



Abstracts
Keynote Addresses



A PUBLIC HEALTH STRATEGY THROUGH YOGA FOR DIABETES PREVENTION AND CONTROL

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The deepening health crisis facing India's increasingly urban population is of concern to all. Soon India is racing to become the Diabetic Capital of the world. Should that not be of great concern to all of us? While more exacting and wide spread prevalence studies are needed to quantify the incidences, it is believed that about 5 to 8% of our population has DM Type 2 in India. While this percentage is more in Indian population in different countries (Singapore about 15.8%), it shows that modern life style featured by speed and greed leading to upsurges of emotions and stresses are at the base of this alarming growth of DM among Indians. It is also well known that Indians are prone to become Diabetic more than other communities due to highest insulin resistance among Indians.

Recent decades have made clear modern medicine's inability to treat Non Communicable diseases caused by life-styles, bringing to public awareness the vital need to incorporate other health care systems into public health policy. Research now indicates that Yoga and India's other AYUSH medical systems can yield systematic improvements in chronic life-style conditions. A summary of simple pre-post studies on large population of DM2, Short term control studies and yearlong RCT trials, etc will be presented by Drs Nagarathna and Shirley Telles tomorrow. Pending more exacting research studies, the existing studies have shown clear indications of the efficacy of Yoga Therapy to deal with DM effectively by its mind-control methods bringing out life-style changes needed to deal with DM. While some studies on reduction of IR by Yoga practices, etc have shown the possible mechanism of reduction in auto Immunity and decreased Insulin resistance, more studies are in the offing to understand

the mechanisms. An earlier conference in prashanti dealt with this aspect bringing out the latest set of studies which will also be presented in the next Key notes.

The role of AYUSH systems in India is well known to precede the revolution of modern medical system by many centuries. Yoga way of life, Ayurvedic and other AYUSH interventions were well set into our health care delivery systems in India. With the incumbent inability of the modern medical system to control and eradicate the DM pandemics due to its one-dimensional bio-medical approach on one hand and the growing popularity of Yoga all over the world, it is wise to adopt a strategy of combined approach for modern medical system and AYUSH systems in general and Yoga in particular to meet this challenge. Yoga provides a good scientific basis and a common platform of PanchaKosha concept for all AYUSH and other health care delivery systems

The question is how to bring these into greater use alongside modern biomedicine to meet the challenge of DM. While it is vital that the advantages of this possibility are accurately evaluated and mechanisms understood better using more exacting research, we should march ahead to use Yoga for meeting this challenge of Diabetes. A policy should be taken by the Govt of India that the AYUSH systems, including Yoga, must be enabled to play their roles in this vital public health challenge. Yoga has to be adopted as a Public health strategy for prevention and control of Diabetes in India. Yoga Therapy as a life style change strategy towards not only better health but also to lead a life of fulfilment and bliss can be a good add-on to the available wide spread modern medical system with all its attendant benefits.



In S-VYASA we launched a Stop Diabetes Movement (SDM) was launched 3 years ago. November 14, 2013 was a great boost to SDM when most centers of VYASA celebrated the World Diabetes Day in different parts of India and the world. In Singapore Dr Nair talking about the modern medical aspects of DM and its treatment, mentioned that the incidence of DM is fast increasing in Singapore and stands at nearly 10% of the population. Among Indians it is 15.8%, he added and said that it will be most relevant and appropriate to start the SDM in Singapore also. In Germany, Dr Hans has planned for the first SDM. In LA it has already started and soon a bigger start will be launched in Houston. In Karnataka, it has shaped up nicely under the leadership of Swarnavalli Math Swamiji in North Karnataka; Sirsi, Yellapra and Kumpta. The results are quite encouraging in all SDM programs held so far in Gujarat, Rajasthan, Pondicherry, Madhya-pradesh also.

We have trained nearly 800 Yoga Therapists throughout the country and the same continues. DrNagarathna heading this movement will personally train many of them during the post-conference workshop in PrashantiKutiram. All yoga Therapists and others interested in participating in this vital movement are welcome to take advantage of this opportunity.

This conference has the objective of providing a platform for all health care professionals so that we all work synergistically to meet this challenge. It should be a combined strategy of policy makers, pharma industries doctors and endocrinologists to participate in this SDM venture. Pharma manufacturers can use Yoga as an add-on to their medicines to reduce the side effects on one hand and to increase the effectiveness of their medicines on the other.

New methods for tracking the subtle changes that occur at the psychological and *prānā* levels before the disease sets in would go a long way to prevent diseases. New subtle energy tools as *NādiTarangini* based on pressure transducers used to find the changes

in blood flow in wrist area to delineate the *doshās* and their predominance, Gas Discharge Visualiser based on plasma field discharge changes in pre-diabetics as also different levels of DM severity, Accugraph measuring the bio-impedance of meridians in general and Diabetics in particular will be brought to research studies, examine with an open mind their usefulness with exacting research.

Different modalities of introduction of DM practices have been evolved to suit the conditions in different parts of the country, population and atmosphere to suit their needs mentioned below:

1. A Ten days camp (morning 2.5 hours or evening 2.5 hours) and follow up weekly once
2. Twice in every Week- end for 3 hours for 6 months
3. Two and half hours any day once a week either in the morning or evening; for one year

Practicing for half to one hour at home is mandatory for good progress to bring the sugar levels first under control. Under the guidance of the Doctors, they may taper off the medication as they continue to control the progress of the disease.

We have set up different teams as follows to build a nice network of all interested persons to participate in this vital venture of the country and we invite you all to join any one of these teams

1. **SDMFA** - Stop Diabetes Mellitus Friends Association
2. **SDMDC** - Stop Diabetes Mellitus Doctors Council
3. **SDMYTT** - Stop Diabetes Mellitus Yoga Therapists (for Diabetes) Team
4. **SDMYRG** - Stop Diabetes Mellitus Yoga Researchers Group
5. **SDMYOW** - Stop Diabetes Mellitus Yoga Organizers Wing



INTEGRATIVE DIABETOLOGY: EVIDENCE SUMMARY AND CHALLENGES IN IMPLEMENTATION

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Integrative medicine [IM] is a new term that emphasizes the combination of both conventional and alternative approaches to address the biological, psychological, social and spiritual aspects of health and illness. It emphasizes respect for the human capacity for healing, emphasizes the centrality of the physician-patient relationship, a collaborative approach to patient care among practitioners, and the practice of conventional, complementary, and alternative [CAM] / traditional medicine [TM] health care that is evidence-based and are recommended based on an understanding of the physical, emotional, psychological, and spiritual aspects of the individual by integrating both allopathic and complementary therapies. Most people who use TM or CAM combine it with conventional medicine, because they perceive the combination to be superior to either alone.

Integrative Diabetes Care:

It is estimated that TM/CAM is used by 80% of the world population for primary health care. Therefore TM/CAM, including Yoga, Ayurveda, herbal medicines, acupuncture, moxibustion, and other therapies, represents an important area of exploration for diabetes therapy. A tremendous number of TM/CAM treatments are recommended for diabetes, and most of these agents are touted as having hypoglycemic effects. For instance, chromium picolinate ¹, stress management

with biofeedback ² and relaxation training ³, acupuncture ^{4,5}, and traditional Chinese remedies ⁶ have been reported to possibly be of benefit to people with diabetes. Some recent research indicates that some CAM agents may have promise as therapeutic adjuncts in the treatment of diabetes, especially raw food therapy and wholefood supplements. However, additional evidence from large, well-designed clinical trials on their efficacy are needed before they can be recommended for use in routine clinical practice.

Only two nationally representative surveys have examined the patterns of CAM use in people with diabetes. The estimates of CAM use ranged from 8% in one study ⁷ to 57% in the other study ⁸. Clearly, these estimates are broad and likely reflect the manner in which CAM was defined and whether or not the definition of CAM use was associated with a provider visit. When CAM use was linked to a CAM provider visit, only 8% of people with diabetes reported using some form of CAM ⁷, whereas 35% to 57% reported CAM use when it was not linked to a CAM provider visit ⁸.

Factors Associated

With TM/CAM Use for Diabetes

Among people with diabetes, the factors that predicted CAM use were similar to predictive factors for the general population. Older individuals (greater than or equal to 65 years) and more educated people (more

than high school education) seemed more likely to visit CAM providers and use CAM remedies than other individuals with diabetes⁷. Dissatisfaction with conventional medicine was not an independent predictor of greater use⁹, although more than a quarter of US adults in the NHIS survey said that they used CAM because they believed conventional medicine wouldn't help them.

Evidence based Integrative Medicine for Diabetes Care:

Traditional Medicine [TM] or CAM	PubMed Citation
Yoga	84
Ayurveda	249
Naturopathy	20
Homeopathy	25
Acupressure	5
Acupuncture	194
Chiropractic	31
Tibetan medicine	5

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DIABETES, THE NERVOUS SYSTEM AND YOGA

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Prolonged exposure to high blood sugar affects the nervous system by influencing the central regulatory chemical signals. The effects on the nervous system can be categorized as three. This presentation will discuss three aspects of the nervous system and mental functions. These are the (i) peripheral and autonomic nervous system, (ii) cognitive functions, and (iii) the impact on emotions. (i) Peripheral neuropathy is a known complication of prolonged, uncontrolled diabetes. This results in several warning symptoms and also causes impaired sensation in the affected area, which often leads to untreated injuries and deformities. Delayed sensory transmission is detected by delayed nerve conduction velocity. A series of studies through the years have shown that the practice of yoga facilitates sensory (auditory) information transmission at the level of the brainstem, thalamus and primary auditory cortex, as well as at the association cortices. Though these studies were conducted on healthy participants they do suggest a possible role for yoga in the management of peripheral neuropathy. Like the peripheral nerves the autonomic nervous system is involved if diabetes is allowed to go untreated. This manifests as several inconvenient and unpleasant symptoms. It can be seen as changes in the heart rate variability. The main change is a shift towards reduced vagal activity. This is seen as reduced variability in the heart rate, assessed as the beat-to-beat interval. There are several yoga practices which increase the heart rate variability. As mentioned above, these studies were carried out on

healthy participants. The results suggest interesting possibilities of yoga techniques in the management of diabetic complications of the autonomic nervous system. (ii) Another area in which the nervous system is affected is cognitive functions. In persons with advanced uncontrolled diabetes there is a risk of compromising the executive functions and attention (focused and selective), primary working memory, as well as functions such as strategic planning. There have been several studies, conducted in healthy children and adults which have shown that yoga techniques influence all the functions mentioned above, both as a short-term effect as well as a longitudinal effect (with intervals between ten days to six months). These results suggest that yoga techniques may also help in reducing the cognitive deficits due to raised blood sugar levels. (iii) Impact on the emotions and mental state. Like all chronic illnesses many people with diabetes experience some extent of anxiety (state and trait) and depression. Yoga practice reduces both state and trait anxiety in people with situational anxiety as well as in persons with disease. More vigorous yoga practices, especially yoga breathing techniques have been found beneficial in depression. A recent survey conducted by us on around 750 individuals with chronic illnesses support these findings. Hence it appears that yoga has beneficial effects for the (i) neurological, (ii) cognitive and (iii) psychological and emotional aspects of diabetes.

Another way in which yoga can possibly help in diabetes is in the prevention. A recent

randomized, comparative trial conducted by us assessed the effects of supervised yoga and supervised walking on anthropometric variables, biochemical variables including adipokines. The results were encouraging and will be presented.

Hence, in summary there appears to be encouraging evidence to support the practice of yoga in managing diabetic complications related to the nervous system.

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THE JOURNEY FROM ANTS TO ANALOGUES AND BEYOND! “HOLISTIC DIABETES CARE – DREAM OR REALITY?”

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Scientists and physicians have been documenting and describing diabetes for thousands of years.

From the origins of its discovery to the dramatic breakthroughs in its treatment, many brilliant minds have played a part in the fascinating history of diabetes.

From the starvation diet and crude insulin extracts, we have made a dramatic progress in the field of diabetes care.

Diabetic patients can now use dietary changes, regular exercise, insulin, and other medications to precisely control their blood glucose levels, thereby reducing their risk of health complications.

This presentation gives a bird eye view into progress of diabetes care since the first description of diabetes and the following were described in detail.

1. Understanding of diabetes,
2. Impact of various landmark studies on the way we treat diabetes,
3. Evolution of diabetes management through decades,
4. Implications of several guidelines on clinical practice,
5. Futurist approaches to diabetes management.

Then, the global impact of diabetic epidemic in terms of increasing prevalence, complications and diabetes related deaths

were detailed out.

Later the complexity of diabetes care, barriers for glycemic control and the need for change in diabetes care model were described in detail.

The need for changing the paradigm with a chronic care model that is affordable, accessible, accurate and under one roof was stressed. This model is exemplified by Karnataka Institute of Diabetology.

The oration ended with hope and vision for the future of diabetes care in India and Karnataka.

About

Karnataka Institute Of Diabetology (KID), Bengaluru

KID is a unique, first of its kind and the only institute in the whole of the country under Government arena, which is dedicated to provide holistic and state of the art care to the diabetic population.

UNIQUENESS OF KID

- Provides state of the art holistic care under one roof.
- Has dedicated, friendly and efficient staff.
- Has a pleasant and vibrant ambience.
- Clean and hygienic setup.

FACILITIES OFFERED IN KID

- Specialised Diabetology Consultations



20th International Conference on Frontiers in Yoga Research and Its Applications

- Well equipped vitreoretinal department
- Well equipped podiatry department
- Nephro Diabetology
- Cardio Diabetology
- Psycho Diabetology
- Neuro Diabetology
- Counseling by Diabetes educator / nutritionist and Laboratory facilities meeting international standards

VISION OF THE INSTITUTE

- To be known as a world renowned centre for diabetes care.
- To provide holistic care of international standards under one roof (Already achieved).
- To attain pinnacle in diabetes care which no centre has ever attained and to make Karnataka find a place of special attention on the world map of diabetes.
- To be known as an Institute which provides affordable, quality and best of care to diabetic individuals across all sections and age groups?
- Carrying out Research in Basic and Epidemiological aspects of Diabetology (which is already an ongoing programme).
- Providing hands on training in diabetes care for the medical and paramedical staff of the peripheral health centres.
- Providing Educational courses, Fellowships, DM course in Diabetology and allied fields



PREVENTION OF DIABETES THROUGH COMMUNITY EMPOWERMENT

Some success Stories from Chennai

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According to the International Diabetes Federation (IDF), India has the second largest number of people with diabetes in the world (1). The epidemic of diabetes in India is spiraling upwards and a recent national study, namely the "Indian Council of Medical Research, India Diabetes (ICMR-INDIAB) study" on prevalence of diabetes was estimated to be 62.4 million individuals with diabetes and 77.2 million with prediabetes in India showing that the epidemic will be worsen in the near future (2). This escalation is due to genetic factors, epidemiological and nutrition transition with regards to changes in dietary habits of our population. Since environmental factors like dietary pattern and physical activity are modifiable, translating prevention trials into action is the urgent need of the hour.

In this presentation, we would like to share some of our success stories using community empowerment.

1. Asiad Colony experience: The Chennai Urban Population study (CUPS) was carried out in two urban residential colonies, one representing the middle income group (Asiad colony in Tirumangalam) and the other representing the low income group

(Bharathi Nagar in T.Nagar) in Chennai city, in southern India. The study was conducted from 1996 to 1998 and as expected, showed a significantly higher prevalence of diabetes in the middle income group (12.4%) compared to the lower income group (6.5%) (3). The results of the study were discussed with the residents of both colonies. After these awareness campaigns, the middle income residents realized the value of physical activity and built a beautiful park adjacent to their colony, by raising funds through their own resources thus increasing not just their physical activity but also people in the neighbourhood. The question was did this help to reduce or at least slow down the rapidly escalating the diabetes rates? A follow up study was done after 10 years which showed that in the middle income group, the prevalence of diabetes increased from 12.4 to 15.4% (24% increase), while in the lower income group, it increased from 6.5 to 15.3% (135% increase) (4). This study is first of its kind in India which involves a real life experience of lifestyle intervention in prevention of diabetes

2. Prevention, Awareness, Counselling and Evaluation (PACE) Diabetes Programme:

Through the Prevention, Awareness, Counselling and Evaluation (PACE) Diabetes Programme, we aimed to raise the awareness about diabetes in the city. Under the PACE project, the following activities were undertaken: Free public awareness campaign, "PACE Education Counters" were opened in many places in Chennai, a documentary film prepared on diabetes was telecast in the local television and radio and a training program was conducted for GPs who were trained on diabetes management and prevention strategies. Through the PACE program, a total of 774 camps were conducted all over Chennai. Overall, 2 million people received diabetes awareness and 76,645 individuals were screened for diabetes of which 13,340 (17%) were individuals with known diabetes, 2,825 (4%) were newly diagnosed cases of diabetes and 5,738 (7.5%) individuals were found to have pre diabetes (5,6). As part of PACE, we also undertook a pilot program to study the effect of short term life style intervention with the help of yoga and walking on metabolic variables. Participants who were randomized to the yoga group were taught standard 'yogasanas' by certified yoga trainers for 30 min every day and those who were in the walking group did 30 mins of walking daily for a period of 3 months. Both the interventions showed significant improvement in several of the metabolic variables.

3. Diabetes Community Lifestyle Improvement Program (D-CLIP): The Diabetes Community Lifestyle Improvement Program (D-CLIP) was taken up to take diabetes prevention to the community in a 'real-world' setting (7). D-CLIP uses a stepwise model of diabetes prevention with lifestyle as a continuous approach and metformin added when needed. Individuals with prediabetes were randomized into two

arms - an intervention and a control arm. The intervention consisted of aggressive lifestyle modification through 16 once weekly classes regarding diet and exercise followed by 8 maintenance classes. A unique feature of D-CLIP is its effort to involve members from the community (called 'Dia-ambassadors') in the program along with 'peer support groups' or 'buddy systems' which makes this a sustainable program driven by the community for the community.

4. Brown Rice Intervention Study: In a large epidemiological study, we showed that consumption of white rice was strongly associated with risk type 2 diabetes in our population (8). We then did an intervention study which showed that replacing white rice with brown rice could improve 24 hour blood glucose and meal insulin levels (9). Therefore, it is feasible to assure that adopting a diet that is rich in whole grains along with increasing physical activity could be a cost-effective, feasible and sustainable approach to diabetes prevention and control in India.

5. The Chunampet Rural Diabetes Prevention Project: There is an urgent need for translating these into the community. Unfortunately, 78% of Indians live in rural areas but 80% of doctors practice in urban areas. We therefore had to innovate and develop a rural diabetes model called as 'The Chunampet Rural Diabetes Prevention Project (CRDPP). CRDPP was developed with the aim of not only providing diabetes health care, but also to take up diabetes prevention through the use of telemedicine. With the help of the telemedicine van 27,014 individuals (86.5% of the adult population) were screened in and around the 42 villages of Chunampet. The mean glycated haemoglobin levels among the diabetic subjects in the whole community decreased from $9.3 \pm 2.6\%$



to 8.5±2.4% within a year (10). Less than 5% of patients needed referral for further management to the tertiary diabetes hospital in Chennai. Thus, the CRDPP can be used as a model for diabetes prevention and health care delivery in undeserved rural areas of developing countries like India.

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PREVENT INDIA BECOMING “DIABETIC CAPITAL”, JOIN HANDS FOR “STOP DIABETES MOVEMENT”!

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India will be the global Capital of Diabetes

In 2010, prevalence of diabetes worldwide among adults was 6.4% and it is estimated that by 2030 it will increase by 7.7%. By 2030, diabetes will be affecting approximately 439 million people. In this gap of 20 years (2010 to 2030), the increase will be 69% in developing countries and 20% in developed countries. In fact, the problem is worsening faster than expected as seen by these figures: in 2000, the projected figure for 2030 was 366 million [1] and by 2010, the figure has reached 439 millions. It is now established from epidemiological studies in Asia that approximately 15 per cent or 1 in 7 adults has either increased fasting glucose or impaired glucose tolerance based on the WHO criteria [2,3] of which an estimated 5 to 12 per cent develop Type 2 diabetes annually [3]. The increasing threat of T2DM is highlighted by following facts:

- ▶▶ 347 million people worldwide have diabetes [4].
- ▶▶ In 2004, an estimated 3.4 million people died from consequences of high fasting blood sugar [5].
- ▶▶ More than 80% of diabetes deaths occur in low- and middle-income countries [6].
- ▶▶ WHO projects that diabetes will be the 7th leading cause of death in 2030 [7].

India is threatened with the epidemic of Type 2 Diabetes Mellitus (T2DM) with second largest number (>61 million) of diabetics, expected to double by 2030 [8]. Alarming things are, T2DM is increasing in rural India too [9] and its onset is shifting to younger age [10]. Due to unhealthy lifestyle [11], a large proportion of the population is at “high risk” of progression to T2DM [12] which indicates a huge burden on nation’s health and economy in near future. The national T2DM prevalence in 2011 was already 8.3 percent [12]. In 2006, diabetic population in India was 40.9 million and it is estimated to be 69.9 in 2025 and 80 million in 2030. These observations, together with the high rates of complications and mortality [13] associated with T2DM, demonstrate that diabetes prevention is an urgent priority for the government and other organizations in India.

Need for Lifestyle Intervention

In spite of great technological advancement and spending millions of dollars in research to develop drugs for the management, it has not been possible to reduce the rising incidence of diabetes type 2 and the associated morbidity and mortality. Five classes of oral agents (sulfonylurea, biguanide, alpha-glucosidase inhibitor, thiazolidinedione, and meglitinide) are approved for the treatment of diabetes. Oral therapy is indicated in any patients in whom diet and exercise fail to achieve acceptable



glycaemic control. Although initial response may be good, oral hypoglycaemic drugs may lose their effectiveness in a significant percentage of patients. These drugs have various side effects e.g. sulfonylurea causes weight gain due to hyperinsulinemia [14, 15], biguanides cause weakness, fatigue, lactic acidosis, alpha glucosidase inhibitor may cause diarrhoea while thiazolidinediones may increase LDL-cholesterol level. Weight gain and hypoglycemia are common side effects of insulin [16,17]. Vigorous insulin treatment may also carry an increased risk of atherogenesis [17]. Also, **several studies have shown that intensive glycaemic control does not reduce the incidence of cardiovascular events or mortality** [18]. The **reasons** for the increased mortality with very tight glycaemic control as reported in three large studies (ACCORD study -Action to Control Cardiovascular Risk in Diabetes, ADVANCE study -Action in Diabetes and Vascular Disease: Preterax and Diamicon MR Controlled Evaluation and VADT study -Veterans Affairs Diabetes Trial), are **unclear** [19]. Further, rising costs for drugs and investigations on a long term basis add to the financial burden which a large section of the poor living in India cannot afford.

Lifestyle intervention has been found to be efficacious, safe, and cost-effective method [20, 28, 30, 37]. The **major challenge** is to translate lifestyle interventions into **prevention programs** at the national level [21] for which it is important to look at lifestyle interventions which are not resource-intensive and those which are nearer to the community that people live in [22].

