristics
Regarding age. 20 (33%) members were belongs to the age group (30-40 years), 28 (47%) members were belongs to the age group (40-50 years), 7(12%) members were belongs to the age group (50-60years), 5(8%) members were belongs to the age group (60-70years)., That Regarding sex 30(50%) members were male. 30(50%) members were female.., Regarding educational status. 33(55%) member were below middle education, 20 (33%) members were secondary education, 5(8%) members were higher secondary education, 2(3%) members were degree. Regarding occupation. 3(5%) members were daily wages. 36(60%) members were private employee. 17(28%) members were government employee, 4 (7%) members were self-employed, Regarding income. 4(7 %) members were belongs to below 10000, 13(27%) members were belongs to (10000-15000), 24 (40%) members were belongs to (15000-20000), 19 (32%) members were belongs to above 20000., Regarding Religion Among 60 Samples. 36(60 %)members were Hindu, 22 (37 %) members were Christian, 2 (3 %) members were Muslim., Regarding marital status 50(83%) members were married, 1(2%) members were unmarried, 7(12%) members were widower/divorce, 2(3%) members were separated. Regarding place of residence 32(50%) members were belongs to urban, 28(47%) members were belongs to semi urban., Regarding type of family 53(88%) members were belongs to nuclear family, 7(12%) members were belongs to joint family., Regarding family history of diabetes mellitus 42(79%) members were belongs to Yes, 18(30%) members were belongs to No.

Section-B: Frequency and Percentage distribution of pre-test and post-test level of random blood glucose among patient with diabetes mellitus
Shows the frequency and percentage distribution of pretest on level of random blood sugar. This data reveals that 15 (25%) had mild level, 38(63.3%) members had moderate level, 7 (11.6 %) members had high level of random blood sugar.

Shows the frequency and percentage distribution of post-test on level of random blood sugar. This data reveals that 53 (88%) had mild level, 7 (12 %) members had moderate level, 0(0 %) members had high level of random blood sugar.

Table 1: Pre Test

Random Blood Sugar Level	Frequency	Percentage
Mild Level	15	25 %
Moderate Level	38	63.3 %
High Level	7	11.6 %
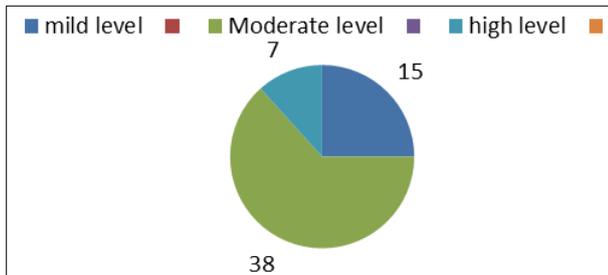
Fig 1: Pre test

Table 2: Post Test

Random Blood Sugar Level	Frequency	Percentage
Mild Level	53	88.3%
Moderate Level	7	11.6 %
High Level	0	0%

The present study findings is supported by O Peter Adams & Larder A (2013) had conducted study on knowledge attitude practices and barriers reported by patients receiving diabetes primary health centre in Barbados a focus group study. Five structured focus groups were conducted for randomly selected people with diabetes.21 patients with a mean age of 59 years attended 5 focus group sections. This study reveals that patients' factors that affected care included the difficulty in maintaining behaviour change practitioner factors included not considering the "whole person" and patient expectations and not showing enough respect for patients [12].

Section-C: Effectiveness of yoga therapy among patients with diabetes mellitus
Reveals that, the post-test mean value is lower than pre -test. The paired 't' value found statistically significant and it shows that yoga therapy is effective on reducing random blood sugar.

Education Booklet	Pre Test	Post Test	Paired 'T' Test
Mean	2.1191	1.9980	0.3584
Standard Deviation	11.9692	9.5362	S***

Section-D: To find the association between the post-test level of random blood glucose among patient with diabetes mellitus and its demographic variables
The present study shows that the demographic variables sex, type of family and family history of diabetes had shown statistically significant association with post test level of RBS at $p < 0.05$ level and the other demographic variables had not shown statistically significant association with post test level of RBS among diabetes patients.
The present study findings are supported by Mohan V, et al., (2018) [13] had conducted a study regarding awareness and knowledge of diabetes in Chennai, the aim of the present study was to assess the awareness of diabetes in an urban rural epidemiology study is on present is an ongoing population based study conducted using a systematic sampling method on a representative population of Chennai the largest city in south India. A structured questionnaire was used to obtain information related to demography. The questionnaire included 5 question on diabetes awareness. The finding suggest that the total 26,001 individuals only 75.5% of the whole population reported that they know about a condition called diabetes or conversely nearly 25% of the Chennai population was unaware of a condition called diabetes. 60.2% of all participants and 76.7% of them self-reported diabetes subjects know that the prevalence of diabetes was increasing in India. Only 22.2% of the all population and 41% of the known diabetic subjects were aware that diabetes could be prevented [13].

Conclusion
Acknowledgement
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Authors contribution
All the authors actively participated in the work of the study. All authors read and approved the final manuscript.

Conflicts of interest
The authors declare no conflicts of interest.

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