SDM by International Diabetes Center (IDC) and American Diabetes Association (ADA)

Based on these observations of increasing

incidence of DM2 in spite of the large budget that is being spent on discovery of newer drugs, treatment and preventive programs, the International Diabetes Center (IDC) in collaboration with American Diabetes Association launched SDM [23] (Staged Diabetes Management) in the year 1988, to translate the latest research findings into clinical practice and make the information available to a wide audience of primary care doctors throughout the world. Within these 25 years, SDM by IDC has been implemented in a variety of clinical settings throughout the world including USA [24]. Training was provided in 69 medical centers of the Indian Health Service (IHS - the US Federal health program for Native Americans and Alaska Natives). Each centre adopted programs that consisted of practical solutions to the detection and treatment of diabetes, its complications, and such areas as metabolic syndrome and pre-diabetes along with intense education on life style change as the primary modality that goes beyond the standard medical care recommended by the American Diabetes Association (ADA). In Brazil, improved screening, increased reliance on insulin-based therapies, the use of multidisciplinary teams, and emphasis on diabetes education resulted in a significant improvement in HbA1c levels. Adoption of staged diabetes management program through consistent diabetes management among general practitioners in Germany resulted in improved blood glucose (glycaemic) control and quality of life along with a reduction in hypoglycemia events. SDM also led to significant changes in the organization of care for people with diabetes in Singapore, Mexico, Russia, and Turkey by creation of specialized clinics for screening, diagnosis, diabetes education, and follow-up. It has led to the integration of care and

education. The material was translated into 10 languages including Japanese, Russian, Spanish, and Chinese that have been adopted by medical societies and government agencies in many countries as a means of implementing national standards of practice.

SDM (Stop Diabetes Movement) by VYASA in India

Vivekananda Yoga Anusandhana Samsthana (VYASA) through its 30 years of continuous research has evolved Specific Integrated Yoga Therapy modules for chronic diseases based on intense search of the yogic literature that is being continuously updated based on the results after implementation of the modules. VYASA in its Arogyadhama (200 bedded residential integrative health center) through residential treatments has treated nearly 4 Lakh patients of Non-Communicable Diseases. Apart from the publications that provided the scientific evidence through RCTs [20, 25], the observations on large number of patients with DM2 who are able to get back their wellness (stop their insulin requirements, maintain their weight, better sleep, energy levels and quality of life) has been a rewarding experience at the Arogyadhama.

Evidence for Yoga in Management and Prevention of Diabetes

Yoga is an old, traditional, Indian psychological, physical and spiritual regimen that has been studied for several decades for its role in the management of several chronic diseases including hypertension [26], asthma [27], obesity [28], neuromuscular diseases [29], psychiatric illnesses [30] and coronary artery disease [31]. There are about 65 published research papers pointing to the efficacy of yoga based lifestyle programs from round the globe.

Yoga based life style intervention, an innovative form of physical activity and stress management can be considered the best intervention for community-based management programs in tackling the burden of type 2 diabetes [22] as it has already shown its efficacy in different domains of DM2 [32]. Yoga is also easy and inexpensive to maintain, requiring little in the way of equipment or professional personnel, with some studies indicating excellent long-term adherence and benefits [30-33]. Table 1 summarizes the results of some of the important studies which have used yoga based lifestyle interventions.

These beneficial effects of yoga seem to be due to the relaxation response that has the potential to reduce the heightened stress responses through techniques that promote mastery over the modifications of mind [38].

In a recent randomized controlled trial (funded by the ministry of health and family welfare, new Delhi) [20], we recruited 277 DM2 subjects (both male and female, 28-70 years) and randomized them into two groups; one group practiced yoga based lifestyle intervention that included lecture sessions on yogic lifestyle, *asanas*, *pranayama* and meditation, while the control group followed comparable exercise based life style program that included life style education and physical exercises (one hour daily for 9 months with supervised practices for both groups). Yoga based life style modification program was better than exercise in decreasing oral hypoglycemic medication requirement; yoga decreased LDL and increased HDL better than exercise. Yoga was found to be similar to exercise based life style modification in reducing blood glucose, HbA1c, Triglyceride, total cholesterol and VLDL [20]. Yoga based lifestyle offers a comprehensive solution to the problem of diabetes: as a preventive program



[39] for prediabetes, for risk reduction [40] and management of complications [41-43].

Inspired by these research data and the amazing results, VYASA has undertaken an ambitious nationwide program, the SDM "Stop Diabetes Movement" to bring down the rising incidence of diabetes in India. Stop Diabetes Movement (SDM) is a community (Public - Private Partnership) effort to prevent India from becoming the world capital of Diabetes Mellitus using the Integrated Approach of Yoga Therapy (IAYT).

Objectives of SDM of VYASA ,India

- (i) **Primary prevention of DM2 in India:**
Prevent Pre-diabetics to become diabetics, and
- (ii) **Secondary prevention of DM2 in India:**
Converting Diabetics From Severe to moderate, Moderate to mild, and from Mild to normal.

SDM by VYASA, Bengaluru: Progress in Three Years

VYASA first announced SDM with an aim to stop the epidemic spread of diabetes in India in the year 2008 .Since then several SDM camps have been conducted camps in many states viz Karnataka, Gujarat, Rajasthan, Maharashtra , Tamilnadu, Andhra and Assam. Under this scheme around 600 volunteers (from different states of India), have been trained to become efficient yoga therapists to teach Yoga for diabetes. In the year 2013, camps have been conducted in Rajkot (Gujarat), Udaipur and Chittorgarh (Rajasthan), Pondicherry (Tamilnadu) and Chikhali (Maharashtra). Five different yoga modules have been evolved to provide stepwise progression of the practices. The first module is being implemented in all these camps (Table 2). Only a small number of investigations are monitored in these camps

(7 days) to keep the costs to the minimum. About 1000 patients have been registered and taught the first module of yoga in these five camps of 2013. Significant improvements ($P < 0.001$) have been observed in FBS, PPBS and Lipid profile. Also, the subjective feedback from patients attending these camps shows improvement in the quality of life and sleep with reduction in symptoms of fatigue. The major problems faced by VYASA included shortage of man power and funding for implementation of the program in more places, training of more therapists and conducting population based documented follow ups.

An appeal

We shall take pride in active participation and become the number one country to contribute something original from Bharat to the medical fraternity by active participation in this SDM that is now an evidence-based Indian contribution. We request active participation by the delegates and speakers and guests of 20th INCOFYRA (January 2nd to 5th, 2014) by S-VYASA University, Bengaluru, dedicated to SDM. This conference hopes to engage the collective wisdom from all areas: physicians, professionals, policy makers, industry partners, and form a partnership, which will integrate Yoga into mainstream health care delivery systems to address the problem of diabetes.

Conclusion

Diabetes is a major health problem and a leading cause of morbidity and mortality all over the globe; it is reaching epidemic levels in India. Yoga based lifestyle, with its holistic approach, offers a comprehensive solution to the complex problem of diabetes. Stop diabetes movement (SDM) by VYASA is a nation-wide initiative which is spreading globally to curb diabetes through yoga based

lifestyle intervention. This article invites one and all to join hands with VYASA and “Stop Diabetes” through Yoga!!

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Table1: Summary of Major Studies on Yoga Based Lifestyle Interventions for Type 2 Diabetes Mellitus

Findings, by clinical measure	Study design		
	Uncontrolled clinical trials	Non-randomized controlled clinical trials	Randomized clinical trials
Fasting glucose Reduced	32, 34, 40, 42	43, 36	27, 22
Post-prandial glucose Reduced	32, 34, 42	43, 36	22
Reduced fructosamine		43	
Reduced OGT maximum/AIT	42		
Fasting glycated hemoglobin Reduced	32, 42		27, 37, 18
Total cholesterol Reduced	<u>34, 32</u> , 40	43, 31, 36	37, 20
Triglycerides Reduced	34, 32, 40		20
Low density lipoprotein (LDL) Reduced	34, 32, 40	36	37, 20
High density lipoprotein (HDL) Increased	34, 32, 40		37, 20
Reduced VLDL	34, 32, 40		20
Reduced Oxidative Stress		41	



Table 2: Yoga Module 1 for SDM

No	Name	Posture	Practices
1.	Breathing practices (5 minutes)	Standing	Hands Stretch Breathing
		Sitting	Shashankasana Tiger Stretch Breathing
2.	Loosening practices Shitihilikarana vyayamah (5 minutes)	Standing	Padahastasana-Ardhachakrasanavyayama
			Trikonasanavyayama
			Kati parivartanavyayama (Spinal Twist)
		Sitting	Chakkichalana
			Bhunamanasana
Supine	PawanmuktasanaKriya		
Prone	Dhanurasana Swing		
3.	Relaxation (5 minutes)		Instant Relaxation Technique
4.	Surya Namaskara (5 minutes)		12 steps
5.	Asanas (10 minutes each)	Standing	Ardhakatichakrasana
			ParivrittaTrikonasana
		Sitting	Vakrasana
			Ardhamatsyendrasana
	Prone	Bhujangasana Dhanurasana	
Supine	Pawanmuktasana Matsyasana		
	Relaxation(10 minutes)		Deep Relaxation Technique
6.	Kriyas		Kapalabhati, Vaman Dhouti (Once a week)
7.	Pranayama (10 minutes)		Nadishuddhi
			Bhramari pranayama
			Om chanting
8.	Meditation (20 minutes)		Cyclic Meditation



Abstracts

Invited Talks

Track A:
AYUSH Systems
in Diabetes Research



HOLISTIC THERAPY OF NEUROGENIC COMPLICATIONS IN DIABETES MELLITUS INCLUDING YOGA-THERAPY

Dr. Christoph Garner

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Neurogenic complications are common symptoms in diabetes mellitus as well in type I as in type II. Macro- and microvascular changes as well as autonomic neuropathy may be distinguished. On the macrovascular side the risk for arteriosclerosis and following myocardial infarction, stroke or peripheral arterial occlusiv disease is significantly enhanced. On the microvascular side polyneuropathy and autonomic neuropathy causing numbness and pain in feet as well as loss of cardiac rhythm variability may be encountered.

Diagnosis of the neurogenic complications is based on ultrasonic doppler investigation of the neck vessels concerning the risk for arteriosclerosis and on clinical (testing sensitivity and vibration threshold) and electrophysiological measurements (EMG, NCV) concerning diabetic neuropathy.

Holistic therapy is primarily based on reducing elevated blood sugar levels using e.g. diet with controlled intake of carbohydrates, drugs and ayurvedic procedures. Various Yoga-techniques are helping to lower the stress level and so lower the blood sugar level. Homoeopathic and ayurvedic drugs are helpful to control neurological symptoms like pain, vertigo and numbness.

CARDIAC AUTONOMIC FUNCTION AND QUALITY OF LIFE IN PATIENTS WITH DIABETES IMPROVES WITH PRACTICE OF SUDARSHAN KRIYA YOGA

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BACKGROUND:

The aim of this study was to observe the effect comprehensive yogic breathing (Sudarshan Kriya Yoga [SKY] and Pranayam) had on glycemic control, QOL and cardiac autonomic functions in patients with diabetes.

MATERIALS AND METHODS:

This is a prospective randomized controlled intervention trial. Cardiac autonomic functions were assessed in 64 diabetics. Patients were randomized into two groups, one group receiving standard therapy for diabetes and the other group receiving standard therapy for diabetes and comprehensive yogic breathing program. Standard therapy included dietary advice, brisk walking for 45 min daily, and administration of oral antidiabetic drugs. Comprehensive yogic breathing program was introduced to the participants through a course of 12 h spread over 3 days. It was an interactive session in which SKY, a rhythmic cyclical breathing, preceded by Pranayam is taught under the guidance of a certified teacher. Glycemia control parameters, quality of life (QOL) assessment and cardiac autonomic function tests were done before and after 6 months of intervention.

RESULTS:

In the intervention group, after practicing the breathing techniques for 6 months, the improvement in cardiac sympathetic functions was statistically significant (P 0.04). The change in sympathetic functions in the standard therapy group was not significant (P 0.75). Parasympathetic functions did not show any significant change in either group. When both parasympathetic and sympathetic cardiac autonomic functions were considered, there was a trend toward improvement in patients following comprehensive yogic breathing program (P 0.06). In the standard therapy group, no change in cardiac autonomic functions was noted (P 0.99). There was also improvement in the QOL, post prandial plasma glucose in the group practicing Sudarshan Kriya compared to the group not practicing.

CONCLUSION:

Cardiac autonomic functions, quality of life and post prandial plasma glucose improved in patients with diabetes on standard treatment who followed the comprehensive yogic breathing program compared to patients who were on standard therapy alone.



HEART RATE VARIABILITY AND DIABETES

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Recent studies have identified a possible link between heart rate variability (HRV) and diabetes or glucose intolerance. In other words, loss of autonomic function resulting in a reduction in HRV may also have negative effects on the body's ability to process and store glucose.

Your heart rate and its rhythm are largely under the control of the autonomic nervous system (ANS), which is comprised of the sympathetic and parasympathetic branches. It has long been known that the time between beats of the heart normally varies slightly. The important things to remember are that a loss of HRV can predict cardiovascular mortality and, in diabetes, is frequently associated with neuropathy of the ANS and that HRV normally declines slowly with advancing age.

In healthy individuals, when blood glucose levels fall the SNS is activated, stimulating glucose production in the liver and kidney and reducing muscle use of glucose by way of adrenal release. Vagal (parasympathetic) stimulation has the opposite effect. Insulin release from the pancreas, which stimulates glucose uptake by cells, reduction in glucose release from the tissues and increased glucogen formation by the liver. Hypoglycaemia, or low blood sugar, leads to sympathetic activation increasing blood glucose levels, while hyperglycaemia, high blood sugar, results in parasympathetic activation to reduce blood glucose levels. These two systems work in unison to maintain healthy blood glucose levels. Therefore, impaired parasympathetic regulation (Decreased HRV) increases, risk for chronic hyperglycaemia and hyperinsulinaemia (raised insulin levels, also known as insulin resistance), which is a precursor for diabetes mellitus.

What can be done to preserve your HRV? In addition to therapeutic, lifestyle changes and appropriate medications, restoration of HRV has been demonstrated using increased physical activity, deep breathing, and **spending time for some selfless work regularly (altruistic frame of mind)**.

Physical activity can have a powerful effect given that it improves parasympathetic (vagal) tone, which is apparently the first thing to go with central nerve damage related to diabetes. Taking some time out of your busy day to relax, breathe deeply, and destress may be an effective way to prevent declines. Equally important is to understand the Laws of Nature and put them in practice—engaging in some selfless work regularly is one.

An important finding of modern Clinical Research is maintaining your HRV is the key to your well-being, longevity, and successful aging.



DIABETES PREVENTION AND MANAGEMENT FROM THE AYURVEDIC PERSPECTIVE

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Ayurveda was one of the earliest medical systems to describe Diabetes mellitus. Classical texts like CarakaSamhita clearly distinguish two kinds of diabetes that can be seen clinically, which is today understood as Type 1 and Type 2 diabetes. A careful study of the texts reveals that Ayurveda also understood the gradual progress of diabetes in three phases which today we understand in terms of insulin resistance, insulin deficiency and insulin dependency. There was also a good insight into the prognosis with the disease being curable in the first phase, manageable in the second phase and incurable in the third phase. Ayurveda targeted the pre diabetic state for aggressive management and greatly emphasises exercise and diet as crucial components of both prevention and management of diabetes. Apart from this, Ayurveda also highlights the importance of purificatory measures to correct the metabolic processes and scavenge the harmful byproducts that accumulate in the system. When it comes to diet, Ayurveda has carefully evaluated and listed the diet articles based on their digestion and absorption reminding us of the concept of glycemic index. One of the strengths of Ayurveda in management of diabetics is the pharmacological agents that can both prevent and manage complications associated with diabetes like microvascular changes leading to conditions like retinopathy, neuropathy and nephropathy. This paper will discuss how the strengths of Ayurveda when integrated with biomedicine and yoga can offer a more comprehensive approach to prevention and management of diabetes with less dependence on chemical drugs and better outcomes in terms of quality of life in the long term.



IMPROVING FITNESS OF SOLDIERS AT HIGH ALTITUDE: AN APPLIED YOGIC ASPECTS

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Maintaining optimum physical fitness of soldier is an important pre-requisite standard to perform or execute any successful operation in combat military situation at any extreme climatic environments. Trade specific various combat fitness of soldier requires to perform uniformly continuous or short duration walking, running, explosive muscular strength for lifting carrying loads at any adverse field locations like hot desert, high altitude, under water and low intensity conflict stress situations, without compromising physical fitness standards. To cope up with the mobilization of troops from different climatic zone and optimisation of physical fitness, research studies were conducted and evaluated at sea level, high altitude, hot dry & hot humid conditions for the supplementation of equivalent types of physical fitness package. A series of yoga research projects were carried out to explore the prophylactic, promotive and curative potentials of yoga with particular reference to its applications to soldier systems. Scientific research studies were conducted with modern technologies to develop yoga package for different wings of soldier system. Standard yoga postures were performed by proficient and validated by taking real time recording of various physiological parameters and evaluated with interpretations. Physical fitness relevant parameters like oxygen consumption, pulmonary ventilation, energy expenditure, respiratory quotient, blood pressure, oxygen saturation and heart rate were monitored on-line during different paces of suryanamaskar and validated with graded exercise protocol by cycle ergometry. Our research studies on yogic practice established improvements in aerobic & anaerobic capacity, lung capacity, body flexibility, muscular strength, cognitive function etc. it also helps to achieve a stable autonomic balance with better thermo regulatory efficiency to cold stress and facilitates acclimatization process. Aerobic capacity and oxygen pulse were improved significantly after yogic training as compared to regular physical exercises. If yogic practices are supplemented with regular physical exercises, it helps to attain cardiorespiratory conditioning at a rate of 15-33% of an individual's maximum aerobic capacity. As per the climatic conditions like high altitude, hot & humid and different trade specific need, yoga packages were formulated accordingly by synchronizing practices of Pranayama, asanas and meditations with different durations. The research on yoga with applied advanced technology resulted to explore its potentials scientifically to use it effectively for the performance improvements of soldiers.

ADD ON EFFECT OF CLINICAL YOGA PACKAGE IN GLUCOSE METABOLISM IN IMPAIRED GLUCOSE TOLERANCE AND TYPE 2 DIABETES MELLITUS – A LONG TERM STUDY

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Summary of three studies on Diabetes mellitus conducted at Clinical Research Institute for Yoga and Ayurveda, Kottakkal are presented here. The studies aimed i) to evaluate the add on effect of clinical yoga package on glycaemic control in patients with impaired glucose tolerance and type 2 diabetes mellitus who have practiced yoga regularly for a period of 15 days. ii) to evaluate the effect of mental imagery techniques in diabetic patients during group meditation iii) to estimate the relative association of regular yoga practice for longer duration and reduction of glycemic index using a Retrospective cohort design.

METHODS:

148 participants (33 persons were having Impaired Glucose tolerance and 115 were having type 2 diabetes mellitus) were selected from the participants of yoga treatment camps for diabetes. The mean age of the participants was 48(SD 9.41) with 123 males and 25 females. An open clinical trial was conducted. The interventions were Loosening Exercises, Yogic postures, Classes on different topics, shankhprakhshana, kapalabhati, nadishuddhi pranayama, bhastrikasuryabhedana and Cyclic meditation. Assessment of efficacy is done using oral glucose tolerance test.

Later these patients were invited for follow up yoga camps (reorientation camps) and a total number of 30 patients were participated. The relative association of regular yoga practice for longer duration and reduction of glycemic index using a Retrospective cohort design.

RESULTS :

Oral glucose tolerance test result showed that fasting blood sugar value 148.64 of before the camp has reduce to 138.43 after the camp; is significant at 1% level. Similarly half an hour value of 241.89 has reduce to 228.47; is significant at 5% level and two hour value of 280.77 has reduce to 263.35; is significant at 1% level.

The result of the Retrospective cohort study implies that those diabetic patients who practice yoga regularly have 1.36, 1.53 and 1.5 times more chance to reduce the glycemic index in respect to fasting, half and two hour OGTT than those diabetic patients who practice yoga irregularly. This study also implies that diabetic patients who are practicing yoga regularly have 3.63, 1.63 and 2 times more chance to reduce the glycemic index in respect to fasting, half and two hour OGTT than those diabetic patients who are not practicing yoga. The OGTT of patients who imagined bitter taste found significantly reduced compared to those who imagined sweet taste and not made any taste imagination.

Key words: clinical yoga, diabetes, OGTT



YOGIC BREATHING AS AN ADJUNCTIVE THERAPY

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This is an ongoing Basic & Clinical research study on Yogic Breathing (Pranayama). Non-pharmacologic and non-invasive practices such as Yoga can facilitate effective management of symptoms associated with various diseases including cancer and cardiovascular diseases. Pranayama regulates autonomic response, increase vagal tone, alter the amplitude and frequency of inhalation/exhalation cycles, and thus together may bring about beneficial changes to physiological and psychological status in health and disease.

My objectives include

- 1) How does Pranayama works at the molecular level?
- 2) What are the clinical conditions where Pranayama could be useful?

My talk will include:

- 1) Review of literature on research studies on Pranayama
- 2) My experiences with Yogic breathing in cancer radiation therapy, Cardiopulmonary Rehabilitation, elderly population and Alzheimer's patients.
- 3) Insight into fourteen specific Sutras from the ancient literature Thirumanthiram related to Pranayama.



YOGA AND DIABETES: A DISEASE-BIOLOGY APPRAISAL AND FUTURE RESEARCH DIRECTIONS

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Diabetes mellitus is considered as a complex disease whose pathogenesis originates from multiple cellular alterations and gene-environment interactions. Extensive research directed to the better understanding of the pathogenesis of diabetes by molecular medicine techniques now points out that chronic stress signaling (oxidation, inflammation, glycation, endoplasmic reticulum (ER) stress, autophagy, proteosomal stress) could be the common denominators in both the genesis of diabetes and its complications. Apart from these endogenous stressors, psychosocial stress and depression are closely associated with diabetes. Modern life is full of stress, life-style stress. The factors associated with life-style stress are duration of the stress, the nature of stressors, and lifestyle. *It is at this context, yoga for diabetes prevention and control assumes importance.* Recent studies show that yoga brings about a balance in autonomous nervous system and regulates metabolic parameters (blood pressure, glucose, lipids) by stabilizing sympathetic and parasympathetic nervous system. It mainly acts via down regulating the hypothalamo-pituitary adrenal (HPA) axis that trigger as a response to physical or psychological stressors, leading to a cascade of physiological, behavioral, and psychological effects. By reducing perceived stress, anxiety and physiological arousal, yoga appears to modulate stress response systems. In the *Chennai Urban Rural Epidemiological Study (CURES)*, we have demonstrated increased oxidative stress, proinflammation, advanced glycation and ER stress not only in patients with type 2 diabetes and but also in subjects with prediabetes. In this context, it is important to notice from the emerging literature that yoga practices also decreases endogenous oxidative and inflammatory signaling. A recent transcriptome study in relaxation response (RR) practitioners (that includes meditation and yoga) revealed that RR practice enhanced expression of genes associated with energy metabolism, mitochondrial function, insulin secretion and telomere maintenance, and reduced expression of genes linked to inflammatory response and stress-related pathways. The long-term consequences of frequent high stress reactivity may include greater cortisol responses and accelerated telomere shortening. In fact, we are the first to demonstrate increased telomere shortening not only in patients with type 2 diabetes but also in subjects with prediabetes. It has been shown that yoga can lead to improved mental and cognitive functioning and lower levels of depressive symptoms accompanied by an increase in telomerase activity (and maintenance of telomere length) suggesting improvement in stress-induced cellular aging. It is no doubt that meditation, yoga, and other mind-body therapies are becoming more popular and accessible through local health clubs and wellness centers. *'Is mind-body relaxation by yoga effective to combat lifestyle stress'* is a virgin territory of research with a new dimension of scientific approach, which is a reliable avenue not only to have holistic health



but also to combat lifestyle disorders including diabetes. Future research directions in this exciting field include: comparative evaluation of different yoga techniques, documentation of defined metabolic benefits of yoga, controlled-randomized clinical trials for prevention of diabetes in prediabetic population, yoga intervention to delineate the interactions among diabetes, depression and cognitive dysfunction, and documentation of primary outcomes of glucose control and metabolic benefits supplemented by mechanistic disease-biology insights through biomarker and omics investigations.



INTEGRATIVE DIABETOLOGY: FUTURE DIRECTIONS FOR DEVELOPING COUNTRIES

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Any life style related disorder to humans generated at a physiological system can be effectively corrected without much medication and economic damage to the patient. Under many such metabolic disorders diabetes tops the list as majority of our human population are prone to this physiological disorder across the globe. The problem is more serious in nature in developing countries mainly due to shift from poverty to affordable richness in these countries. Diabetes being the component of X syndrome is relatively of recent origin where in change in human activities are found to be of a major cause. Tele-medicine on one hand and modified life style using integrated safe and affordable medical practices on the other hand seems to be the future trend to control this disorder. Maintenance through medication management seems to be expensive to even developed countries where support schemes are available. Directions of management in future is based on translational research. Application of basic sciences to applied technology is the foundation for translational science of the future.

By bringing down the sugar concentration in developed country in contrast to increasing the sugar concentration in a developing country are the finest examples of improving economy with a win win strategy. Sugar policy in India, Insurance driven strategy in US and recent population based research in India using are some of the finest examples of strategic studies guiding us in near future. Finally the blending of ancient wisdom with modern science will generate simple and affordable solution to handle the global diabetes problem.



Abstracts

Invited Talks

Track B:
Professional
Partnership Conclave



NETWORKS OF YOGA ASSOCIATIONS IN GERMANY

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Yoga has increased in social significance in Germany in the last decades. In the late 1960s a professionalization of yoga has taken place in Germany. Despite this popularity, the yoga teacher has not yet been the subject of empirical investigation. The subject of the lecture will be the analysis of the oldest and biggest Professional Association for Yoga Teachers (www.yoga.de) in Germany which is open for all traditions. The study design is based on the questionnaire of the "General Population Survey of the Social Sciences in Germany" (www.gesis.org/allbus). Since 1980 a representative cross-section of the population is carried out in Germany.

These issues have been integrated into the BDY yoga teacher survey (Weber 2008). Thus, the results of the BDY yoga teacher survey can be compared to the total German population.

This innovative approach in the context of yoga allows the identification of similarities and differences between these two groups. At the same time, the survey provides the opportunity for future research on time series to benefit from the results.

The present work takes on a topic that is located between Religious Studies and geography of education. For the first time in Germany a total Yoga Teachers Association has been studied empirically, the professional association of yoga teachers (BDY). The BDY is the first major association (BDY-2600 yoga teachers), which sought to establish a uniform training program and knowledge of yoga teachers. The current research objective: first to show how this significant association wins in the German scene yoga yoga teachers as knowledge conveyed within the organization and how the yoga teachers see themselves primarily by their self-understanding. For the first time a book was published in 1990 by Fuchs on the subject of yoga history in Germany and the self-understanding of German yoga teachers. Therefore, the present work is understood both as a continuation of the work of Fuchs. On the other hand, the work on Fuchs goes out to the extent that it overcomes by following the above-mentioned shortcomings of Fuchs:

1. New, recent data
2. Innovative methods of Statistics
3. New survey sheets
4. Date, on the state of research adapted questionnaire design
5. Longitudinal study compatibility
6. Questions and comparisons with representative population surveys (ALBUS 2002)
7. Sociologically interesting questions

In addition, the present work the only previous post about yoga and yoga teachers in the area of Religious Studies. The present work has two main objectives. First, the research gap regarding the yoga teacher should be closed to provide a basis for further studies in the field of yoga. Secondly, to support the BDY to optimize the development of Yoga in Germany.



YOGA FOR CORONARY ARTERY DISEASE

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The modern era industrialization and globalization have brought in a pronounced change in our life style. The stress, faulty diet, wrong habits and sedentary lifestyle have given rise to metabolic problems like dyslipidemia, and obesity. This has resulted in steep rise of life style related chronic diseases such as diabetes, hypertension, and coronary artery disease (CAD).

Increased intrinsic neurohormonal activity has been associated with increased predisposition to ischemic heart disease. The stress has major effect on the autonomic nervous system (ANS). The ANS is involved with virtually all the disease conditions (Clinical autonomic disorders- by Philip A. Low). The imbalance in the ANS system can cause physio-pathological changes in human body. By regular practice of yoga ANS get regulated. The sympathetic overdrive in disease conditions get compensated by parasympathetic predominance in yoga practitioner.

Ornish et al., has showed short term and long term benefits from yoga based lifestyle on coronary lesions and clinical manifestation of the CAD.

Manchanda et al., has shown similar benefits in Indian population. In this randomized controlled study patients with angiographically proven coronary artery disease who practiced yoga exercise for a period of one year showed a decrease in the number of anginal episodes per week and decrease in body weight.

Jaydeva et al., in a similar study done at Yoga Institute Mumbai with more number of Indian urban patients, has again proved the definite benefit from the yoga based life style.



CORRELATION BETWEEN YOGA INTELLIGENCE AND DECREASING THE RISK FACTORS FOR TYPE 2 DIABETES

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In this paper, we research to which extent, the indicators of the yoga intelligence helps in monitoring the decreasing level of risk factors of type 2 diabetes. Different forms of physical activity and appropriate diet are recommended to prevent or delay the onset of type 2 diabetes. Yoga is considered to help in weight loss, it improves the glucose level, blood pressure, HbA1c and lipids level. The level of decreasing the risk can be followed by the indicators of the yoga intelligence. Type 2 diabetes is the growing problem in the whole world. Standard treatments for this health problem, don't give long term results. This paper represents a critical overview of the articles that treat efficiency of the yoga practice in treatment of the type 2 diabetes. For this purpose, we used electronic research of the data basis, EBSCO, MEDLINE and Scopus. The articles, pilot studies and conducted researches were electronically researched. We can conclude that yoga practice gives results in improving the symptoms of type 2 diabetes just as for blood pressure, helps in maintaining levels of insulin, glucose, triglycerides and reduces the use of oral medicines. Also we can conclude, that the indicators of yoga intelligence enables measurement of the yoga practice results.

Key words: yoga practice, therapy, asana, pranayama, type 2 diabetes.



YOGA FOR TYPE 2 DIABETES: SCIENTIFIC RATIONALE AND EVIDENCE FOR PREVENTION

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Non-communicable, lifestyle diseases such as type 2 diabetes are reaching epidemic proportions in modern society and represent the greatest burden on modern healthcare systems. Given that the major risk factors for Type 2 diabetes include lifestyle problems such as unmanaged chronic stress, impaired mood and well-being, poor dietary choices and low physical activity levels, traditional allopathic pharmacotherapy and surgical intervention approaches are inadequate. Yoga, when practiced as a regular comprehensive lifestyle intervention, has been shown to be effective in managing these risk factors and is therefore likely to serve as an effective preventive and therapeutic intervention. There is now significant and growing research evidence supporting the role of yoga as a preventive strategy for type 2 diabetes.



SUCCESS ELEMENTS FOR PUBLIC STRATEGY: COMPLIANCE INCENTIVE AND FUNDING

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While in India SVYASA's effort has been very successful with the number of centers all over the country and being able to provide daily group sessions for patients, to reach the crores of people beyond the ambit of these centers, it is essential to integrate within the normal healthcare channels in a wholesale manner. Following are thoughts related to experience in the USA that may provide some insightful thoughts for application in some segments of healthcare in India.

Incentive for patient compliance for individual practice in the absence of a qualified center within reasonable proximity for daily practice: financial commitment; keeping daily log; weekly follow-up with option to follow-up by video-conference.

Eventually funding must be self-sustaining paid by the healthcare system. For establishment of initial infrastructure and training system to integrate yoga therapy, healthcare providers and payment systems, grants may be available to promote the development.



MATRIX-RHYTHM-THERAPY: UTILIZING THE ENTRAINMENT EFFECT TO OPTIMIZE BODY PERFORMANCE AND TISSUE REGENERATION IN DIABETES

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INTRODUCTION:

Diabetes is a serious public health problem in Germany, leading among other things to approximately 40,000 amputations every year. General characteristics of Type II diabetes patients are obesity, stress, lack of movement and a large amount of carbohydrates in their diet (high glycemic load). A mismanaged life-style, maintained constantly over many years, can transform physiological processes into pathological ones. We are convinced that Type II diabetes is most frequently the result of an unhealthy life style.

Life without rhythm does not exist. Body rhythms (brain rhythms, breathing rhythms, heart-rhythm, skeletal muscle rhythms, etc.) can be seen as the result of synchronizations of cell rhythms. The question we asked ourselves, was whether it might be possible to induce specific time-patterns in the body, internally via the mind (meditation, Yoga) and externally, from the outside, by physical-therapeutic methods utilizing the principle of entrainment or synchronization of cellular vibrations by an external signal. Activating cellular rhythms and their correlated processes can be expected to result in systemic as well as local healing effects.

Our recent research work with high resolution video microscopy has indicated that it is possible to influence cellular rhythms and behavior by changing the state of the cellular surroundings – the extracellular matrix – and thereby the conditions under which cells operate.

To apply this idea to whole-body treatment, we focused especially on the skeletal muscle because it constitutes, with 45% of the total body mass, the largest single organ of the body. It pulsates in the range of 8 -12 Hz (the same frequency range as the alpha rhythm of the brain) and is responsible not only for our macroscopic movements but also, together with the heart muscle, for the body's microcirculation (arterial, lymphatic and venous flow).

We shall present how tissue regeneration – in diabetes patients and others, and even in the most severe surgical cases – as well as overall body performance, are improved using this entrainment method. Matrix-Rhythm-Therapy releases blocked neuromuscular processes and restores the sympatho-vagal balance, so that – in the language of Vedas - the embodied spirit is made to become one again with the Universal Spirit.



'DIABETES BEGETS DIABETES'

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There is significant and escalating burden of type 2 diabetes in India. Indians develop diabetes at least 10-15 years earlier compared to people of non-Indian origin (CADI Research Foundation).

Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance with first recognition during pregnancy. **GDM may be the first manifestation of a continuum of altered glucose metabolism.** The prevalence of GDM in India is 16.55% (Sheshiah et al 2005) and the figures are higher in some parts of urban India. One in 5 to 6 pregnant women have GDM. It is known that the risks of adverse pregnancy outcomes increase continuously with increasing maternal glucose (HAPO study).

However the long term implications are more alarming and can add on significantly to the already existing burden of Diabetes in India. **50% GDMs can become overt diabetics in 5-10 years** (Kim C et al *Diabetes Care* 25, 1862-1868 (2002)). High genetic risk and lower risk thresholds for acquired risk factors such as age, obesity, abdominal adiposity and a high percentage of body fat, the 'Thin fat Indians', has contributed towards the higher incidence of GDM. Not only the GDM mother is at increased risk of developing Type 2 DM, but her **progeny can have a 17-fold increase in metabolic syndrome (insulin resistance, hypertension, hyperlipidaemia, CVD) and a 10-fold increase in overweight at adolescence.** In utero hyperinsulinemia which alters the in utero programming is associated with Metabolic syndrome in later life (Knopp et al *Diabetes Care* 33:1382-1384, 2010).

Pregnancy provides an opportunity to prevent development of Type 2DM by life style change. It is known that weight loss and lifestyle changes can reduce the risk by 50% in the mother. It also provides an opportunity to prevent perpetuation of diabetes in the progeny.

Though no studies have been done yet to determine the role of yoga in GDM, Integrated Approach of Yoga Therapy (IAYT) has been shown to be safe in pregnancy and to improve the quality of life of pregnant women with respect to physical, psychological, social and environmental domains (Rakhshani et al, *Qual Life Res.* 2010 Dec;19(10):1447-55). IAYT has also been shown to reduce perceived stress and improve adaptive autonomic response to regulating proper weight gain in pregnancy (Satyapriya et al. *Int J Gynaecol Obstet.* 2009 Mar;104(3):218-22) Yoga might have additional beneficial effects and may play an effective role in the management of GDM pregnancies and also prevent long term incidence of Type 2 DM. It may have a role in improving the in-utero programming thus preventing the long term implications in the progeny.

Thus, yoga could potentially prevent diabetes in both the generations.

AYURVEDA BASED LIFE-STYLE [PATHYA-APATHYA] PRESCRIPTION FOR HEALTHY LIVING, - INFERENCES FROM PRAKRTI (AYURVEDIC CONCEPT OF PSYCHO - PHYSICAL PERSONALITY TYPES BASED ON TRIDOSHA THEORY)

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The whole world particularly the developed and developing countries are cursed with Non communicable diseases - NCD's (WHO Fact sheet updated March 2013) also known as Non-infectious epidemics which are due to the impaired lifestyle practices (WHO Global status report on Non communicable diseases 2010). The Western system of Medicine is thriving hard to manage this progressive, alarming problem and looking towards CAMs (Complimentary Medicine and Alternative Medicine). In this endeavour Ayurveda and Yoga the age old natural systems of health care, which primarily focus on prevention of diseases through life style modifications and interventions based on the fundamental concepts of Tridoshas (Su.su. chap - 1) and Prakrti, play an important role. According to Ayurveda Tridoshas, namely Kapha, Vata and Pitta the three functional humours (Cha. su.chap -5/7) are responsible for three universal functions in the body, namely Generation(Anabolism), Organization(Metabolism) and Destruction(Catabolism)-(Su.su.chap-21/8), contributes for Psychological as well as physical personality development from the time of zygote formation, exhibiting a very specific structure-function-behaviour pattern and trait of a person known as prakrti in Ayurveda.(Su.sha.chap-4/62.)

Now the question is how to understand and assess this Prakrti? Hither to assessments of Prakrti has been more of a clinical issue and the practicing orthodox Ayurvedic physicians invariably use the concept of Prakrti in their own style and skill. Of late few prakrti assessment tools have been put forth by some of the contemporary authors and researchers, but still this issue remains as an unsolved topic. Few focus mainly on the physical factors and few on the psychological patterns. The existing tools of prakrti assessment fail to be comprehensive in all dimensions of Prakrti and they lack scientific methods of standardization with only few subjective parameters.

In order to overcome these lacunas and provide a comprehensive tool for clinicians and researchers a tool with subjective and objective parameters has been developed and standardized with 90 questions and 60 items of physical checklist. The study throws light on providing specific lifestyle for varied individuals to maintain harmony of doshas and in turn the health and several research programs to establish the role of individual oriented and customised lifestyle based on the dosha Prakrti specific.



INITIATIVES FROM PUBLIC HEALTH FOUNDATION OF INDIA ON DIABETES PREVENTION AND EDUCATION

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The Public Health Foundation of India (PHFI) is a public private initiative that has collaboratively evolved through consultations with multiple constituencies including Indian and international academia, state and central governments, multi & bi-lateral agencies and civil society groups. PHFI is a response to redress the limited institutional capacity in India for strengthening training, research and policy development in the area of Public Health. PHFI has several initiatives in diabetes management. Some of them are briefed below:

Certificate Course in Evidence Based Diabetes Management is to improve the treatment outcomes for patients by serving as evidence based guidance for clinical decision making in risk assessment, diagnosis, prognosis and management of Diabetes. It is also an effort to translate and transfer emerging evidence from clinical research to clinical practice. This twelve-month on-the-job training program, conducted once a month, is jointly certified by the Public Health Foundation of India (PHFI) and Dr. Mohan's Diabetes Specialties Center, Chennai.

The Public Health Foundation of India (PHFI) launched 'Uday' - an intensive five year program to fight the rising burden of non-communicable diseases (NCD) in India, with an initial focus on improving outcomes for people with diabetes and High Blood Pressure (HBP). This program aims to demonstrate cost-effective scalable approaches for effective diabetes and high blood pressure management. "In the first phase, the project is being implemented in Vizag (Andhra Pradesh) and Sonapat (Haryana), with intent to strengthen the diabetes and HBP care capabilities in terms of prevention, detection and effective management".

Another innovative project of PHFI is: 1) To assess the acceptability and feasibility of a smart-phone enabled detection and management services for hypertension and diabetes at primary health settings in Kerala, India and 2) To collect information on participant response rate, compliance and follow-up statistics to design an effectiveness trial. The outcome of this project is intended to ease the screening modules of diabetes, which would enable early detection and management.

The above projects would be discussed in light of the use of Yoga as a public health strategy for diabetes prevention and education.



Abstracts

Invited Talks

Track C:
Academia - Industry
Partnership Meet



ELECTRONIC MEDIA AS A POTENT VEHICLE FOR DIABETES EDUCATION & PREVENTION

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Television has redefined lifestyles of humans across the world. It is one of the most consistently used daily source of news, entertainment, sports, travel, science and lifestyle. While the medium is a potent one, it is the presenters who makes it a compelling part of our lives. Thus both television as a medium and presenters of the programs in this medium becomes part of our daily living. It is this potential that is harnessed for common good and sometimes also exploited.

Health care information and health education is one of the major content of this medium. However, the content, quality, presentation, priority and public agenda is never monitored and regulated. Hence, the real potential of television for health education is yet to be realized. This is most relevant in the wake of global epidemics and pandemics. Diabetes Mellitus is one such health care emergency which involves multi-disciplinary approach. Most people are deprived of basic information and thus stay undiagnosed. In recent times, faulty urban lifestyle has made one in every 6 Indians either diabetic or prediabetic. A disease of lifetime poses threat in all domains of life for an individual and for a country.

Thus, the need of the hour is to think of a structured initiatives to reach out to masses who needs health information; health education and information on solutions. A disease like diabetes needs medical care and lifestyle corrections. It is here television has to play a decisive role in diabetes education and prevention. This presentation explores those structured potential initiatives for diabetes education and yoga based lifestyle education.



RESPONSIBLE HOTEL INDUSTRY IN DIABETES EDUCATION AND PREVENTION

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Hotel industry comprises of boarding and loading as its key community service. Feeding people through public enterprise is one of the most interesting as well as challenging proposition. A profession that demands embedding cultural values; regional preferences; evolving trends; nutritional value; palatibility; ambience and finally affordability. South India has lead the hotel indutry by establishing high quality chains and brands. Udupi restaurants are a phenomenon world over.

In the last 3 decades the hotel industry has kept pace or most times has surpassed the pace at which Bengaluru is growing as IT capital of India. As Begaluru rediscovered itself; south Indian restaurants in Bengaluru evolved from their traditional jackets and established south Indian fast food chains branded as 'darshinis'. This concept, brought the kitchen in open-a step that demands enormous courage and innovation. Thus these kitchens became hallmark of hygeine and transparency.

Meanwhile, the carbohydrate rich south Indian food became available in plenty and in style which lead to 6 meals a day. Genetically predisposed Indians with urbanization started to indulge in these smart cafes with less and less physical activity. The result is a pandemic incidence of diabetes mellitus in India. At this crticial juncture, as diabetics rose in number, it opened up yet another stream of business consisiting of innovative, safe & efficient food options and nutritional supplements.

This presentation highlights the social responsibility of hotel industry and each cafe in minimising the frank sugar; less carbohydrate options and NO junk food options in these new age cafes.



EXPLORING SOCIAL MEDIA IN DIABETES PREVENTION AND EDUCATION

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Social media so far has been a place for personal and casual online networking. But with changing times and technologies, such online social platforms have started to be leveraged for commercial and promotional purposes by brands and both e-commerce and traditional retailers.

People are now spending extended periods of time online and the pattern of content consumption has taken a paradigm shift. With the focus shifting more towards meaningful and impactful content, social and digital media streams online are playing a pivotal role in healthcare.

Content, both user generated and professionally developed on social sites have become a source for ready medical information for many reasons. Important reasons for healthcare providers is the leverage of outreach and education, ability to recruit for clinical studies, sources of unofficial data and the opportunity to build physician and institutional credibility and influencing policy. However, patients turn to social media for medical information and disease peer groups thereby resulting in a completely novel patient-care-giver relationship.

Since this is a nascent area that has emerged very recently, this talk would largely cover in generic upon the role of social and digital media in healthcare in general with diabetes as case examples as when appropriate. The take-away messages would be to highlight the advantages and challenges for the healthcare fraternity to engage in social media presence and its impact.



AYURVEDIC INDUSTRY IN DIABETES PREVENTION AND EDUCATION

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Ayurveda is an Indian ancient system of medicine with comprehensive understanding about human diseases; diagnostic procedures; pharmacopia; treatment procedures and lifestyle solutions. Traditional Ayurveda propounded specific remedies for prevention and management of most of the known human disorders. Modern Ayurvedic industry combines the traditional wisdom with regard to the active ingredients; processing; delivery forms and modern manufacturing standards. However, there is a long way to go in meeting global standards with regard to quality control; purity; toxicity standards; safety and efficiency. Hence, ayurvedic medicines are still referred to and sold as food supplements, NOT as medicines.

Diseases like diabetes is well enunciated in ayurveda and specific remedies are prescribed. Lack of clinical evidence has led to poor use of ayurvedic medicines in the care of diabetes. Most of the market demand for the herbs for prevention of diabetes and medicines for management of diabetes are driven by choice made by patients. As on today, no ayurvedic medicine is endorsed by conventional medical system. The solution for this embargo, is to bring dynamic evolution to ayurvedic medicine through high quality evaluation. Thus, ayurveda can meet the challenge of being recognized; prescribed and insured system of care for diabetes prevention and effective management.



ROLE OF ADVERTISING INDUSTRY IN DIABETES PREVENTION AND EDUCATION

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Diabetes is no more endemic in India..It has already reached proportions of Pandemic and for arresting the rapid raise support from all fora of society is needed now . The dissemination of information on awareness, management by way of life style changes and supporting medication should be thoroughly spread and be imbibed by all citizens . Multipronged media vehicle support is critical in doing so considering the sheer number of population in india which is cutting across various geographical, pshycographical profiles .

Presently 0.32% of population has the prevalence of Aids . NACO is spending above 1000 cr for all round spread of awareness for prevention and cure .This includes massive organized campaigns involving mass media. Hope we all remember the disruptive launch of awareness by puliraja campaign.Presently diabetes is more pandemic and close to 4.8% of population is in diab orb. Though diab prevalence is high in urban area, the depth and velocity in rural areas is a serious cause of concern. So far the diab educational campaigns are confined to corporates and too short and too little.Extensive lobbying with ministry of health and family welfare, industry forums like FICCI, FAPSI, NASSCOM should be taken up by like minded societies,people,NGOs for the cause. Unfortunately Drugs and Magic remedies act discourages the claim for curing of diabetes. There fore major pharma companies are refraining from advertising their products.

The claims of yoga, lifestyle, other alternative medicines for managing better life styles and semblance of mind for inner peace are being evaluated scientifically and there are considerable evidence if NOT compelling for lifestyle management. Given the proportions of the disease, the prevailing evidence should be disseminated to generate better quality of evidence. For now, the prevailing evidence should be used to educate public at large who are pre-diabetics; patients; professionals; policy makers and politicians.

Pure simple Commercial time is traditionally effective in building high reach overnight. Creation of characters, subtle integrations and innovations drives the point down the target group. Tips for better health, infomercials by corporates, science of living approach, discussion on myths and realities, quiz programs etc can be used in mass media for reaching desired objective. Creation of an opt creative is highly essential in conveying the message that yoga can prevent diabetes. Innovative advance media management has the track of creating many creatives and has the needful infra for the same. We can support in that area, besides working out a media plan pan India. At innovative advance Media management, we engineered many a national and regional plans for effective impact and reach for our various clients and we will be glad to be of any support for spreading out the message that Yoga and lifestyle drives away diabetes. With our production house, we can create excellent programs on yoga and science of living and help in airing the same on popular channels. The shoot can happen in your premises for more authenticity. As CSR part we are promoting tips for better living in our digital initiative Kwalitpoint.com. Information flow from VYASA is welcome so that the same can be shared with all subscribers by web and sms.



ROLE OF NEWS CHANNELS IN HEALTH EDUCATION SPECIFIC TO DIAEBTES EDUCATION AND PREVENTION

Sri Shashidhara Bhat

Chief of News, Suvarna News Channel, Bengaluru

While electronic media has emerged as most potent medium of mass communication, the emergence of speacialization in channels has further enhanced the quality of communication and reach to all sections of the society. In this direction, exclusive news channels have clearly established new bench marks in real time communication and public interaction.

Although news and news makers form the core of the News channels, these channles have anunique opportunity to expand the healthcare services and health education. The news channels by design have exclusive health programs mostly as interviews with the physicians and advertorials of the health centers. News channels can explore several innovative initiatives to broadcast health alerts and offer high qulaity health education programs. Following are some of those which canbe explored:

- Commemorating Health days through organized multi-disciplinary programs
- Regular programs as a series concerning health & lifestyle
- An exclusive feature for broadcasting national programs & government schemes on health
- Conduct tele-surveys on key health issues
- Partner with professional media can offer annual rating on various healthcare services
- And such other innovative-interactive programs

All the above initiaitives can effectively beused to combat 'an emerging national disaster-i.e., Epidemics of Diabetes'. India is anofficially designated capital of diabetes mellitus. Further India is pitched as an Young nation which is at risk for lifestyle diseases. Hence, it is a national emergency to consider the use of electronic media as a tool to create a platform of all stake holders in the care of diabetes and unseat India from this dubious distinction of being Global capital of Diabetes!



Abstracts
Oral Prize
Paper Presentation



EFFECTIVE MANAGEMENT OF DIABETES MELLITUS BY PRACTICE OF YOGA ASANA AND 'AUM'-KARA CHANTING

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Thirty Diabetes mellitus Patients in the age group of 45-65 years were selected from the Outpatient Clinic of Govt. Ayurveda College Hospital, Poojappura, Thiruvananthapuram, Kerala. The aim of the study was to analysis the effect of Yoga Asana along with 'Aum' -Kara Chanting in Diabetes Mellitus with its various complications. The intervention consists of Asanas:- Padauttanasana, Pavanamuktasana, Danurasana, Sasankasana, Ardhamastyendrasana, Vakrasana, Tadasana, Tryak Tadasana, Ardha Kati Chakrasana with chanting of Aum Kara while maintaining the asana for 40 secs each, and Relaxation Technique (Aum Kara Chanting). The Yoga was practiced daily for one hour for 60 days. Another group of Thirty Diabetic subject with comparable age and severity, called the control group were prescribed medication with light exercises like walking. The Blood Routine Test and lipid profile are tested before and after yoga practice. Results of this study showed that most of the symptoms were subsided significantly, and fall of mean blood glucose level was significant after 2 months of Yoga practice when compared with control group. Results of this study suggest that subjects on Yoga - with Aum kara chanting has better control in their fluctuating blood glucose and symptoms associated with diabetes,

compared to those were on medication and light exercise alone.

Keywords: Yoga, Asana, Aum-kara chanting, Blood Routine test and Lipid Profile test.

EFFECT OF POWER WALKING AND SURYANAMASKAR PRACTICES ON BODY MASS INDEX OF OBESE WOMEN

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The purpose of the present study was to analyze the effect of Power Walking and Suryanamaskar Practices on Body Mass Index of obese women. Forty five (N=45) obese women were selected at Chennai. Their age ranged from 40 to 50 years. The subjects were randomly divided into three equal groups, Group I Power Walking, Group II Suryanamaskar practices and Group III Control each consisting of 15 subjects. Two experimental groups were participated in two different training programmes i.e. power Walking and Suryanamaskar Practices for the duration of six weeks for five days in a week in the morning hours between 7.00 am to 7.45 am and control group did not participated in any training except their daily routine works. The data collected before and after the training programme. Analysis of co-variance (ANCOVA) and Scheffe's Post Hoc test were applied to find out the significance of mean difference among the three groups. The results show that the obtained 'F' ratio value of Body Mass Index 4.116 was significantly higher than the table value 3.23 ($p < 0.05$).

there was a statistically significant decrease in body mass index for both the groups. The findings of the study indicated that the significant reduction on BodyMass Index for the power walking group is better than the Suryanamaskar practices group. But both the groups have shown beneficial effects when compared to the control group.

Key words: Body Mass Index, Suryanamaskar practices, Power Walking

EFFECT OF PYRAMID EXPOSURE ON MEMORY AND LEARNING IN STREPTOZOTOCIN INDUCED DIABETES MELLITUS IN ADULT WISTAR RATS – A BEHAVIORAL STUDY

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Objective: Effect of Streptozotocin (STZ) on memory and learning in adult male Wistar rats.

Material and methods: Adult male rats of 4 months old were divided into three groups (1) Control (2) STZ (3) STZ + Pyramid exposure groups (n= 6 in all groups). Rats in control group were kept undisturbed, STZ rats were given STZ intra peritoneal injection (55mg/kg body weight), STZ + pyramid exposure

rats were subjected to STZ and were exposed to Pyramid exposure for one month. At the end of the treatment period rats in all groups were subjected to T-maze and passive avoidance tests. Data was analyzed using one way ANOVA, followed by Bonferroni's post test. **Results:** In T-maze and passive avoidance experiments, STZ + Pyramid exposure rats showed significantly higher number of alternations, lesser percentage bias, increase in the percentage of correct response and spent significantly less time in the small compartment when compared to the STZ rats. **Conclusion:** We conclude that rats with neurodegenerative disorders like diabetic neuropathy when subjected to Pyramidal exposure will improve learning and memory.

Key words: Streptozotocin, Pyramid exposure, T-Maze, Passive Avoidance test, Wistar rats, Diabetes mellitus.

PREVENTION AND TREATMENT OF TYPE 2 DIABETES IN INDIA - A COMMUNITY BASED PROTOCOL OF YOGIC LIFESTYLE INTERVENTION

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Background: India has the second largest number (>61 million) of people with Type 2 Diabetes Mellitus (T2DM), which is expected to double by 2030.^[1] Lifestyle interventions such as yoga found to be safe and cost-effective for T2DM. ^{[2],[3]} The major challenge is to translate yoga intervention into prevention programs at the national level which would



reach every individual in the community. ^[4]
In this context, the researchers of this paper developed a community based yoga protocol for detection, prevention and treatment of T2DM in India.

Methods/Design: Review of protocols in T2DM and multiple rounds of discussion with 5 experts (epidemiologist, medical physician, yoga expert, researcher and field survey analyst) helped develop the current 'Stop Diabetes Movement (SDM)' protocol.

Results: The main protocol was divided into three phases, each containing sub-protocols. Phase 1 included (a) 4 sub-protocols on Epidemiological survey of prevalence of T2DM and pre-diabetes in different localities in India and (b) 3 sub-protocols on development, validation and pilot testing of a three step yoga module. Phase 2 included 6 sub-protocols on testing the effectiveness of the yoga module in T2DM and pre-diabetes sample using randomized controlled or retrospective designs. This Phase also included a sub-protocol on training of the trainers who would teach the yoga module in the local community. Phase 3 included re-assessing the prevalence of T2DM post provision of yoga module in different localities in India (using the same sub-protocols as Phase 1).

Conclusion: The SDM protocol is logically-scientifically designed and methodologically sound. The effective implementation of this protocol in the community in India could help in the ultimate goal of prevention and treatment of T2DM in India.

YOGA BASED CARDIAC REHABILITATION AFTER CORONARY ARTERY BYPASS SURGERY: ONE-YEAR RESULTS ON LVEF, LIPID PROFILE, PSYCHOLOGICAL STATES-A RANDOMIZED CONTROLLED STUDY

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Objective: To compare the long term effects of yoga based cardiac rehabilitation program with only physiotherapy based program on risk factors after coronary artery bypass grafting (CABG).

Methods: In this single blind prospective randomized parallel two armed active control study, 1026 patients posted for coronary artery bypass grafting (CABG) at Narayana Hrudayalaya Institute of Cardiac Sciences, Bengaluru (India) were screened. Of these, 250 male participants (35-65 years) who satisfied the selection criteria and consented were randomized into two groups.

Within and between group comparisons were done at three points of follow up (i.e.

6th week, 6th month, and 12th month) by using Wilcoxon's signed ranks test and Mann Whitney U test respectively.

Results: Yoga group had significantly ($p = 0.001$, Mann Whitney) better improvement in LVEF than control group in those with low baseline EF ($< 53\%$) after 1 year. There was a better reduction in BMI in the yoga group ($p=0.038$, between groups) in those with high baseline BMI (≥ 23) after 12 months. Yoga group showed significant ($p=0.008$, Wilcoxon's) reduction in blood glucose at one year in those with high baseline FBS ≥ 110 mg/dl. There was significantly better improvement in yoga than the control group in HDL ($p=0.003$), LDL ($p=0.01$) and VLDL ($p=0.03$) in those with abnormal baseline values. There was significantly better improvement ($p=0.02$, between groups) in positive affect in yoga group. Within Yoga group, there was significant decrease in perceived stress ($p=0.001$), anxiety ($p=0.001$), depression ($p=0.001$), and negative affect ($p=0.03$) while in the control group there was increase ($p=0.003$) only in scores on anxiety.

Conclusion: Addition of yoga based relaxation to conventional post CABG cardiac rehabilitation helps in better management of risk factors in those with abnormal baseline values and may help in preventing recurrence.

Key Words: yoga, post CABG, cardiac rehabilitation, LVEF, risk factors

EFFECT OF YOGIC PRACTICES ON SELECTED PHYSIOLOGICAL PARAMETERS IN JEWELLERY EMPLOYEES

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The study of effect of Yogic Practices on Physiological and Biochemical Parameters in Jewellery Employees is conducted at Malabar Gold Employees Hostel, Falnir, Mangalore. Total of 22 subjects of the age group of 22 to 45 years were selected. The 22 subjects were divided randomly 12 as experimental group and 10 were control group. Experimental group has undergone an experimental intervention involving selected yogic practices on every Morning, 6 days in a week for 40 days. Body weight, water percentage, fat percentages, muscle percentage, calorie analysis, systolic and diastolic B.P were physiological parameters. Result of the study shows that most of the physiological parameters have shown significant changes. Therefore regular practice of Yoga helps to bring fitness of the body, good health by controlling the various activities of body.

Key words: Yogic practice, health, physiological parameters.



A PUBLIC HEALTH STRATEGY FOR PREVENTION AND MANAGEMENT OF TYPE 2 DIABETES THROUGH YOGA RESEARCH

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Background: India has the second largest number (>61 million) of people with Type 2 Diabetes Mellitus (T2DM), which is expected to double by 2030.^[1] Introduction of yoga for patients with diabetes could be an effective solution in the Indian community for two basic reasons: (1) yoga which originated in India, is seen to be a practical and accepted intervention for patients to practice at home/community, (2) yoga is cost-effective and has no side-effects as in the case of medications. In this context, the researchers of this paper developed a community based yoga research protocol for detection, prevention and treatment of T2DM in India.

Methods/Design: Through the review of protocols in T2DM and multiple rounds of discussion with 6 experts, the current research protocol was divided into three phases, each containing sub-protocols. Phase 1 included (a) 5 sub-protocols on Epidemiological survey of prevalence of T2DM and pre-diabetes in different localities in India. Phase 2 included 1 sub-protocol to test the effectiveness of the yoga module in T2DM and pre-diabetes using matched controlled design with long term follow-up. This Phase also included a sub-protocol on training of the trainers who would teach the yoga module in the local community. Phase 3 included re-assessing the

prevalence of T2DM post provision of yoga module in different localities in India (using the same sub-protocols as Phase 1). Apart from the above main protocol, 3 independent protocols on development, validation and pilot testing of a yoga module for diabetes was developed.

Results: The 'prevalence of T2DM and pre-diabetes' in 3 different localities in Bangalore (residential locality, slum and rural community) was 20%, 5.1 and 17.5% respectively and that of risk for diabetes was 9.2%, 23% and 25.% respectively. The 'prevalence of T2DM and pre-diabetes among yoga practitioners' in 3 different areas in India (Central Pune, Ernakulam, North Delhi) was 3.6%, 26.1% and 46.4% respectively and that of risk for diabetes being 18.9%, 12% and 15.9% respectively. Age and Duration of physical activity (positive correlation) emerged as the single important predictor of diabetes. For development and validation of a yoga module for diabetes an Inductive method of inquiry of qualitative research was used to develop a conceptual framework consisting of ten main themes reflecting the concepts on which earlier researchers had framed their yoga practices. Asanas, pranayama, relaxation, meditation, chanting and special techniques, and modifications, sequence of practice, duration of session, number of classes per week, time of practice and topics for yogic lectures were the other sub-themes that were elicited from the main themes. Each step lasted for a period of 6 months of duration inclusive of daily practice for one hour each in morning and evening and was validated by 18 experts over three rounds of iteration. The 1st step of the yoga module was pilot tested on 60 Type 2 DM participants attending a 10 day camp at VASK Yoga Centre, Hesaraghatta, Bangalore. It was found that the 10 day yoga module was

feasible with respect to practices, but required a greater amount of time to implement the daily sessions. Further, the module was significantly effective in reducing the FBS and PPBS levels in mild-moderate diabetes participants, as compared to severe diabetes participants. The same set of 60 participants is being assessed over the period of the next 6 months to test the correlation between their adherence to the yoga programme and their biochemical parameters.

Conclusion: The above mentioned results of pilot study show that there is an urgent need to implement the newly developed and feasibility tested yoga module in the communities in India, to prevent and manage Type 2 DM. The effective implementation of the entire protocol in the community in India could help in the ultimate goal of prevention and treatment of T2DM in India.

EFFECT OF YOGA PRACTICES PRESENTED THROUGH MEDIA FOR THE TREATMENT OF BLOOD SUGAR AND BLOOD PRESSURE IN DIABETIC PATIENTS

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The study was designed to examine the effect of Yoga practices through electronic and social media (television and facebook) on blood sugar and blood pressure of diabetic patients. In the present study 40 diabetic patients were selected randomly from Faizabad city of Uttar-Pradesh. Their age ranged from 35 to 50 years. They were divided into 4 equal group's namely: experimental group

1, 2, 3 and control group. The experimental group 1 underwent yogic practices in front of television, whereas experimental group 2 underwent yogic practices in front of social media site (facebook), experimental group 3 underwent yogic practices in front of yogic instructor and control group was not given any specific practices through media. The selected variables were blood sugar, blood pressure assessed before and after the practice period of 12 weeks. The analysis of co-variance was used to test the adjusted post test mean difference among the experimental groups. The results revealed that the selected blood sugar and blood pressure was significantly reduced due to the influence of yogic practices through electronic and social media in diabetic patients.

Keywords: Yoga practices, Media, Blood sugar, Blood pressure, Diabetic patients.

PARAOXONASE ACTIVITY IN TYPE 2 DIABETES MELLITUS PATIENTS WITH AND WITHOUT COMPLICATIONS

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Introduction: Type 2 diabetes mellitus (DM) is a disease of metabolic dysregulation. Current study was undertaken to know the relation between fasting lipid profile and paraoxonase



1 (PON1) activity in type 2 diabetic patients with and without complications.

Materials and methods: The study group consists total of 155 subjects which includes non-diabetic healthy control subjects (n = 50) and diabetic patients with complications (group I, n = 66) and without complications (group II, n=39). PON1 activity was measured in all the subjects based on spectrophotometric methods, and fasting lipid profile and fasting plasma glucose (FPG) levels were determined in clinical chemistry analyzer Hitachi 912.

Results: FPG ($p < 0.001$) and TAG ($p < 0.001$) significantly increased, and HDL-C ($p < 0.001$) and PON1 ($p < 0.001$) were significantly decreased in group I patients when compared to normal controls. In group II patients FPG ($p < 0.001$), TAG ($p < 0.001$) and TC ($p < 0.05$) significantly increased and HDL-C ($p < 0.05$) was significantly decreased when compared to normal controls. On Pearson correlation, HDL-C was positively correlated with PON1 in group I patients ($r = 0.317$, $p < 0.01$).

Conclusion: Type 2 DM patients with complications have shown significantly decreased HDL-C levels and PON1 activity possibly indicating its decreased biochemical role in these patients.

Keywords: Paraoxonase; fasting lipid profile; type 2 diabetes mellitus; fasting plasma glucose.

EFFECT OF YOGA WITH STANDARD DIABETES CARE IN TYPE 2 DIABETES- A RANDOMIZED CONTROLLED TRIAL

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Introduction: India has the largest diabetic population in the world. Changes in eating habits, increasing weight and decreased physical activity are major factors leading to increased incidence of Type 2 Diabetes Mellitus (Type 2 DM). Exercise is primary therapeutic option for diabetes management. Exercise improves the condition of a diabetic patient. Exercise also includes yoga practices which have a role to play in the prevention of type 2 diabetes. Yoga is an ancient, psychological, physical and spiritual regimen that has been studied for several decades for its role in the management of diabetes mellitus. It has been found that subjects show greater compliance to medications and lower compliance to exercise and lifestyle modifications. Further, increasing intensity of exercise leads to more dropouts from a lifestyle modification program. This is first study to evaluate whether yoga practice helps to improve motivation and compliance of the program. This study also helped to understand whether inclusion of yoga was helpful to control glucose levels to acceptable level so that frequent increase in exercise intensity will not be done and subject's compliance to exercise program will be maintained.

Methods

Study design: Randomized Controlled trial involving subjects with Type 2 DM

Inclusion criteria

- Type 2 DM over 18 years of age according to American Diabetes Association (ADA) criteria.
- HbA1c range from >6.5%-9% as described mild and moderate will be included in study.

Exclusion criteria

- Subjects requiring insulin
- Subjects with A1c >9%
- Hypertension
- Unstable or under investigated coronary artery disease.
- Cancer.
- Severe osteoporosis or any other musculoskeletal disorder which may limit administration of yoga therapy.
- Diagnosed cerebrovascular disease.
- Subjects on antipsychotic drug like SSRI.
- Aversion of music.
- Already practicing yoga or music therapy.

Demographic and baseline assessment was done on first day as per details mentioned in proforma to compare group equivalency. Intervention, started from the subsequent day. All subjects had undergone clinical assessment and drug management by supervising physician. All the subjects received standard care. Exercise prescription was done by a qualified physiotherapist at moderate intensity as per ACSM guidelines. Subjects in yoga group were trained for two subsequent weeks after which they were asked to practice for 6 months along with their standard care. Subjects in control group adhered to standard care protocol only without yoga in their program.

Adherence to program was ensured by asking all the subjects to maintain a daily log in a diary to keep a proper record of the activities and lapse. One of the subject parties accompanied subject during training and same will countersign once the subject finishes practice at home. All the subjects were called by telephone every week in order to know their compliance as well as their difficulty. Subject companion was also contacted at same time. Subjects were asked to visit once a month after supervised training while practicing at home. Outcome measures were following

Primary outcome:

- Glycated hemoglobin (HbA1c)
- Fasting Blood glucose level (FBG)
- Post prandial glucose level (PPG)
- Lipid Profile

Secondary outcome:

- State trait anxiety inventory (STAI).
- Beck depression inventory (BDI).

Statistics: Data was analyzed by SPSS (version 16.0; SPSS Inc. Chicago, Ill). Data analysis was blinded. ANOVA with repeated measures was used to analyze the changes in outcome variables from pre to post in both the sessions and between the groups to know that which intervention caused greater change. Huynh Feldt test was used to compute main effect and interaction effect.

Results: There was statistically significant main effect across the time period of yoga intervention and investigations done at 0, 3 and 6 months for HbA1c, Lipid profile and anxiety. There was statistically significant interaction effect between the two groups for all parameters.

There were greater changes observed after the 3 months session in yoga group.

Discussion: Yoga when incorporated with



standard diabetes care program is effective in glycemic control, reducing cholesterol, reducing anxiety and depression in Type II diabetes patients.

Fund: ICMR

Conflicts of interest: none

Declaration: this is original work and this paper for presentation is a part of larger RCT, funded by ICMR.

SURYANAMASKAR VS WALKING: ENERGY UTILISATION AND KINEMATICS - A COMPARATIVE PILOT STUDY

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Recognising the increasing burden of diabetes on the health sector, WHO claims physical activity and managing appropriate weight, are the key aspects of effective management of Diabetes.

Walking, as a physical activity, with correct postures and appropriate gadgets has large public health impact due to its inherent nature, accessibility, its documented health benefits and number of initiatives promoting walking.

While considering the calorie demands yoga, Suryanamaskar (Sun Salutation) stands out as the most popular and widely practiced technique worldwide. Most of the contemporary yogic forms have their deep roots in Suryanamaskar.

While research data on calorie utilisation and kinematics of walking are well documented, they are yet to be established

for Suryanamaskar. Studies reported on Suryanamaskar are focused on cardio-respiratory, musculoskeletal and health related aspects. Energy cost and kinematic aspects during Suryanamaskar as well as comparing it with other physical activities have received very little attention.

The purpose of this study is to measure the energy utilisation (calories burnt) in one hour Suryanamaskar and that of one hour Walking and also to compare & contrast some of the kinematic properties of both the activities.

One hour of suryanamaskar and one hour of walking was performed randomly 21 selected adult yoga practitioners. Calorie expenditure was measured using Polar RS800CX heart rate monitor and the data was analysed using Matlab software.

The pilot study results show that energy expenditure in Suryanamaskar is a part of Walking. Number of joints involved in the process and the range of motions are significantly higher in Suryanamaskar. To conclude, Suryanamaskar may be an equivalent or even better physical activity for weight management and overall fitness, which are the primary concerns in management of Diabetes and many Life Style disorders.

Keywords : Yoga, Suryanamaskar, Diabetes, Kinematics, Energy-utilisation

UTILITY OF NECK CIRCUMFERENCE AS A SIMPLE AND NOVEL MEASURE: AS ANTHROPOMETRIC MARKER OF OBESITY IN ADULTS

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Introduction: According to WHO, obesity is increasing alarmingly worldwide including India. BMI has been used as a measure to diagnose obesity. Neck circumference (NC) is a relatively new method of differentiating between normal and abnormal fat distribution.

Aim: To determine association of NC with other anthropometric measures in males & females and to define NC cutoff levels for overweight and obesity according to existing Asian Indian BMI cutoff levels in males & females.

Materials and methods: A community based cross-sectional study was conducted & prospectively recruited 1351 (840-males & 511-females) aged to 18-65 years at RL Jalappa Hospital & Research Centre, Kolar. Anthropometric measures like BMI, waist circumference, hip circumference & neck circumference were measured. Anthropometric variables were tested by using Independent t test and Pearson's correlation coefficient. ROC analysis was done to find the optimal, maximal sensitivity & specificity for NC against BMI & WC & P value of <.05 was considered to be significant.

Result analysis: Among the 1351 adults

in our study sample, 62% were males and 38% females. Mean NC of the males (36.48 ± 5.70) was significantly higher than in females (34.12 ± 5.70) ($P < .001$). Other anthropometric parameters were significantly higher in males compared with females except for hip circumference. Strong correlation was found between NC & age, weight, height, waist and hip circumferences, BMI and W/H ratio for men and women ($p < 0.0001$). NC > 36cm for males & > 32cm for females was the best cutoff levels for determining the overweight/obese subjects with BMI > 23 kg/m², using ROC analysis.

Conclusion: NC was positively correlated with other indices of obesity in males & females. NC > 36cm for males & > 32cm for females was the best cutoff levels for determining the overweight/obese subjects. NC could be a potential, inexpensive, easily measured clinical screening tool for evaluating central obesity.



Abstracts
Posters



A CRITICAL REVIEW ON YOGIC SHADKRIYA & PANCHAKARMA OF AYURVEDA WITH SPECIAL REFERENCE TO UTILITY OF 'NETI & NASYA' IN THE MANAGEMENT OF DIABETIC RETINOPATHY

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Shadkriya or Shuddhikriya in Yogic practices are having its own special importance in many schools of Hathayoga. Also the Panchakarma holds a very special approach in Ayurvedic Therapeutics. There are six shuddhikriya as we know – Basti, Dhauti, Neti, Nauli, Trataka & Kapalabhati & there are five karmas in Panchakarma as Vamana, Virechana, Basti, Nasya, Raktamokshana.

There exist certain specific pre requisites (Poorvakarma – Snehana & swedana) for undergoing Panchakarma, also there are specific determined Indications & Contraindications for them, along with the prescribed after practices (Paschat Karma), along with certain rigid diet restriction to be followed. While in case of Yogic Shatkriya comparatively these other aspects are not seen to be that rigid. Practically many people can undergo these kriyas.

Here an effort has been taken to compare these two modalities in a critical way. Possible correlation of these modalities can be observed & put forth. Basic difference between these two practices as observed by

an author along with the references of another scholar from Yoga has been discussed.

We found that in Diabetic Ophthalmic Complication such as Diabetic Retinopathy one can use Neti & Nasya in a specific way so that the effect of Nasya is enhanced. We have used Ayurvedic medication along with modern medicines.

At the end, a possibility of utilizing these two modalities together in different perspective in clinical practice for the management of various disorders will be discussed. As in case of Ophthalmic disorders, Bronchial asthma, Chronic Atrophic Rhinitis etc. The emphasis will be given on how one may make use of both these practices (Shuddhikriya & Panchakarma with special reference to Netii & Trataka with Nasya).

Key words: Shadkriya, Yogic practice, Panchakarma, Neti, Nasya, Diabetic Retinopathy, Ayurveda, Methodology, Indications, Contraindications, Pre requisites, After practices.

DIABETES MELLITUS AND FRUIT: THE FEASIBILITY AND EFFICACY IN MANAGEMENT AND CURE AS COMPARED TO OTHER COMMONLY PRESCRIBED DIETARY INTERVENTIONS – A REVIEW

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Changing food habits is an important factor in increasing incidence of Type 2 Diabetes

Mellitus (T2DM) in India. The quality of carbohydrates eaten in India over the past thirty years has changed from high-fiber carbohydrates to the low-fiber carbohydrates such as polished white rice, which has a higher glycemic index. Also, percentage of energy coming from dietary fats and consumption of animal foods, sugar (in processed foods, especially sweetened, carbonated beverages) has increased.

Pharmacological interventions are insufficient to prevent further progression of the disease, when diet remains unchanged, continually contributing to insulin resistance and systemic low grade inflammation that causes T2DM. Dietary intervention is the mainstay in management of T2DM, and should not only aim to achieve glycemic control but also to normalise dyslipidaemia and eliminate risk factors such as obesity.

A high fruit and vegetable intake is associated with lowered incidence of Diabetes Mellitus Type II. The reasons for this are, they have low - medium glycemic indices, low fat, protein, complex carbohydrate content, and a rich source of phytochemicals that have anti-inflammatory, antioxidant and other functions. Also, they prevent altered gut microbiota, which causes increased adiposity, cell dysfunction, hyperglycemia, hypercholesterolemia, adiposity, dyslipidaemia, metabolic endotoxemia, systemic inflammation, intestinal permeability (leaky gut), defective secretion of incretins and oxidative stress associated with T2DM.

This article aims to discuss in detail whether a high daily fruit intake is essential for the management and cure of Diabetes Mellitus Type II, in relation to the efficacy of other more commonly advised dietary interventions, such as higher intake of wheat, oats, other

cereals, vegetables, sprouts, and soya products. We present an in-depth analysis of commonly available fruits in India and seek to set recommended dosages, pertaining to quantity, which fruits are to be prescribed as well as general guidelines for eating fruit.

Keywords: Type 2 Diabetes Mellitus, Fruits, dietary intervention, systemic inflammation, gut microflora

EFFECT OF YOGA THERAPY ON PSYCHOLOGICAL WELL BEING AND QUALITY OF LIFE IN DIABETES MELLITUS.

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Diabetes mellitus is one of the global health problems with devastating human, social and economic impact. Present study was undertaken on 40 subjects suffering from Diabetes Mellitus, 20 to 60 years (41.9 ± 10.9) under medication, willing to participate in the program were recruited. Those suffering from other medical, psychiatric disorders were excluded. Measures were assessed by - Psychological General Well-Being Schedule having 6 sub scales and 22 items, Satisfaction with Life Scale having 5 items. Pre assessment and post assessment was conducted before yoga therapy and after six months of follow up.

Analysis showed significant results, pre and post mean scores of Psychological well being : 10.65 ± 2.03 and 14.62 ± 2.77 (0.001), Self control : 9.35 ± 1.76 and 12.15 ± 1.73 (0.001), General health : 8.77 ± 2.51 and 11.77 ± 2.53 (0.001), Vitality : 10.35 ± 3.95 and 13.60 ± 4.06



(0.001) Anxiety : 21.15 ± 3.86 and 16.13 ± 4.10 (0.001), Depression : 12.50 ± 2.33 and 10.05 ± 1.39 (0.032), Satisfaction with Life Scale : 21.54 ± 3.55 and 24.42 ± 3.31 (0.001). Thus this study has convincingly demonstrated the short term benefits of regular practice of yoga on psychological well being and quality of life in Diabetes mellitus.

Key words : Diabetes mellitus, Yoga therapy, Quality of life, General health

EFFECT OF 10 DAYS NATUROPATHY AND YOGA LIFESTYLE INTERVENTION ON GLYCEMIC STATUS IN TYPE 2 DIABETICS: A PRELIMINARY OBSERVATIONAL STUDY

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Background: Growing numbers of people with diabetes worldwide use complementary and alternative medicine (CAM) as along with the medical therapy for managing disease and improving quality of life. Multiple mind-body approaches including Naturopathy and Yoga are gaining public and scientific interest. Despite of the growing popularity, very few studies have been reported for Naturopathy and Yoga as a combined comprehensive lifestyle intervention in Indian context. The current study was therefore aimed at documentation of blood sugar levels of Type 2 Diabetes Mellitus (T2DM) patients undergoing Naturopathy and Yoga lifestyle intervention.

Materials and Methods: The study was undertaken at the SDM Yoga and Nature Cure Hospital, Dharmasthala in Karnataka. 100 pre-diagnosed T2DM in-patients (58 males, 42 females, age: 52.7 ± 9.03 years) undergoing Naturopathy and Yoga lifestyle intervention for 10 days were recruited for the study. Subjects with co-morbid conditions like hypertension were excluded.

Intervention: The intervention included regulated diet, relevant naturopathy treatments like hydrotherapy, massage and mud therapy along with an integrated yoga module including asana, pranayama, meditation and kriya.

Outcome Measures: Fasting (FBG) and post prandial (PPBG) blood glucose levels were measured on 2nd and 10th day.

Results: The mean FBG reduced from 185.52 ± 52.41 mg/dl to 152.82 ± 44.35 mg/dl ($p < 0.001$) and PPBG reduced from 245.13 ± 64.62 mg/dl to 208.05 ± 54.33 ($p < 0.001$). Though not documented in the current study, authors also observed medications and body weights of the subjects being reduced during the 10 day intervention.

Conclusion: Naturopathy and Yoga comprehensive lifestyle interventions are effective in improvement of glycemetic status.

Key words: naturopathy, yoga, glycemetic control, lifestyle, diabetes

FEASIBILITY TESTING OF YOGA MODULE- NEED & METHODOLOGICAL PROCESS

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Introduction: Feasibility testing of any yoga module is important as only if the practices are found to be feasible by the target sample, the effectiveness of the module can be tested. In this context, there is a need to conduct feasibility testing studies and define standardized methodological protocols to conduct the same. In this paper we shall detail the protocol for conducting feasibility testing studies, based on a study protocol developed for feasibility testing of a yoga module for Type II diabetes.

Methodology: A review of scientific published literature papers on feasibility testing of yoga modules was conducted to develop a standardized protocol for feasibility testing of yoga modules. This protocol was implemented on the yoga module developed for Type II Diabetes at S-VYASA, University.

Results: This standardised protocol included an interview guide and an observation checklist. The interview guide administered to the participants before and after the 10 day yoga programme to assess the feasibility of the module provided insights about the participant's experience with the yoga programme and specific practices, physical or emotional discomforts/changes (positive) experienced during the practice, method adopted by the physician in teaching the practices, fulfilment of participants health

expectations, component of the yoga programme that helped/disappointed the most, components that should be excluded/included in the programme for diabetes. The observation checklist administered during the yoga practice assessed the ease with which the participants were able to perform the practices and the efficiency with which the trainers were able to teach the practices.

Conclusion: The feasibility testing protocol which is developed based on scientific methodology and provides a qualitative understanding of the ability of the participants to follow the therapist's instructions and perform the practices which can be used in future yoga studies.

IS BITTER ALWAYS BETTER? BITTER TASTING FOODS AS DIETARY INTERVENTION FOR TYPE 2 DIABETES MELLITUS: A REVIEW

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Bitter tasting foods have traditionally been used across many cultures in the management of Type 2 Diabetes Mellitus (T2DM). TAS2R9, a receptor for bitter taste, has been shown to be involved in the regulation of nutrient-dependent GLP-1 secretion from L cells, which impacts glucose homeostasis by regulating glucose-stimulated insulin biosynthesis and secretion from pancreatic cells and by inhibiting glucagon secretion from pancreatic cells. This evidence provides an important link between alimentary chemosensation and metabolic disease.



A 30% amelioration in fasting blood glucose was observed with bitter gourd feeding in diabetic rats. 60% of fatty acid content of bitter gourd seeds is alpha eleostearic acid, and 65% in pomegranate seeds is Punicic acid, both of which have showed potent antioxidant and anti-inflammatory activity in DM. Bitter gourd reduces protein tyrosine phosphatase 1B activity in skeletal muscle cytosol, which enhances insulin sensitivity. It has also shown to aid regeneration of Beta Cells in Islets of Langerhans of pancreas.

Fenugreek improves glycemic control in T2DM. Female inflorescences of the hop plant *Humulus lupulus* L. contain secondary metabolites with bitter acids, which exhibit anti-fibrogenic effects on hepatic stellate cells in vitro. Bitter melon has a modest hypoglycemic effect and significantly reduced fructosamine levels from baseline among patients with type 2 diabetes who received 2,000 mg/day. Wild-type Bitter Melon powerfully lowered glucose levels. Other foods such as stevioside, cinnamon and *Gymnema sylvestre* have been addressed for their specific actions towards different reactions involved in development of T2DM.

One study reported negative effects leading to three deaths and twenty six hospitalizations due to consumption of extremely bitter bottle gourd juice. This article aims to review the effects of bitter tasting foods on individuals with T2DM, by virtue of the taste as well as physiological functions of various phytochemicals and other compounds present in them.

Keywords: Bitter taste receptors, Type 2 Diabetes Mellitus, Bitter food, TAS2R9, safety

GASTRO HEPATIC PACK FOR TYPE 2 DIABETES MELLITUS: UNDERLYING PHYSIOLOGICAL MECHANISMS OF CURE – A NOVEL HYPOTHESIS

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Type 2 Diabetes Mellitus (T2DM) was estimated to be prevalent among 2.8% for all age groups worldwide in 2000, and extrapolated to 4.4% in 2030. A major part of this burden, 75%, will be borne by developing countries, of which India will be home to the maximum number of diabetics, about 57 millions. Several CAM (Complementary and Alternative Medicine) modalities like naturopathy, acupuncture, therapeutic massage, reflexology, dietetics etc, are found to be effective in the management of type 2 Diabetes Mellitus. In India and abroad, Gastro hepatic (GH) pack is a hydrotherapeutic treatment of choice in the management of T2DM. As of today, the evidence available to support its use on such a large scale is insufficient.

This article presents a novel hypothesis of one mechanism by which GH Pack could reduce insulin resistance and thereby effectively be used in the management of T2DM. Elevated basal plasma lactate is associated with T2DM and obesity. Elevated basal lactate levels with increased obesity may reflect increased lactate production from enlarged adipocytes and an increased fat mass. It suppresses glycolysis and impairs insulin signaling, decreasing insulin-stimulated glucose transport in

skeletal muscle and adipose tissues, thus contributing to insulin resistance.

This article discusses a mechanism of action of GH pack on hepatic carbohydrate metabolism that reduces plasma lactate, thus reducing insulin resistance and aiding in the management of T2DM.

Keywords: Gastro Hepatic Pack, Type 2 Diabetes Mellitus, Basal Plasma Lactate, Obesity, hepatic carbohydrate metabolism

PREVENTIVE ROLE OF THE YOGA PRACTICE IN INSULIN RESISTANCE AS A PREDIABETES CONDITION – A CASE STUDY

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Background: Yoga is considered to be a practice that helps reduce risk factors for type 2 diabetes by improving glucose levels, blood pressure, triglycerides, promotes weight loss and life style changes. Although the body produces insulin, cells are resistant to insulin and are unable to use it effectively, leading to hyperglycemia. Life style of respondent contributes to the state of lack of physical activity and overdose of carbohydrates and sugar in the diet (more than 300g of carbohydrates per day).

Method: In this case study, we research influence of the implementation of daily yoga practice (asanas, pranayama and meditation) over the period of 3 months in person who shows the symptoms of weight gain and inability to lose weight, inability to focus, sleepiness, increased hunger, signs of depression and high blood sugar. There was

also proscribed diet without carbohydrates. Participant had mood assessment test and blood tests at baseline and at the end of 3 months.

Results: Results show the efficacy of the intervention. Participant expressed high satisfaction with the program of daily yoga practice (asanas, pranayama and meditation) and experienced subjective feeling of mood and physical health improvement after 10 days. After 3 months, participant shows improvement in blood sugar, weight loss, focussing, sleeps better, feels more energy.

Conclusion: This case study suggest s possibility to use of yoga techniques and diet changes in prevention of type 2 diabetes by interrupting development of the insulin resistance.

Key words: yoga, life style, insulin resistance, hyperglycemia

THE EFFECT OF YOGA THERAPY FOR DIABETES MELLITUS

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Diabetes mellitus has been with human race for longer period of time. The presence of such a unique disease like Diabetes Mellitus was become a big challenge to health care providers and patients alike.

In the present scenario, Diabetes Mellitus is one of the leading causes of death in the developed countries and in India it is estimated that approximately 2% of the population, 15 million people, have diabetes, which is comparatively more in number. The better way of reducing the risk factors of



Type 2 Diabetes Mellitus is the yoga therapy that includes yogic counselling, asana, pranayama and relaxation techniques. In the present paper some of the researches working on the yoga therapy for diabetes are shown as evidence, from which it clearly shows that mental stress is the root cause for all cases of diabetes mellitus type 2. The research on yogic practice for diabetes mellitus type 2, conducted for 3 months shows comparative reduction in oral hypoglycemic medication, control in blood glucose level, increased insulin secretion, HbA1C and lip profile. The another research that has been conducted for 6 people as a 10 days camp by stopping their medicines few days before the camp has shown the change of 90-95% at fasting blood sugar level, postprandial level (PP) and in urine sugar.

Conclusion: Yoga therapy can be used as a major tool in the prevention, cure and the promotion of health in Type 2 Diabetes Mellitus.

Keywords: Diabetes Mellitus, yoga therapy, Yogic Counselling.

POSITIVE STATES OF MIND AND EXECUTIVE CONTROL IN MEDITATORS

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Purpose: The present study investigated a specific attentional task to measure the cognitive performance and positive states of mind in meditators and non-meditators. In addition the present study also assessed the

possible correlation of meditation experience with the positive and negative affects.

Method: This was a cross-sectional study comparing the cognitive performance in meditators with age and gender matched non meditators. We selected 30 right-handed meditators and equal number of non-meditators matched for age, years of education and gender. Participants were administered a Stroop task in which they had to choose the color (red, blue or green) of single word presented visually in three conditions: congruent, neutral and incongruent as well as Positive states of Mind (PSOM) and Positive and Negative Affect Schedule (PANAS) 'before' and 'after' one month of meditation practice.

Results: Meditation practice was associated with better performance in color task ($p < 0.001$) compared to word task ($p < 0.01$) and color word task ($p < 0.05$) in the meditation group compared to non meditation group. Assessments on PANAS and PSOM showed that meditation experience is associated with larger Positive Affect ($p < 0.001$) and lower Negative Affect ($p < 0.01$) in meditation group and similar changes in Positive states of mind in both the groups.

Conclusion: The results suggest that meditation improved the Positive states of mind and Positive affect as well as reduces the interference on the Stroop task with enhanced executive control.

Keywords: meditation, positive state of mind, positive and negative affect, stroop task, executive control.

AYURVEDIC MANAGEMENT OF DIABETIC RETINOPATHY - A CONCEPTUAL STUDY

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Diabetic retinopathy is a disease resulting from diabetic chronic hyperglycemia characterized by micro vascular complications in the retina, where neuronal elements responsible for vision are located. It is the main cause of adult blindness in developed and developing countries.

NetraPrakashika has mentioned *Granthi* and *Meharoga* as the cause of eye diseases. *Charaka* in *nidanasthana* 4th chapter stated *Baludravashleshma* along with *Abaddhameda*, *mansa*, *shareerakleda*, *shukra*, *shonita*, *vasa*, *lasika*, *majja*, *rasa* and *oja* as the pathological constituents of *Madhumeha*.

There is no direct correlation and reference of diabetic retinopathy and the eye diseases caused because of *madhumeha*. Based on the signs and symptoms of Diabetic retinopathy, an attempt has been made to correlate with the *Srotodushtiprakaras* occurring in Ayurveda and management of diabetic retinopathy by *sanpraptivighatana*.

The management is aimed at both preventing further damage and relieving the complaints. Following line of treatment is advised.: *Kledaharana*, *Rasa* and *RaktavahaSrotodushtiharana*, *Vata anulomana* and *Shophaharana*. For *kledashoshanartha* and *kaphanirharanartha*, *Seka* with *triphalakashaya* is useful. Triphala does *kaphachedana* and *shoshana* along with *rasayana* properties.

Chandraprabhavati can be given 2BD. *Guggulu* present in that has hypolipidaemic action which has significant role in preventing the formation of soft and hard exudates in DR thus causing vighatana of atipravritti, siragranthi and also acts as Shophahara.

Punarnavakashaya can be administered 4tsp BD. *Punarnava* is best *Shophahara*, *Vata anulomana*, anti-hypertensive and diuretic. This helps in preventing macular edema and also soft exudates, and also improves retinal oxygenation. Thus *vighatana* of *sanga* and *vimargagamana* is established. *Nishamalaki* 2bd is advice, which is a proven drug to control blood sugar level.

Key words: Diabetic Retinopathy, Madhumeha, Ayurveda

PREVALENCE OF DEPRESSION IN TYPE 2 DIABETIC PATIENTS AND EFFECT OF YOGA THERAPY ON PSYCHOLOGICAL, BIOCHEMICAL AND CLINICAL VARIABLES IN DEPRESSED TYPE 2 DIABETES PATIENTS

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Background and objectives: Type 2 diabetes (T2DM) almost doubles the risk of comorbid depression. One study in Spain have reported lifetime prevalence up to 29%. No study till now has assessed prevalence of depression in type 2 diabetes patients in India. Recognition and treatment of depression in T2DM are



important because of its association with hyperglycemia, diabetic complications and poor quality of life (QoL). However, although currently available medical therapy for depression is effective in reducing depressive symptoms, it has considerable side effects. The aim of this study was to determine the effects of Integrated Approach of Yoga Therapy on Psychological, Biochemical and Clinical Variables in Depressed T2DM patients.

Methods: 146 T2DM patients attending a yoga therapy hospital over a period of 8 weeks were screened using BDI (Becks Depression Inventory). Out of 146, 46 T2DM patients were found to have clinical depression (BDI score >13) (48.9% males, age 59.8 ± 11.1 , T2DM duration 9.5 ± 6.5 years). This was confirmed with a structured interview. Two weeks of IAYT intervention was given to all 46 depressed T2DM patients daily. IAYT intervention included specific sets of *asanas*, *pranayama*, relaxation techniques and lectures on yogic lifestyle based on yoga philosophy. 8 out of 46 refused the IAYT treatment because of busy schedule and were used as controls. Both the groups continued conventional treatment without any change. Psychological variables such as BDI score, Positive and Negative Affect Scale (PANAS), General Health Questionnaire (GHQ); Biochemical variables (Fasting and Post Prandial Blood Sugars) and Clinical variables (Fatigue, Body Pain, Foot problems and Frequency of Urination) and body mass index BMI were assessed before and after 2 weeks of IAYT intervention, complications related to T2DM and comorbidities were also recorded.

Results: Out 146 T2DM patients, 46 suffered from depression which brings out a prevalence rate of 31.5% in India. Out of 46, 17 had mild depression (10.6%; BDI scores: 14-19), 13 had moderate (8.1%; BDI scores: 20-28) and 16 had severe depression (10.95%; BDI scores: 29 to

63). No differences in baseline characteristics were observed between the two groups. When compared with the untreated group ($n = 8$), patients treated with IAYT ($n = 38$) showed significant improvements in BDI scores, positive affect, FBS scores, fatigue, body pain, foot problems and urinary frequency. BMI and Negative affect score reduced significantly in the IAYT group. No differences in GHQ and PPBS were found.

Conclusions: Treating depressive symptoms with IAYT in T2DM is associated with improvements in depression, positive affect, blood sugar levels, clinical symptoms and BMI but with no significant changes in metabolic control or weight.

Keywords: Type 2 Diabetes, Depressive disorder, Integrated Approach of Yoga Therapy.

THE IMMEDIATE EFFECT OF A 45 MIN. MUSIC SESSION ON THE BIO MARKERS OF DIABETES MELLITUS TYPE 2 PATIENTS.

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Context: Psychosomatic problems are the outcome of the modern materialistic life style for which there is no cure in modern medicine. Like yoga, naturopathy and ayurveda, music is also considered as an effective therapy in treating the psychosomatic illnesses. It is a non-invasive and cost effective therapy.

Background: Diabetes mellitus type 2 is a metabolic and life style disorder. It is a systemic condition due to which all the systems of the body are affected. The present study is an attempt to find out the influence

of music therapy on the bio-markers of DM Type 2 patients.

Methods and Materials: With self as control design 35 participants were given a music session of 45m. 29 participants were analyzed with Gas Discharge Visualization technique (bio-photonics) and assessed with SPSS.

Results: The experimental group showed significant decrease in the right entropy (p value=0.011) and improvement in the front projection form coefficient, (p value=0.032) compared to the active control group.

Conclusion: The findings of this study provide an experimental support to claim that music therapy is effective in treating the DM Type 2 patients.

'HEALTH AWARENESS' USING PHYSICAL BODY AS A FRAME

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This is a concept paper detailing on the use of body focused meditation for awareness of health:

Self awareness is having a clear understanding of oneself; including strengths, weaknesses, thoughts, beliefs, motivation, emotions etc. Awareness on physical status could be attained using body as a frame and enhanced using body focused meditation techniques. Body focused meditations helps one in understanding the subtle changes of the body by bringing awareness into the physical body frame. The process starts with feeling the outer space of one's physique including

the objects around. Later shift the focus into the subtle bodily changes including breath, feeling, body rhythm etc. Focus also is to be given on breathing for one to have moment-to-moment awareness. The process helps one in reconstruction of one's idea about one's physique. Moreover, body focused meditation techniques are found to be helpful in reducing the stresses and anxieties of one's life which is likely to complicate ones health status. Regular practice of meditation helps in modifying ones responses to stress by incorporating positive life decisions into the routine of the individual. Reduced stress, greater self-awareness, better relationships, improved ability to focus and lesser depression and anxiety levels are proved benefits of including meditation practices in daily routine. 'Health competence' is a requirement of each individual which is a manifestation of one's health literacy focused to enhance physical health and well being which could be achieved through meditation.

EFFECT OF YOGA ON DIABETES MELLITUS

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Introduction: Diabetes mellitus is characterized by high levels of blood glucose due to the defects in insulin secretion, insulin action or both. Regular Yoga practice reduces blood sugar levels and its complications.

Objective: To find out the effect of regular yoga practice on Diabetes mellitus.

Study design: 12 diabetes mellitus patients



were selected for study who were given regular yoga practice for one and a half hour in the morning and half an hour in the evening for one month.

Materials and methods: Fasting blood sugar, Random plasma glucose and post prandial blood sugar levels were checked at the end of every week for the month and were compared to previous month's blood glucose levels.

Result: The results showed a better management of blood glucose levels through yoga.

Conclusion: Blood glucose levels can be maintained at near normal levels in Diabetes mellitus patients by regular yoga practice.

Key words: Diabetes, Yoga, FBS, RBS

DEVELOPMENT OF DIABETES DUE TO STRESS & ITS MANAGEMENT FOR POSITIVE HEALTH

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Stress (psychology), an unpleasant state of emotional and physiological arousal that people experience in situations that they perceive as dangerous or threatening to their well-being.

When a person appraises an event as stressful, the body undergoes a number of changes that heighten physiological and emotional arousal. First, the *sympathetic division* of the autonomic nervous system is activated. The sympathetic division prepares the body for action by

directing the adrenal glands to secrete the hormones epinephrine (adrenaline) and norepinephrine (noradrenaline). In response, the heart begins to beat more rapidly, muscle tension increases, blood pressure rises, and blood flow is diverted from the internal organs and skin to the brain and muscles.

Stress influences mental health as well as physical health. People who experience a high level of stress may become irritable, socially withdrawn, and emotionally unstable.

The oxidative stress may be amplified by a continuing cycle of metabolic stress, tissue damage, and cell death, leading to increased free radical production and compromised free radical inhibitory and scavenger systems, which further exacerbate the oxidative stress. Structural characterization of the cross-links and other products accumulating in collagen in diabetes is needed to gain a better understanding of the relationship between oxidative stress and the development of diabetes.

In the Thoughts of Modern Thinkers we find yoga as a System of Conscious Evolution and Self perfection. Yoga is a complete system of a way of life. Yoga can be applied irrespective of age, gender, profession, state, conditions, problems and sufferings. Yoga can be applied in every human endeavour –personal, professional, social, family and spiritual. Meditation is designed to achieve subjective goals such as contemplation, wisdom, and altered states of consciousness.

Key words- Stress, mental health, yoga, diabetes.

EFFECT OF YOGA ON THE HIV INFECTED CHILDREN- A HOLISTIC APPROACH

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The study entitled “**Effect of Yoga on the HIV infected Children- A Holistic approach**” has been conducted at Snehasadan HIV home care and Jeevadhan Rehabilitation centre, Mangalore. 45 HIV infected children with the age group of 6 to 17 years were selected with 30 in the experimental and 15 in the control group for the study from SnehaSadana. The experimental group was taught selected yogic practices for two hours a day for the duration of 2 months. After the study, experimental group had showed a significant improvement in CD4 counts, Hemoglobin, weight and ESR. Thus, the present study emphasizes the holistic approach of yoga to improve the health of HIV infected children.

Key words: Yoga, HIV infected children.

DIABETIC FOOT MANAGEMENT: AN AYURVEDIC PERSPECTIVE

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Lifetime incidence of foot ulcers within the diabetic community is around 15% and may become as high as 25%. The existing protocols

for the management of Diabetic foot ulcer by conventional system of medicine are (1) measurement of the wound by planimetry; (2) optimal glucose control; (3) surgical debridement of all hyperkeratotic, infected, and nonviable tissue; (4) systemic antibiotics for deep infection, drainage, and cellulitis; (5) offloading; (6) moist-wound environment; and (7) treatment with growth factors and/or cellular therapy. In Ayurvedic classical literatures, the pathological ulcers are explained as *Dusta vrana* and sixty treatment modalities are explained for the management of the same. In present study, the literatures are reviewed for treatment of Diabetic foot ulcer on the basis of international protocol for the management.

Key words: *Dusta vrana*, Diabetic foot ulcer, Ayurvedic management

COLD ABDOMINAL COMPRESS: UNDERLYING PHYSIOLOGICAL MECHANISMS OF CURE – A NOVEL HYPOTHESIS

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Type 2 Diabetes Mellitus (T2DM) was estimated to be prevalent among 2.8% of all age groups, worldwide in 2000, and extrapolated to 4.4% in 2030. Several CAM (Complementary and Alternative Medicine) modalities have been found to be effective in the management of type 2 Diabetes Mellitus, including hydrotherapy. In India and abroad, Cold Abdominal Compress is a widely



used hydrotherapeutic treatment in the management of T2DM, usually administered about half an hour before a meal. As of today, the evidence available to support its use on such a large scale is insufficient.

A class of drugs used widely in the management of T2DM is potassium channel blockers, which inhibit voltage gated K⁺ channels in the Beta Cells in the Islets of Langerhans in Pancreas, thereby opening Calcium channels and promoting insulin secretion.

A low temperature of 22°C has been found to inhibit voltage-gated K⁺ channels. This article aims to discuss a novel mechanism through which the cold abdominal compress may work in a similar fashion to potassium channel blockers, by inhibiting voltage-gated K⁺ channels in Beta Cells in the Islets of Langerhans in Pancreas, thereby stimulating insulin secretion, and how this may be used effectively in the management of T2DM.

Keywords: Type 2 Diabetes Mellitus, Cold abdominal compress, voltage-gated K⁺ channel, insulin secretion, potassium channel blocker.

THE EFFECT OF YOGIC PRACTICES IN MANAGING THE RISK FACTORS OF DIABETES MELLITUS

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Background: The prevalence of Diabetes Mellitus all over the globe is increasing day by day. In India, we are soon raling to become the Diabetic Capital of the world. About nearly

5 crore people in India, are stuck with the pandemics of Diabetes. WHO estimates for the global prevalence of Diabetes of the year 2000 and projections for 2030 indicates that India will be on top of the list of 10 countries across the globe.

Aim: Objectives of the study were to see the effect of Yogic practices on the risk factors of Diabetes Mellitus.

Method: We carried out five batches of well designed studies to assess the effect of Yogic practices in patients with Diabetes Mellitus, at **Satguru Yoga Vidyalayam a unit of Sukrutham Heritage Foundation Trust, Coimbatore – Tamilnadu** between 2009-2011. The study utilized 45 subjects in total, between the age group of 35-50 years, having the history of Diabetes Mellitus since one month to 10 years. The integrated Yogic practices includes specific – Kriyas, Yogasanas, Pranayama, Bandhas, Meditation, Relaxtion Techniques, Counseling sessions, lectures on diet and healthy life style.

Result: The result is found to be statistically satisfactory and effective in reducing the Blood Glucose (Fasting and Post prandial), Serum insulin, Lipid profile, HbA1c, Oral hypoglycemic medication requirements and they have withdrawn the medicine under the Yogic Therapy only.

Conclusion: Our data, on the long term follow up of the study, shows that research findings reveal remarkable improvements in the of Yogic practices on Diabetes Mellitus under the OPD System.

Key words: Yogic Therapy, Diabetes Mellitus, Healthy life style, OPD System

CONCEPTUAL ANALYSIS OF OJUS AND IT'S ROLE IN MADHUMEHA

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Ojus is one of the body components which is told to be as "*Saptha Dhaathu Sara*". Being located in *Hrudhayaa* as *Para Ojus* and in entire body as *Apara Ojus*, it contributes *Bala* to the body. *Ojus* in excellence, results in the robust health condition; while affected *Ojus* can even lead to death. Unfortunately, the concept of *Ojus* has remained mysterious even today. Analytical studies or clear understanding of *Ojus* has remained out of reach for many *Ayurvedic* scholars. Hence in this paper: meaning, production, distribution, qualities, functions, factors affecting and results of depletion of *Ojus* are reviewed as explained in the classics and a small attempt to understand it in contemporary science is made.

Madhumeha rules over any non-communicable disease prevailing in this era. Increasing population, sedentary lifestyle, and various kinds of internal and external stress factors have made the metabolic diseases even more epidemically spreading. Over 150 millions are reported to be suffering from this 'Sweet Disease' worldwide. The international diabetic federation (IDF) estimates total number of diabetic subjects to be around 40 million in India and it is further said to rise to 69 million by the year 2025.

Keeping in mind the necessity of

understanding *Madhumeha* and its contemporary counterpart Diabetes Mellitus, the etiology, pathogenesis, features and management of the disease are comparatively analyzed. An effort is made to establish the involvement of *Ojus* from the stage one of *Madhumeha* and how *Ojus* has to be restored while managing the patients of *Madhumeha*. The entire paper is a conceptual analysis and the facts have to be proved with scientific studies and statistical analysis.

Key words: *Ojus*, *Para Ojus*, *Apara Ojus*, *Saptha Dhaathu Sara*, *Bala*, *Madhumeha*, *Diabetes Mellitus*.

IMPACT OF THE PEOPLE PERCEPTION ABOUT AYUSH

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Introduction: India is the only nation in the world with officially recognized multiple systems of medicine namely AYUSH (Ayurveda, Siddha, Unani, Naturopathy and Yoga and Homeopathy). For 65% of its population, Alternate medicine is the only available source of healthcare. This widespread resource needs to be strengthened, retrained and effectively utilized in the national health care delivery system so that there is glorious future ahead for providing an integrated health care system to our people.

Aim & objective: To determine the effectiveness and knowledge about AYUSH system.

Methodology: This cross sectional study was



conducted on 200 adults in Kanchipuram district, in two different settings, the community setting (n=100) to represent the rural population and the hospital setting (n=100) to represent the peri urban population by simple random sampling method and convenient sampling respectively. Pre structured questionnaire was used.

Results: 82% of people feel AYUSH to be effective for various conditions. In that, most of them had result in preventive care (36%), chronic conditions like hypertension & diabetic (30%). The preference for approaching AYUSH clinics greatly varies according to the disease conditions, their perception about the effectiveness of these systems ($p= 0.001$), the age of the respondents ($p= 0.001$) and their knowledge about AYUSH, the awareness about the existence of AYUSH clinics ($p= 0.04$) in their locality.

Conclusion: Knowledge about AYUSH system varies. People have a opinion that AYUSH is only for chronic diseases. Knowledge is limited and hence need more awareness and exposure to AYUSH.

Key Words: AYUSH, knowledge, chronic diseases, effectiveness.

ETIOPATHOGENESIS OF DIABETES IN AYURVEDA AND ITS PRINCIPLE OF TREATMENT

Mamta Mishra, O.P. Gupta

Diabetes Mellitus is the biggest challenge for medical people not only for the management but the prevalence of this chronic disorder within the mass, ultimately generates personal, social, national burden. It was only in the late 19th century, when the scientists

were searching for the causes of every disease and discovery of bacteria, invention of microscope developed a new branch for research, during animal experimentation in 1890, it was showed that particular part of GIT including pancreas removed from the body of the animal developed sign and symptoms of diabetes. After 30 years, 1921 Fredrik In Benedict, a Canadian surgeon and Charles Best, a medical student who was helping him on a specific experiment, when injected extract of pancreas to a diabetic animal the sign and symptoms of diabetes reduced and they have given a name for such extract as insulin. After the invention, a hypothesis was made that the certain part of GIT removal including pancreas developed Hyperglycemia, and entire treatment still focused on the same etiological factor. Regarding aetiopathological concept, *prameha* can be correlated with Diabetes today on the basis of their clinical similarities is described in Ayurveda that 1) GIT Hormones (Role of Mandagini) ii) Meda, Bahudravasleshma, Kleda (lipid, FFA, dyslipidemia) (iii) Role of Medovahasrota Mola (Kidney and their entire structure) and genetic predominance. These four are the basic components which take directly or indirectly active part in generation of the disorder. Only treating the hyperglycemia the approach is not entirely successful because of complex of pathology, that is why goal of proper treatment is not achieved and most of the patient develop acute or chronic complications. It is very important to discuss the hidden role of untraced hormones for prevention as well as treatment scientifically. Certain scholars of Ayurveda, very categorically described the role of certain genes and hormones which control the disorder through GIT. This genetic factor should kept in central place while discussing about the development of

prameha. Ayurveda deals *prakriti* and *vikriti* in relation to diseases as certain personality (kaphaj personality) which is described as prone to develop such disorder very specific treatment has been quoted accordingly in classics, which needs more scientific work to develop an effective treatment for such disorder. In Government Ayurvedic College, Guwahati we have developed formulation with herbal mixture and studied on diabetics. This paper will highlight the entire concept in the seminar and the observation of herbs, and the Hypoglycemic activities.

Keywords: Prameha, FFA, Medovahasrota, Mandaagni, Prakriti, Vikritis, Sahaj

PUBLIC HEALTH STRATEGIES TO TACKLE DIABETES

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This work mainly discuss the national study on diabetes, nationwide estimates of diabetes prevalence and Recent development in diabetes control and strategies of prevention in India. There have been a few multi-centre studies such as the ICMR studies conducted in 1997 and 1998, National Urban Diabetes Survey (NUDS) in 2001, the Prevalence of Diabetes in India Study (PODIS) in 2004 and the WHO-ICMR NCD Risk factor Surveillance study in 2008. It is estimated that the overall prevalence of diabetes 62.47 per 1000 population in India. India is the diabetes capital of the world. It is estimated that currently there are 51 million people with diabetes in India. . The government of India has undertaken some actions in the form of various national health programs and projects in the past such as “national diabetes control

programs” on a pilot basis during 7th five year plan in 1987 in some districts of Karnataka, Tamil Nadu, and Jammu and Kashmir. The Cabinet Committee on Economic Affairs has approved (on 8th July 2010) the National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) for implementation of its various components during the remaining period of 11th Five year plan (i.e. 2010-11 & 2011-12), estimated total outlay of Rs. 1230.90 crores, in that Rs.499.38 crores for interventions on diabetes and cardiovascular diseases & stroke. the program will be implemented in 20,000 Sub-Centers and 700 Community Health Centers (CHCs) in 100 Districts across 15 States/UTs. In July 21, 2012 Public Health Foundation of India (PHFI), Dr. Mohan’s Diabetes Education Academy (DMDEA) and MSD India announce partnership for comprehensive diabetes management. A main objective of all these programs is Promotion of healthy lifestyle through massive health education and mass media efforts at country level.

EFFECT OF BHRAMARI PRANAYAMA AND OM CHANTING ON PULMONARY FUNCTION IN HEALTHY INDIVIDUALS: A PROSPECTIVE RANDOMIZED CONTROL TRIAL

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Background/Aim: Yoga is an ancient Indian science as well as the way of life. Pranayama is a part of yoga, which improves pulmonary function but the aim of our study is to evaluate the effect of only Bhramari pranayama and



OM chanting on pulmonary function in healthy individuals.

Materials and Methods: A total of 82 subjects were randomized into the study group (SG) ($n = 41$) and control group (CG) ($n = 41$). Baseline assessment was performed before intervention for both groups. SG practiced Bhramari pranayama and OM chanting for the duration of 10 min (5 min for each practice)/day for the period of 6 days/week for 2 weeks and CG did not practice so. After intervention post-assessment was performed for SG ($n = 40$) and CG ($n = 39$). Statistical analysis was performed by Independent samples t -test and Student's paired t -test with the use of Statistical Package for the Social Sciences version 16 (2007, USA).

Results: The result showed a significant improvement in peak expiratory flow (PEF), forced expiratory flow (FEF)_{25%} and maximal voluntary ventilation (MVV) along with a significant reduction in weight in SG compared with CG in independent samples of t -test. Significant improvement in slow vital capacity (SVC), forced expired volume in 1 s (FEV₁) along with PEF, FEF_{25%} and MVV; Significant reduction in weight and body mass index were observed in SG unlike in CG in Student's paired t -test. No significant changes were found in forced vital capacity, FEV₁/SVC and FEF_{50%}, between and within the group analysis of SG and CG.

Conclusion: Bhramari pranayama and OM chanting were effective in improving pulmonary function in healthy individuals.

Keywords: OM, Bhramari, Pulmonary Function Test

PREVENTION OF DIABETES BY INCREASING THE OXYGEN

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In human body all the mechanisms are working only by the five elements such as air, water, fire, land, space. Let us come to our topic about 'How can we prevent diabetes by yoga?'. Mainly diabetes is caused by the digestion problem, which prevents insulin secretion. This is due to the non-burning of glucose. Burning of glucose is done by the oxygen in blood. This paper deals about the increasing of oxygen content in blood, which is used to burn the glucose and to prevent diabetes. This paper says how to increase the oxygen content in the blood by regular yoga and meditation. This paper also says about the art of living.

REVIEW OF RĀGĀS AND ITS RASĀS IN INDIAN MUSIC AND ITS POSSIBLE APPLICATIONS IN THERAPY

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The imbalances in between our outlook towards life and insight cause stress. This could, mostly result in psychosomatic ailments. By modification of our innermost

attitude, we can bring peace, satisfaction and comfort irrespective of the external environment. There are many systems of healing, for countering perceived stress. It helps in managing stress as well as its impact on the systems of the body. In this paper an attempt is made to review the Indian *Rāgas* and the interwoven agreeable *rasās* (aesthetic mood) in them. The willful submission to the notes of the music and the willingness to release the negative thought patterns are helpful in healing physically.

Based on many research made on the metaphysical causation of disease, we have attempted to list particular melody or *rāgas* depicting a particular aesthetic mood, which could help to heal a particular disease.

Key-Words: Indian Music, *Rāgas*, *Rasās*, Metaphysical Cause

HEALTHY PYRAMID TO STOP DIABETES

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Steps of the pyramid include:

1. Breathing exercises, Shitilikaran Vyayam, Suryanamaskaras, Yogasanas, Relaxation Techniques, Pranayama, Kriyas & Walking

Diet

2. **Vegetables, Greens and fruits:** Use variety of colored vegetables & fruits (seasonal, local). **Vegs:** 5 servings /day. Each serving=100g. Provides 30-45 kcals, 5g carbohydrates, 2g proteins. Eg: 1 cup green leafy vegetables, 1 medium size

carrot/onion/potato/10-15 beans, etc.

Fruits: 3 servings /day. Each serving = 100g. Provides 10g carbohydrates & 40-60 kcals. Eg: 1 small banana, 1 medium sized apple/orange/sweetlime/guava/pear, etc, 1 wedge melon/papaya/10-12 berries

3. **Whole grains and products:** 6 servings/day. Each serving=30g (uncooked). Provides 100 kcals, 15g carbohydrates & 3g proteins. Eg: 1 serving = One 6 inch roti ordosa or two idlies **or** 1 cup rice (cooked)/upma/poha **or** 1 tennis ball size ragiball.
4. **Legumes, nuts and seeds:** 2-3 servings /day. Each serving=30g (uncooked). It provides 100kcals, 15g carbohydrates, 6g proteins & 1g fat. Eg: 1 serving = 1 cup cooked thin **or** ½ cup thick dal. **Nuts:** 20g/day. **Seeds:** 1 tbs/day
5. **Milk, curd and butter milk:** 2-3 servings /day. Each serving=100ml. Provides 70 kcals, 5g carbohydrates, 3g proteins & 3g fat.
6. **Oils:** Use sparingly: Filtered traditional cooking oils, used for generations in the family. 3 tsp/day. 1 tsp gives 5g fat & 45 Kcals. Ghee can be added in small quantities.

Fluids: 2 lts/day. Including water

Sugar: Avoid. Occasionally, sweets made of unrefined jaggery are allowed. Artificial Sweeteners – **NO**

Salt: 1tsp unheaped/day (if not hypertensive)

Animal foods: Animal products are low in nutrients that protect us against diseases - fiber, antioxidants, phytochemicals, folate, vitamin E, and plant proteins. There is a strong correlation between diseases and animal protein, not just animal fat.



FIGHT DIABETES IN EVERY CORNER OF YOUR LIFE

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We do hundreds of things every day, from drinking our morning coffee to turning on the computer and humming a song. Many of them you don't even think about-they're just 'what you do'. Can we change a few of them without affecting our overall day? Of course. And what if some of those changes offered, a promise which significantly improves our health? With that in mind, I have put together what may be the most comprehensive menu of small changes which include LIFESTYLE, DIET AND EXERCISE for better diabetes management. I will be dealing with the 'BASIC' things to be done to manage diabetes in every place of our lives – our kitchen, our living room, our garden, our neighborhood and more. I will also touch upon the use of ACUPRESSURE TECHNIQUE to strengthen the fight against diabetes.

It's the little things you do that make the difference between getting on top of this disease or letting it get the better on you. Diabetes isn't a disease that can be treated and forgotten; you take it with you everywhere you go. You can, however fight with it to improve your overall health no matter where you are.

DETAILED ANALYSIS OF THE MUSCLE ACTIVATION DURING A SUN SALUTATION - A SEQUENCE OF YOGA POSTURES

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Sun salutation is one of the holistic practices across the globe. Pioneering in India, sun salutation consists of a sequence of 10 postures performed in a continuous conscious and graceful flow. Performed with alternate inhalations and exhalations this sequence not only rejuvenates the musculoskeletal system it also stimulates the mental system for a focused approach. This sequence is designed scientifically and is a consequence of the experience and wisdom of many great practitioners. In general, sun salutation is an exercise which activate all the muscle in human body. In this study, we sought to determine the forces in some specific muscles of the hip, spine, abdominal and upper limb segments to corroborate the precedence of this meticulous cycle. A biodynamic human model was developed using multi-body dynamic software: ADAMS LifeMOD®. Moderate values of force were found to transpire for muscles at different regions of the human body. Conjointly these muscle forces are sub axial in nature, hence establishes the innocuous nature of the sequence. The modeling and simulation of sun salutation for human musculoskeletal model is generated

using ADAMS/LifeMOD® software. The primary aim of our study is to determine the human muscle activation while performing sun salutation.

Keywords: Sun salutation, Muscle activation, LifeMOD, Musculoskeletal modeling and Musculoskeletal simulation

R: A STATISTICAL PACKAGE FOR YOGA RESEARCHERS

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Statistical analysis is an integral part of any quantitative research. There are many statistical programs available for this purpose. Choosing one among them may be a challenge. The objectives of this paper are: 1) To introduce a *free* statistical package R, to the Yoga researchers for computing. 2) To present the advantages and sophistication of R in data analysis. Due to these factors R is gaining huge popularity among academicians. As a matter of fact, many universities across the world are gradually shifting to R from other statistical programs. Through this paper it is expected that the yoga researchers will be aware of the free and sophisticated software R for statistical computing.

Apart from being an open source, R has many distinguishing features. Its graphics and data visualization tools are praiseworthy. There are more than 800 packages meant to achieve dedicated purposes like effect size calculation, factor analysis, linear and non-linear modeling, time-series analysis, data

visualization and the like. Moreover, there are specific packages for various disciplines like 'psych' for psychology and 'Biobase' for advanced biological computation. It is also a programming language, which gives researchers a greater freedom. The new packages are peer-reviewed and thoroughly tested before they are launched. R provides the updated statistical procedures with the source codes. The users can also alter the codes if they wish. Active support is also provided by various R community forums. All these features make R transparent, latest, free, and the most desirable statistical package. Due to its versatility and freedom, sometimes learning curve for R becomes slower in the beginning. Some of these aspects will also be discussed.

This paper is an attempt to bring awareness among Yoga researchers about R and encourage its use to disseminate their scientific knowledge in the best way possible.

Keywords: R: A statistics, open source, packages, Yoga

FIVE DAYS OF INTEGRATED APPROACH OF YOGA THERAPY NORMALIZES BLOOD SUGAR LEVELS WITHOUT ANY MEDICATIONS IN A KNOWN DIABETIC PATIENT: A CASE STUDY

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Case: A 59-year-old male, known case of DM 2 since 2 years, came to our holistic health



home Arogyadhama with chief complaints of increased frequency of nocturnal micturition, easy fatigability, increased thirst and burning sensation in feet since 6 months. His diabetes was poorly controlled with HbA1C of 9.6 % in spite of taking oral hypoglycaemic agents (Metformin 500mg BD). His Fasting and Post-prandial blood sugars (FBS and PPBS) were 150mg% and 210mg% respectively at the time of admission.

Method: The case underwent a residential integrated approach of yoga therapy (IAYT) intervention, adapted to his specific needs and limitations, continuously for duration of five days. The intervention included breathing practices, relaxation techniques, meditation, mantra-chanting, yogic counselling and bodily postures with awareness. The case was reluctant to take conventional medications and hence stopped his medicines as soon as he was admitted to our health home.

Assessments: FBS, PPBS, Weight, BMI (Body Mass Index), Waist Circumference, Symptom Score and Medication Score were assessed before and also at the end of 5 days of IAYT intervention.

Results: This study shows an instant effect of IAYT on reducing FBS (by 30.6%), PPBS (by 35.2%), weight (by 3kg), BMI (by 4.5%), Waist circumference (by 6%), symptom score (by 99%) and medication score (almost 100%).

Conclusion: Yoga Therapy can reduce blood sugar levels and other risk factors in DM2 patients and bring them to normalcy in as short duration as 5 days.

Key words: IAYT, Yoga, Diabetes, blood sugar, case study

SAFETY AND USEFULNESS OF LAGHU ŚAṆKHAPRAKṢĀLANA (YOGIC BOWEL CLEANSING) IN PATIENTS WITH ESSENTIAL HYPERTENSION, A CONTROLLED STUDY

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Background: Yoga and Ayurveda texts emphasize the role of cleansing the bowel as an important component of management of hypertension (HTN). Observations during our clinical experience and pilot studies on Laghu Śaṅkhaprakṣāla Kriyā (LSP), a yogic bowel cleansing technique, appeared to be safe and complimentary.

Aim: To test the safety and effectiveness of LSP in patients with essential hypertension.

Materials and Methods: This itself as control study recruited 32 patients with mild to moderate essential HTN admitted for a week long residential integrated *yoga* therapy program at the integrative health home in Bengaluru. Subjects had a daily routine of 6 hours of integrated approach of *yoga* therapy (IAYT) module for HTN that included physical postures, relaxation sessions, *prāṇāyāma* and meditations. LSP, an additional practice, that involved drinking of Luke-warm water (with or without the herb, *triphalā*) followed by a set of specific *yoga* postures that activates defecation reflex, was administered on 2nd (LSP without *triphalā*) and 5th day (LSP with *triphalā*). Assessments (blood pressure and pulse rate) were done just before and after both the sessions of LSP. Secondary outcome

measures were assessed on 1st and 6th day of IAYT intervention.

Results: There was significant ($p < 0.001$, paired t test) reduction in blood pressure (systolic and diastolic), and pulse rate immediately after both the sessions (LSP with and without *triphalā*) pointing to its safety. There were no adverse effects reported during or after LSP. There was no significant difference between the two techniques ($p < 0.505$, independent samples t test), although the percentage changes appeared to be higher after *triphalā* LSP session. The number of visits to clear the bowel during the procedure was significantly ($p < 0.001$, independent samples t test) higher after LSP with *triphalā* than LSP without *triphalā*.

After the weeklong IAYT there were significant reductions in blood pressure ($p < 0.001$), BMI ($p < 0.004$), medication score ($p < 0.001$), symptoms score ($P < 0.001$), fatigue ($p < 0.001$), state and trait anxiety (STAI, $P < 0.001$), scores of general ill health (GHQ, $p < 0.001$), and increase in comfort level ($p < 0.001$) and quality of sleep ($P < 0.001$).

Conclusion: LSP (a part of IAYT) is a safe and useful *kriyā* for patients with essential hypertension. LSP with *triphalā* is more useful.

Key Words: Hypertension, *Triphalā*, *laghu śaikhaprakṣāḷana kriyā*, *yoga*, bowel cleansing.

MUD PACK TO EYES: A NEW POSSIBLE REGIME FOR GLAUCOMA

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Glaucoma is slow progressive deterioration of the optic nerve, associated with elevated intraocular pressure (IOP). It leads to reduced visual acuity and is a major cause of blindness in developing countries like India. Though the exact mechanism of elevated IOP remains unexplored, it is often found to be associated with Diabetes Mellitus, aging, and head injury. Optic nerve cupping and damage is caused due to elevated IOP.

The goal for administration of any therapy is to lower IOP, either by reducing the secretion of aqueous humor or by promoting its drainage. Lowering of IOP retards progression of optic nerve damage even in normal/low IOP glaucoma.

Since, historical time mud therapy (MT), a naturopathic treatment modality is used in the care of acute and chronic inflammatory conditions. Indirect application of the mud pack to eyes through a cotton cloth, may increase the tone of the ciliary muscle (attached to scleral spur) and sphincter pupillae which may pull on and improve alignment of the trabeculae so that outflow for the aqueous humor is enhanced and IOP decreases in open angle glaucoma. Also contraction of sphincter pupillae removes pupillary blocks and reverses obliteration of irido-corneal angle in angle closure glaucoma.

Also mud therapy reduces the circulating



levels of the pro-inflammatory mediators like PGE2, LTB4, IL 1 and TNF- α , reducing the inflammation and exudate formation.

This suggests that mud packs to eyes can be used as an effective anti-glaucoma measure. Further in depth studies need to be conducted to the unearthing of the innate potency of this natural remedy.

Key words: Glaucoma, Mudpack, Naturopathy, Inflammation

PROTOCOL TO ASSESS THE REASONS FOR ADHERENCE IN YOGA STUDIES

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Introduction: Adherence to yoga regime can have a positive effect on treatment outcomes and health. Research has shown that inspite of offering yoga, explaining its potential benefits and providing travel support to attend the training, there were considerable drop outs in the yoga sessions (Baspure et al, 2012). In order to make yoga acceptable and available to the patient population, it is thus vital to first understand the possible causes of adherence to yoga therapy in patients. In this context, the current study protocol was developed to follow-up patients with Type 2 Diabetes Mellitus (T2DM) who were provided yoga for a period of 6 months to check various factors related to adherence in the Indian community.

Methodology: A review of scientific published literature papers on adherence to yoga was conducted to develop a standardized protocol.

Results: In this standardized protocol T2DM participants in the community would be provided yoga intervention for a period of 6 months. Those: a) who refused to participate in the study at the screening level, b) who agreed to participate in the study and completed the study successfully, and c) who agreed to participate in the study but dropped out before the completion of the study would be assessed using an interview guide and an observation checklist at the end of every month for 6 months to assess their qualitative reasons for adherence to yoga. Objective parameters such as BMI, FBS, PPBS, HbA1c, hip circumference, waist circumference and Fat%, would also be assessed every month to assess the effectiveness of yoga for T2DM based on period of adherence to yoga.

Conclusion: An understanding of the factors of adherence to yoga would help researchers' in the future to control the attrition rate in larger randomized controlled yoga trails and effectively test the positive outcome of yoga.

MATRIX RHYTHMUS THERAPY IN THE MANAGEMENT OF DIABETIC COMPLICATIONS - A PILOT STUDY

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Without enough insulin in the body, glucose accumulates in the blood, where it is of little use. Even though there is plenty of glucose around it, it can't get into the cells to produce ATP. To fulfill these requirements the body starts to liquidate fat deposits for energy production which in turn produces acidic side product like ketones resulting in acidosis. Acidosis sensitizes the pain perception and

the muscle disposition to contract. Thus compression of the venules and the arterioles leads to insufficient oxygen supply and reduced ATP formation causing hypoxia. As a result of hypoxia and energy deficit on the cellular level the muscle fiber stay contracted resulting in various complications like stiffness of muscles, reduction in mobility, non healing wounds, loss of sensation, burning sensation in the extremities, hyper pigmentation of skin, edema, lack of stamina, fatigue etc.

A specially constructed resonator of Matrix Rhythm Therapy coherently delivers mechanical magnetic oscillations in the physiological frequencies(8-12 Hz) to the skeleton musculature and the nervous system which normalizes the cellular rhythm as well as the nutrient flux density in the extra cellular matrix. Application of Matrix Rhythmus Therapy once in a week, in individuals with diabetes allows the cell metabolism of the tissue to be reactivated with depth- effective rhythmical micro extensions that enhances the metabolic processes resulting in improved circulation, oxygen supply, ATP production and normalizing the blood Ph. As a result of this at the cellular level, there is relaxation of the muscle fibers resulting in relieving the individuals from the complications due to diabetes.

Keywords: Matrix Rhythmus Therapy, Diabetes, ATP, Acidosis

A COMMONALITY STUDY ON IDEAS OF YOGAVASISHTA AND TEACHINGS OF J. KRISHNAMURTI FOR PREVENTION PSYCHOSOMATIC DISEASES

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This study on J Krishnamurti's teachings and Yogavasishta shows that there are many similarities in the teachings of both in the core areas of discussions in the subjects like thought and mind. Both J. Krishnamurti and Yogavasishta underline the fact that all human problems are in the thought. Also one has to see the mind by oneself. On various other points like attachment, desire, bondage, liberation, control of body mind by hatha yoga, J Krishnamurti also takes a view which is similar to Yogavasishta with emphasis on mind and thought. Though the approaches of Yogavasishta and J Krishnamurti are totally different, both of them are closer to Vedanta and Buddhism. In this paper a comparison of basic thoughts given in YOGAVASISHTA and TEACHINGS OF J KRISHNAMURTI is done. The Yogavasishta is a spiritual text traditionally attributed to Valmiki. It recounts a discourse of the sage Vasistha to a young Prince Rama, during a period when the latter is in a very depressed state. J.Krishnamurti (1895-1986) was one of the most influential Indian thinkers of the 20th century & his philosophy emphasized what he called as 'choice less awareness'. It is found that Yogavasishta and teachings of J Krishnamurti have essential similarities, and practice of both, leads to prevention of



'Adhija Vyadhis' or psychosomatic diseases originating from mind.

TIMING OF THE MIDDAY MEAL: A POSSIBLE NEW RISK FACTOR FOR TYPE 2 DIABETES

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Background: Traditional systems of medicine like Ayurveda and Yoga are used in many places as a means of prevention, because of their deep understanding of the health concept, still foreign to modern medicine. This arises out of their understanding of the subtle levels of the physiology, their modes of function, and how to work with them to personal health advantage. Examples include the subtle diurnal biorhythms of Tridosha in the case of Ayurveda, and the two hourly alternation of dominant nostril in Yoga. Using such insights, chronic diseases can be managed better and often cured. Many of the non-communicable disease scourges of modern India can be greatly improved, including the leading killer diseases. For cardiovascular disease, regular meditation practice reduces hospitalization costs by 85%. For Type 2 Diabetes, Yoga medicine regularly cures long-term cases. Something in the structure of their treatments must therefore bring unexpectedly large benefits. One candidate is the way life-style recommendations take into account subtle energy biorhythms. Adopting life-style recommendations should decrease the risk of falling ill, i.e. *failing to adopt them may be risk factors for NCD's*.

Methods: Ayurveda strongly recommends finishing the midday meal before the end of the 10am–2pm time slot when pitta dosha

dominates physiological function to avoid various health complications. We therefore conducted a retrospective analysis of the eating habits of patients attending four complementary medicine clinics in Bhopal, particularly the time when they started the midday meal.

Results: We found that first time patients reporting with diabetes were roughly twice as likely as patients not reporting diabetes to be in the habit of starting their midday meal after 1 pm.

Conclusion: this preliminary study requires much further follow-up, but we can tentatively identify timing of the midday meal as a previously unidentified risk factor for Type 2 diabetes.

Keywords: Diabetes, meal timing, Ayurveda, yoga

STUDY ON PROMOTING PHYSIOLOGICAL PERSONALITIES OF THE STUDENTS BY VETHATHIRI MAHARISHI'S NINE-CENTER MEDITATION USING QUANTUM MAGNETIC RESONANCE ANALYZER

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The Nine Center Meditation of Simplified Kundalini Yoga was formulated by sage Vethathiri Maharishi. It involves the following centers: Mooladhara, Swadhistana, Manipuraga, Anahatha, Visudhi, Agna, Thuriya, Shakthi Kalam and Shiva Kalam. Meditation is done on all the nine centers,

seven of which are endocrine glands located within the physical body and Shakthi Kalam, Shiva Kalam are Universal field and Absolute space respectively. Meditation commences at Mooladhara Chakra; followed by meditation on each of other chakras and concludes when the mind merges with Absolute space.

The Quantum Magnetic Resonance Analyzer is a diagnostic machine working on the basis of electromagnetic waves of body cells. The weak magnetic frequency and energy of human body is collected by holding the sensor. After amplification by the instrument and processing by the built-in micro-processor, the data is compared with the standard quantum resonant spectrum of diseases, nutrition and other indicators incorporated in the instrument. Finally, it generates reports on 21 health parameters.

To prove the research concept, Students of two different schools pursuing 11th standard were selected and chosen one as experimental group and another one as controlled group. After six month regular practice of the nine centre meditation, the former group of students progressed well compared to the later in the following: considerable increase in hormone secretions of endocrine glands, insulin in blood and BMI and significant decrease in pulse rate, blood pressure and blood sugar level.

The Nine centre meditation regulates and promotes the secretions of hormones and insulin which uplifts Physiological functions of humans.

TRATAKA INDUCED PARASYMPATHETIC DOMINANCE AS A PROBABLE TOOL FOR THE MANAGEMENT OF AUTONOMIC DYSFUNCTION IN DIABETES MELLITUS

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Background: The yogic visual concentration technique, *trataka* is similar to meditation. Research studies have shown shift towards the vagal tone during meditation. However, autonomic changes in *trataka* were not studied. Present study was planned to assess the changes in heart rate variability following *trataka*.

Materials and Methods: Heart rate variability and breath rate were assessed in thirty healthy male volunteers with ages ranging from 20 to 33 years (group mean age \pm S.D., 23.8 ± 3.5) before and after yogic visual concentration (*trataka*) and control session on two separate days. Repeated measures analysis of variance (ANOVA) were performed with two 'within subjects' factors, i.e., Factor 1: Sessions; *trataka* and *control* and Factor 2: States; "Pre", and "Post". This was followed by a *post-hoc* analyses with Bonferroni adjustment comparing 'Post with 'Pre values.

Results: There was a significant decrease in LF (RM ANOVA with Bonferroni adjustment $P < 0.01$) and increase in HF ($P < 0.01$) after *trataka*. Breath rate ($P < 0.001$) and heart rate ($P < 0.01$) were significantly reduced after *trataka* compared to before. Control session showed no change.



Conclusions: The practice of *trataka* leads to increased vagal tone and reduced sympathetic arousal. The findings of the current study project a probable role of *trataka* in managing autonomic dysfunction in diabetes which needs further investigation.

Keywords: HRV *Trataka* LF HF diabetes mellitus

MOVING MEDITATION COMBATS DEPRESSION AND ANXIETY IN TYPE 2 DIABETES MELLITUS PATIENTS

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India, the diabetic capital of the world with the incidence rates of 7.1%, is increasing proportionately with statistics to declare type 2 diabetes mellitus to be an epidemic. The role of stress in the incidence and disturbed psychological wellbeing in the development of T2DM has been recently understood demanding a deeper understanding over individuals' psychological wellbeing. Having not known the relevance of introspection and relaxation through awareness, a pilot study was conducted with Cyclic Meditation (CM). CM, a moving meditation developed by Nagendra HR, has shown to enhance sleep quality, quality of life, and attention with better heart rate variability.

Thirty patients both male and female, diagnosed with T2DM since 6.97 ± 1.2 years, with mean 50.12 ± 11.15 years of age, and BMI 25.14 ± 4.37 were recruited randomly following advertisements issued in national

dailies. The practice involved 23 minutes of recorded cyclic meditation practice every day for five days in a week for one month practiced under supervision of experts.

Observations were made during the start and end of the month long intervention. Paired samples 't' test revealed a significant improvement in the overall sleep quality ($p=0.0001$), its components and overall quality of life ($p=0.0001$). Also a significant reduction was observed in state anxiety ($p=0.003$), depression ($p=0.006$), perceived stress levels ($p=0.0001$). The observed results are speculated to contribute towards alleviation of complications associated with T2DM. The results also indicate the necessity for mind management apart from the medical management.

ENEMA: AN AT-HOME THERAPY FOR PREVENTION AND MANAGEMENT FOR DIABETES? PROMISE AND POTENTIAL FOR NOVEL THERAPEUTICS.

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Today, Type 2 Diabetes Mellitus (T2DM) cannot be considered a standalone disease. It is a part of the wide spectrum of pathologies contributing to Metabolic Syndrome. Therefore, any therapy that aims at treating diabetes mellitus must aim at a healthier lifestyle, to prevent any of the associated diseases from developing in an individual.

T2DM patients have been shown to have increased Gastrointestinal Transit Time. This is a risk factor for a host of other diseases, such as Cancer, especially of the colon, liver, pancreas and bile duct. There is also an increased risk of colon cancer in Pre-Diabetic men. In addition to the condition itself, the diet that is involved in the etiology of diabetes could also play a role in increasing Gastrointestinal Transit Time and altering gut microbiota, which causes increased adiposity, B-cell dysfunction, hyperglycemia, hypercholesterolemia, adiposity, dyslipidaemia, metabolic endotoxemia, systemic inflammation, intestinal permeability (leaky gut), defective secretion of incretins and oxidative stress associated with T2DM.

Constipation is an associated condition for majority of diabetics. Constipation has been found to be linked to a high level of pro-inflammatory processes in the body. Identification of T2DM as a metabolic, inflammatory disorder concludes that constipation is a causative factor for the development of T2DM.

This article aims to discuss in detail the efficacy and safety of the use of Plain Water Enema as an at-home therapy for preventing, managing and curing T2DM, along with documented and possible hypothetical complications and means to prevent such complications from occurring. Different methods and procedures of the same are discussed in detail.

Keywords: Enema, Type 2 Diabetes Mellitus, constipation, systemic inflammation, altered gut microbiota

NEURAL DYNAMICS OF YOGA: IMPLICATION TO DIABETIC NEUROPATHY-A CONCEPTUAL REVIEW

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Neural dynamics in Yoga: To the best of our knowledge till date, neural mobility during yoga Asanas has not been investigated. As many of the Yoga Asanas involves mostly spinal movements along with the movements of extremities, neural dynamics like sliding and stretching can occur during Yoga Asanas, similar to neural mobilization. For example in *Padma Hasthasana*, there is a complete forward bending of the trunk with straight legs. There can be sliding and elongation of spinal cord and complete stretching of nerve trunks in the lower limbs with elevated intra neural pressure. Completely opposite neural mechanics are expected in case of *Ardha chakrasana*. Asanas are typically practiced in complementary pairs. When a person performs Asanas like we have mentioned here, continuously and alternatively, we can expect neural mobilization occurring during yoga Asanas.

Implication in diabetic neuropathy: Alternative elongation and relaxation of peripheral nerves in the lower limbs, cause strain and increase in intraneural pressure,



followed by relaxation in the intraneural pressure. When this occurs continuously in alternate fashion, it may cause “pumping” action along the nerve fiber in turn this can improve circulation, reduction in the intraneural oedema and prevention of accumulation of mechano sensitive elements. A recent study shows that stretching of the nerves improves axonal transport and neuron growth.

Conclusion: The neural dynamic principles during yoga practices and its application in peripheral neuropathies particularly in DM, appears to be a novel therapy and it needs to be systematically studied. Apart from the health benefits of practicing Yoga asana, the impact on the nerve tissues to manage peripheral neuropathic conditions can be more effective than the therapeutic sessions for various reasons like that it involves active participation of the patients, always encourages symmetrical positions and hence balanced and addresses multiple segments and nerves in a shorter time than the ones manoeuvred by the therapist in a clinical set up.

IMMEDIATE EFFECT OF CYCLIC MEDITATION ON FASTING BLOOD SUGAR IN TYPE 2 DIABETES MELLITUS PATIENTS

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Background/Aim: Diabetes is one of the leading non-communicable diseases characterised by deregulation blood in glucose control. Cyclic Meditation (CM) is

one of the advance yoga technique developed by S-VYASA University, Bangalore. The main principal of CM is stimulation followed by deep relaxation. Many previous studies have shown that CM corrects the imbalance of the autonomous nervous system (reduces sympathetic tone). The present study was done to see the immediate effect of CM on Fasting Blood Sugar level (FBS) in type II diabetes patients.

MaterialsandMethods: Total 16 subjects were enrolled in the study. The design was self as control. Study Group (SG) practiced CM for duration of 40 minutes and Control Group (CG) did Physical exercises (PE) for same duration of 40 minutes. Pre and post FBS samples were collected immediately before and after following the practice of CM and physical exercise. Statistical analysis was performed by the use of Statistical Package for the Social Sciences version 18.

Results: The result showed a significant reduction in FBS ($P=0.002$) immediately following the practice of CM following Wilcoxon matched-pair signed rank test, whereas, some marginal changes were found in PE group which is not significant ($P=0.159$) in paired samples *t*-test.

Conclusion: Immediate practice of CM is effective in reducing the FBS in Type II Diabetes Mellitus patients.

THE EFFECT OF YOGA EXERCISE ON ANXIETY, STRESS AND PLASMA LEVELS OF DIABETIC SUFFERERS

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Yoga is considered as anxiety and stress-reduction training. The present study was designed to investigate the effect of Yoga training on anxiety, stress and plasma levels in middle age (30 to 40 years) diabetic sufferers. For experimental group, diabetic sufferers, equal number of men and women (10 men and 10 women) were selected after their consent from a Yoga training center in Ayodhya, Faizabad, (U.P.), India, to participate in a twice weekly 60 minutes training of Yoga exercises for a period of 2 months. The same number of age matched participants who have no experience of Yoga or similar training also participated in the investigation as a control group. Sinha Anxiety Test, Cooper-Smith Stress Test and Plasma levels were examined in both groups at the beginning and the end of the Yoga training period. The results of present investigation indicated that Yoga training reduced anxiety, stress and plasma levels in diabetic sufferers significantly. It is concluded that Yoga has beneficial effects on anxiety and stressed diabetic individuals.

Key words: Yoga. Anxiety, Stress, Plasma levels, Diabetic sufferer.

EXPLORING THE GENETIC AND MOLECULAR CORRELATES OF STRESS AND TYPE 2 DIABETES MELLITUS (T2DM)

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Etiology of T2DM can be derived from 2 sources: genetic and life style modifications. Genetically, T2DM can be a polygenic or a monogenic disease. One cumulative database lists 497 genes that are associated with diabetes (<http://bws.iis.sinica.edu.tw/THOD/>). Gene expression studies implicate genes affiliated with diverse functions ranging from immune system, transport, metabolism, endocrine system, cell communication to nervous system.

Equally important in disease progression is the effect of environment or life style. Growing evidence suggests that nutrient and hormonal signals converge and act on brain centers to orchestrate changes in energy and glucose homeostasis. Dysfunctions in the ability of the central nervous system integrating fuel-sensing signals underlie the etiology of diabetes. Through the theory of Allostatic load, *McEwen* and *Wing field* explain that excess energy consumption leads to waxing and waning of several hormones, cytokines and neurotransmitters which could be reason to develop pathologies.

Our aim will be to understand T2DM from outset to manifestation by correlating the psychological stress and its influence on the physiological changes. A lot of scope still exists to explain the disease progression



through gene-environment association studies. Statistical power and measurement errors for the environmental factors are a challenge for characterizing interactions. For this, we are working on standardizing the differentiation of acute and chronic stress, through psychological assessments and correlating them with physiological biomarkers of stress. The biomarker component will be studied at point of gene expression, cellular level and protein level, which will provide a comprehensive picture of genetic and molecular correlates of stress, their origin and modulating mechanism of physiological pathways.

THE MECHANICS OF GROUP MEDITATION: WHY MEDITATING IN GROUPS FEELS DEEPER AND EASIER THAN DOING SO ALONE.

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That practising meditation in a group feels deeper and easier than when done alone is a common experience. Why this should be so is often explained in terms of 'natural coupling' between minds, a phenomenological explanation requiring theoretical justification: how can the physiological apparatus supporting experience in one person, couple to that in another? This presentation will show that such coupling between people meditating together is part of a wider body of phenomena; it will provide the required explanation in terms of internal quantum correlations in states of 'self-organized criticality', previously shown to provide information states supporting the

phenomenon of subjective experience.

High internal quantum coherence is conferred on excited states at critical feedback instabilities by the critical fluctuations that originate in their instability, and acts as a high band-width channel for information-transfer between states. It offers rigorous explanations for many phenomena listed in Sheldrake's 'Seven Experiments that Could change Science': information communicated between mothers and children of many species (the 'milk let-down reflex'), between predators and prey (the 'sense of being stared at'), or between masters and pets ('dogs that know when their masters are coming home') etc.

All such phenomena are inter-related, and have a common explanation: natural coupling between minds, specifically exemplified in the commonly experienced, well-researched, and well-validated phenomenon of 'telephone telepathy'. Many people think quantum correlations can provide suitable information channels, but no one previously has explained how such channels have sufficient band-width to transmit images and ideas, rather than a bit at a time.

The proposed criticality-based cognitive states have that capacity. Their bandwidth is enhanced by going deeper into meditation. Naturally, information about individual states of each mind will be transmitted between groups of people meditating together; those in deepest states of meditation will entrain others into them. Criticality states of mind can thus model deepening of meditative states during group meditation: higher levels of internal quantum coherence activated in one person in deep meditation tend to increase coherence and deepen meditation in those around them.

MATRIX RHYTHM THERAPY FOR DIABETIC NON HEALING ULCER- A CASE REPORT

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Purpose of the study: To report the effectiveness of Matrix Rhythm Therapy in the treatment of Diabetic Non healing ulcer.

Introduction: Diabetic foot ulcer is a major complication of diabetes mellitus, occurring in 15% of all patients with diabetes and precedes 84% of all lower leg amputations. Major increase in mortality among diabetic patients is considered to be due to the development of macro and micro vascular complications, including failure of the wound healing process. A key feature of wound healing is stepwise repair of lost extracellular matrix (ECM). Non-healing chronic diabetic ulcers are often treated with extracellular matrix replacement therapy, advanced moist wound therapy, bio-engineered tissue or skin substitute, growth factors and negative pressure wound therapy. No therapy is completely perfect as each type suffers from its own disadvantages. The Matrix Rhythm Therapy (MaRhyThe®) is derived from the fundamental research of Dr. Randoll, Germany. A basic kind of therapy based on the principle of readapting physiological resonance of musculoskeletal system at cellular level. Hence this method was put to test in the treatment of Diabetic Non healing ulcer.

Materials and Methods: This single longitudinal study of six weeks that involved a 67 years elderly surgeon with known

controlled diabetes mellitus for 20 years presented with an ulcer measuring 1.5x1.0 centimeters over the dorsum of the left foot which failed to heal for 8 months in spite of regular medications. The subject was treated with Matrixmobil on the posterior aspect of leg, around the ulcer and dorsum of foot once a week for an hour and this continued for next six consecutive weeks along with ankle exercises twice a day. Medications were discontinued prior to the study. Assessment was done every week prior to treatment and serial photographs were taken. The subject was then followed up for three months.

Results: After the first assessment ulcer showed signs of healing and granulation tissue was seen. After the fifth assessment the ulcer epithelialised completely.

Conclusion: Matrix Rhythm Therapy can be another non invasive, safe and effective modality in the treatment of Diabetic Non Healing Ulcer.

Keywords: Matrix Rhythm Therapy (MaRhyThe®), Nonhealing ulcer, Cybernetics. Non linear Thermodynamics

AN APPRAISAL OF STUDIES OF CITIZEN'S CHOICE – PANCHAKARMA THERAPY TO TREAT MADHUMEHA W.S.R. DIABETES MELLITUS

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It is essential to recognize the potential of Panchakarma therapy of Ayurveda and convert into a real life treatment. This article highlights the therapeutic approach used in



Panchakarma i.e. Sodhanachikitsa to treat MADHUMEHA. Based on the pathogenesis as well as prognosis “Madhumeha seems to have bad prognosis or difficult to cure. Due to increase in adoption of sedentary life style & stress strain Madhumeha is becoming one of the alarming disease, so here it is a great thirst for addition of new treatment. This paper deals concise summary of Panchakarma therapy which is already trailed & need a clinical research. Through this article also a trial has been taken to establish the probable action potential of Panchakarma therapy in the pathogenesis of madhumeha as well as Diabetes Mellitus. In pursuits of finding a better treatment solution the combined sodhana & samana approach of Ayurveda with superior & safer efficacy is likely to be an eminent way to overcome some of the current frustration to treat difficult disorders like Madhumeha.

Key words: Panchakarma, Snehana, Vamana, virechana, Basthi, Nasya, diabetes mellitus, Rasayana, Sodhana, Samana, RituSodhana.

STUDY OF CONSISTENCY AND ELUCIDATION OF COMPARITIVE STUDY DURING CHANGE OF POSTURE FROM SWASTIKA ASANA TO UTKATHA ASANA

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In today's world the occurrences of musculoskeletal problems due to adoption of poor postures has increased. Poor postures can result in spinal alignment problems and

muscle shortening which can in turn lead to usage of muscles improperly and cause pain. Poor postures can be directly attributed to increased period of time spent using gadgets such as desktop computers and hand held devices, improper style of sitting due to inappropriate ergonomical design of furniture, decreased outdoor activities and exercises.

In such a scenario, exercises that assist in cultivation of healthy postures are highly beneficial. Swastika asana and utkata-asana are two such yoga asanas that give a good range of motion and are beneficial for developing healthy postures with proper balance and good stability.

This paper presents a comparative study of nine yoga practitioners' performance during swastika-asana, utkata-asana and transitions between the two. The comparison has been done with respect to different trials done by an individual subject and also between trials of different subjects. In addition, the consistency of performance of each subject has been studied.

The yoga practitioners started from Swastika-asana and jumped to Utkata-asana five times gracefully. Six inertial measurement units were used for data acquisition. The exercise was analysed based on g-values, bending angle and the total time period for which each subject performed. An insight about the performance and consistency was successfully obtained.

Keywords: Swastika asana, Utkata asana, Orientation, Consistency

CHOICE IS YOURS, HEALTHY OR UNHEALTHY?

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Small changes in routine life can change the way from unhealthy life to healthy one. Indian medicine tells to get up in the morning around 1 hour before sunrise, if not then get up as early as possible. Try not to stay awake till late nights and if night shift is must then eating habits should be changed accordingly and the required sleep should be taken before lunch and not after the lunch.

Nowadays in busy life, we harm the body by skipping the breakfast. Over the period of time, skipping breakfast will harm the body directly and temperament indirectly. Healthy breakfast will add life to the health. To enjoy the earned money we need health. So, take simple and easily digestible food as dinner avoiding restaurant food and it should be taken as early as possible.

Avoid excess of fermented food. Make a habit of fruit juices, *nimbupani* instead of tea or coffee or else maintain the moderation strictly. Add whole fruits in eating habits. Avoid taking fruits along with milk. Replace sugar with jaggery or honey. Honey is the best sweetener advised in *Ayurved*. It has been prescribed even in known diabetics too as it has lot many medicinal characteristics. Replace wheat flour with barley flour wherever possible. Replace new rice with old one or else roasted rice. Avoid *Maida*. Moderate milk and curd intake as they increase *kapha* in body which is the main cause for diabetes and lot many metabolic disorders. Add sprouts or salads to

the plate to get enough fibers required. Avoid ice creams. Have warm or normal water even in summer whenever you feel thirsty which cleans the body thoroughly than refrigerated water. Cold water cannot flush out waste products of the body.

Increase physical activity by choosing staircase instead of lift. Add 6 to 12 *suryanamaskar* in the morning before breakfast as routine, it is a best form of exercise. At work station, take breaks in between the work. It will give you enough exercise wherever possible. Last but not least enjoy the stress of the life too rather taking tension of it.

Key words: Health, Ayurveda, Lifestyle

DYNAMIC SCIENCE - THE SCIENCE OF YOGA AND HOLISTIC MEDICINE - EXPLAINS HOW MIND, SOUL AND DNA ARE INTERCONNECTED - (THE NEW GENERATION SCIENCE FOR THE SPIRITUAL ERA)

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The purpose of YOGA is to harmonize and strengthen the mind, soul and body. We believe from ancient times onwards that mind, soul and body are interconnected. But the science fails to explain how these three entities are interconnected. This is the most important limitation, deficiency or inadequacy of the present science. The parameters of current scientific thinking are limited to the material plane. So during scientific research studies, only the physical



body becomes the part of the study. But it is only one component of the living phenomena and studying about it alone is not sufficient for the complete understanding of the health, disease development and other problems associated with life and also for the curative management of such problems.

Dynamic Science, the new generation scientific hypothesis, is the product of a curious enquiry made to further develop the science to make it more complete to understand the nature and the behaviours of nature more completely and clearly. It scientifically explains how mind, vital force (soul) and DNA are interconnected. This understanding is of historical importance, helping us to solve many unresolved human problems including the curative management, prevention and rehabilitation of many diseases like the dreadful cancer. It helps in resolving many mysteries of the present times, scientifically. It also explains how Yoga helps, functions and produces cure or healing.

AYURVEDIC MANAGEMENT OF GARBHAVASTHA JANYA MADHUMEHA – A CONCEPTUAL STUDY

Shubha M, M R Kulkarni

“Motherhood is neither a duty nor a privilege, but simply the way that humanity can satisfy the desire for physical immortality and triumph over the fear of death” ...Rebecca West.

Achievement of motherhood is the cherished desire of every pregnant woman. A series of changes happen in the physiological and psychological status of women, some of it may be felt as discomforts to her. In

this present era of materialism, women are surrounded with various kinds of diseases. One such disorder which appears during pregnancy is “*GarbhavasthaJanYaMadhumeha*”. The prevalence of gestational diabetes mellitus in India is 10.6-35.8% in urban, 7.8-48.4% in semi urban and 8.2-29.6% in rural area. If “*GarbhavasthaJanYamadhumeha*” is ignored and not treated than, it is said to complicate 1-16% of all pregnancies. Hence emphasis is given for management of “*GarbhavasthaJanYamadhumeha*” in this study.

To fulfil the aims and objective the study has been designed in following two parts,

- 7) Conceptual Study of *Garbhavastha JanYa Madhumeha*: The *Ayurvedic* classics and allied literature has been referred keenly to throw light on *Garbhavastha JanYa Madhumeha* along with its importance and utility.
- 8) Concept of *Ayurvedic* management in *Garbhavastha JanYa Madhumeha*: In this second section, utilizing the concepts of *Garbhavastha JanYa Madhumeha*, the review of principle management has been dealt. Literary material was compiled and critically analyzed to include the key references necessary for evaluating the hypothesis.

Conclusion: The management of *garbhavastha janya madhumeha* should include *rasayana, tridoshashamana, dahaprashamana, pramehaghna, deepana, balya, brunhana, vishaghna* and *hrudya* along with the proper *pathya* and *vyayama* appear to be effective in managing the *garbhavasthajanyamadhumeha*.

Key words: *GarbhavasthaJanYaMadhumeha, Gestational diabetes mellitus.*

USAGE OF THE RASAUSHADHIS IN THE MANAGEMENT OF MADHUMEHA

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Ayurveda employs the usage of rasaushadhis (Herbomineral preparations) since centuries for a wide range of maladies. Modern medicine has very less documentation regarding therapeutic utility of metals and minerals. They are apprehensive about safety of these compounds. The role of metals and minerals in curing ailments was first realised in ayurveda. Ancient acharyas were conscious about the ill effects of metals and minerals and they were well versed in transforming them into safe effective medicines by subjecting them to various kinds of pharmaceutical procedures like shodhana, marana etc.

Diabetes mellitus (Madhumeha) is one of the major lifestyle disorder, which is considered one among the 'prameha', a complex disorder of urinary system. The management of madhumeha generally done in two ways viz shodhana and shamana. Shodhana is renewal of causative doshas from the body whereas shaman chikitsa is pacification of responsible dosha within the body. For shaman chikitsa both kashtoushadhis (herbal preparation) and Rasaushadhis (Herbomineral preparations) are used. Rasaushadhis are considered as superior form of oral administration because of their multiple activities like analgesic, anti-inflammatory, antihistaminic, antimicrobial etc in minimum dose, minimum duration, irrespective of doshic conditions and quick relief action on the body. Because of these

qualities only rasaushadhis are considered as an emergency medicine of ayurveda.

Many rasaushadhis are used for the management of madhumeha, some among them are Vanga bhasma, Jasada bhasma, Naga bhasma, all the three bhasmas together known as Trivanga bhasma; shilajatu and the formulations like Tarakeshwara Rasa, Vasantakusumakara Rasa, Mahasetu Rasa etc. Along with these, many other single bhasmas and also formulations have been recommended for madhumeha like swarnamakshika bhasma, Rasa sindura, Mehakalanala Rasa, Chandrakala Rasa, bruhat Vangeshwara Rasa, Swarna vanga etc. As the rasaushadhis contain bhasmas as an ingredients, their action is always quick. Nanotechnology is held responsible for the quick action and multiple actions of the rasaushadhis.

EFFICACY OF 1 MONTH TRĀṬAKA INTERVENTION ON ATTENTION AND EXECUTIVE FUNCTIONS: A RANDOMIZED BLOCK DESIGN

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Background: *Trāṭaka*, a type of yoga practice is considered to improve cognitive functions. The aim of this study was to test the effect of 1 month of *Trāṭaka* intervention on cognitive functions of elderly.

Methods: 60 healthy elderly subjects were selected based on inclusion and exclusion criteria. The subjects were administered MMSE (Mini mental Status examination) and



those scoring 26 and above were selected for the study and randomly divided using randomized block design into 2 groups- *Trāṭaka* and wait list control group. *Trāṭaka* was given for a period of 1 month (26 days) and subjects in both groups were assessed at baseline (Day 0) and on Day 30 on Six letter cancellation test (SLCT), and Trail making test B (TMT B).

Results: At the end of 1 month, *Trāṭaka* group showed significantly better performance in the SLCT test compared to baseline ($t = -3.93$, $p < 0.01$) and TMT B scores ($t = 7.09$, $p < 0.01$). On the independent sample t test, there was no significant difference in TMT B scores between *Trāṭaka* group and Wait list control group. However there was a trend towards significance ($p = 0.08$). RMANOVA results also reiterated that there was significant interaction effect at the end of one month of *Trāṭaka* intervention as compared to control group on TMT-B and SLCT scores.

Conclusion: *Trāṭaka* can be used as a technique to enhance cognition. Further if *Trāṭaka* is provided to a group which is prone for cognitive decline and to those who have not been exposed to any cognition improving interventions, it can be helpful in improving their cognition. Long term practice of *Trāṭaka* (an optimum duration of one month) is advocated to bring about the required change in cognition.

MATRIX RHYTHM THERAPY FOR INTRAMEDULLARY EPENDYMOMA INCIDENCE IN TYPE2 DIABETES MELLITUS PATIENT: A CASE REPORT

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Purpose: To the best of author's knowledge this report represents the first to provide a detailed effect of Matrix therapy on chronic Type2 diabetic patient suffering from complications of both diabetes and ependymoma.

Study design: Case report

Methods: A 46 year old male reported on June 2013, chief complains of all four limb weakness, trunk weakness, multiple pressure sores, polydipsia, sensory deficits, shoulder joint pain, breathing difficulties, lethargy, bladder and bowel problems since 21 months. He had positive family history of type 2 Diabetes mellitus and the patient was diagnosed to suffer from the same at the age of 25 years and since then he had been on oral medications. In March 2006, MRI Cervical – Dorsal spine revealed Syringobulbia and syringomyelia of cervical-dorsal cord upto D6 level. August 2006 CEMRI revealed Cervicomedullary ependymoma with secondary syrinx. On May 2007, Post operative and Post radiotherapy MRI study revealed tumor extension upto D5 level rather than syrinx. From 2007 to 2011 patient had undergone two surgical procedures and regular radiotherapy but had no functional deficits.

In September 2011 all four limb and trunk movement stopped with MRI revealing residual existence of tumor. Since then patient had been completely bed ridden . Patient did not take any Physical therapy or Matrix therapy during the entire course till June 2013. Matrix Rhythm Therapy was started as adjunct to physical therapy in June 2013 and continues till date.

Result: Glucose level monitoring during the entire course of therapy revealed a significant lowering in blood glucose level , moderate level sensory regain , no breathing problems, healed ulcers, decreased fatigue level. Signs of tumor resolutions are clear.

Conclusion: Matrix Rythm of Therapy is one the successful adjuncts to physical therapy in treating various complications related to Type 2 Diabetes mellitus and Intra-medullary Ependymoma.

Key words: Type2 Diabetes Mellitus, Ependymoma, Matrix Rhythm Therapy, Rehabilitation

YOGA AND ASIAN BUSINESS DEVELOPMENT

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Contemporary business development policies fail to take into consideration the immense damage caused by the stress of development - particularly to those who are responsible for driving the expansion forward, and who often fail to reap the rewards of their labor, as diseases of affluence sweep society. Indian business today is rapidly becoming

wise to this problem and adopting India's traditional stress management tool - the practice of Yoga. By exporting its many highly acclaimed Yoga HRD programs to surrounding Asian countries, India will not simply be generating a new export business with huge potential for the further export of skilled personnel. The side benefits of Yoga practice are significantly improved health and quality of life. By bringing Yoga and its benefits to surrounding countries, India will generate universal goodwill, together with appreciation of the depth and beauty of her ancient culture.

Keywords: yoga, business, hrd & stress management.

TO EDUCATE RURAL HEALTH CARE PROVIDERS, TO HELP THE RURAL COMMUNITY IN PREVENTING AND COMBATING DIABETES THROUGH YOGA WAY OF LIFE

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Introduction: Diabetes is a common, complicated and costly disease. India is going to be the diabetes capital of the world. It is estimated that 70 million people will suffer from diabetes by 2025.

Background: Diabetes is equally prevalent in the urban and rural masses. Several studies say that, yoga way of life which includes, asana pranayama practice, satvik diet and de-stress programs will bring a significant result in the prevention and management of diabetes. Hence it gains importance to educate



the rural masses through trained health care providers (HCPs).

Aim: 1) To determine the diabetic status of rural HCPs by conducting Blood Sugar tests. 2) To impart the knowledge of the benefits of yogasanas, pranayama and relaxation techniques to Rural HCPs in managing diabetes 3) To bring about a change in the personality of rural HCPs through yoga, who in turn, will help the rural community in preventing and combating diabetes by targeting pre-diabetics, persons prone to diabetes and diabetics.

Methods: subjects: 35 male and female HCPs. Source: HCPs from state government primary health centres in Ramanagaram District, South Karnataka. Data collection: demographic data was collected. Questionnaire was given (pre and post yoga workshop) regarding their quality and efficiency in work and positive outlook towards serving rural people. Intervention: one day yoga workshop was held by a professional yoga therapist from S-VYASA University with 10 year experience. This session included both theory and practice of the asanas which helps in diabetes, deep yoga nidra, kapalabhati and nadishuddi practices along with theory lectures.,

Results: To evaluate the personality development and yoga knowledge in rural HCPs.

Key words: yoga, pranayama, rural HCPs, diabetes therapy

IMPACT OF KRIYAS AND BREATHING TECHNIQUES ON BIOLOGICAL PARAMETERS

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Background: There is a growing need to educate individuals on the blood sugar management techniques by understanding the mechanism through which the sugar level in the blood is maintained. It is important to understand that a combination of Yoga, Kriya and Meditation would give a better result because of it is working on both the Annamaya and Manomaya Kosa.

Objective: To assess Blood Sugar and Blood Pressure responsiveness to Yoga, Pranayama and Kriya combination. To establish a procedure that is consistent and repeatable for maintaining Blood sugar, BP and Respiratory disorders.

Materials and Methods: Twenty-two IT professional suffering from DM type 2 with average age of 35 years participated in this study. PFR, BP and Blood sugar were taken on the first and sixth day of 5 days Yoga for Diabetes program. The first and the last day interventions included Jananeti, Vamana Dhouti and Laghu Shanka Prakshalan Kriyas. Participants were divided into two groups. The candidates who were present for all the interventions on all five days were only considered for analysis.

Results: The data analysis showed both increase in sugar level for some of the low

sugar candidates and decrease in sugar level for the patients with high sugar levels. The percentage decrease in BP was 3.5%. There was an increase in sugar level after the kriyas for some of the patients which possibly could be attributed to healing crisis or increased fear/tension on bowel movements and vomiting sensations. Almost all the subjects showed increased sugar levels. Average increase in sugar was 24.42%. There was reasonable increase in Peak flow rate for people having breathing problem. A video recording of the feedback of the subjects was also made to record the non numeric feedback from the subjects which was very positive and encouraging.

Conclusion: These results suggest that participation in a Yoga program not only brought down the high Blood sugar values but also improved the low sugar levels. There was a visible change in the breathing patterns of subjects suffering from the same and the same was reflected in the PFR measurements. There was a definite improvement in Blood pressure for all the patients.

SELF - MANAGEMENT OF EXCESSIVE TENSION THROUGH YOGA AND NATUROPATHY

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Stress, which means noxious stimuli, in broader terms is derived from the Latin word '*stringere*', "to draw tight", playing an active role in disrupting the homeostasis, a concept central to the idea of stress. Stress and its associated disorders are to be the greatest epidemic in the next 20 years in Asia. Stress is characterized by over activation of HPA

axis, secreting excessive amounts of cortisol. Accompanied by the failure of the negative feedback mechanism results in flat cortisol levels throughout the day, exaggerating the sympathetic drive making one prone to cardio-vascular disorders and suppressing the circulating T4 lymphocytes and interleukins, and the local inflammatory response clinically associating with depression altering the normal behavior.

Certain yoga modules like yoga nidra, transcendental meditation, cyclic meditation and regular asana, pranayama practices have all shown to possess an active control over the HPA axis and the stress response.

Calorie Restriction in the regular diet, regular exposure to sun light, drinking water, application of mud over the body all act by promoting immunity, production of vitamin-D indirectly stabilizing the homeostasis, and neutralizing the inflammatory mediators respectively.

Naturopathy and Yoga together appear as a clinically applicable yet effective science in the management and prevention of Stress and Stress based disorders. This paper speaks in detail about the physiological facts and their relevance in day to day approach.

DIABETES MELLITUS AND THE ROLE OF MUD THERAPY – A NOVEL HYPOTHESIS

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This article aims to discuss the possible mechanisms through which mud therapy



may reduce insulin resistance and thus may be used effectively in the management of Type 2 Diabetes Mellitus (T2DM). In T2DM, levels of circulating proinflammatory cytokines and fatty acids increase. Inflammatory cytokines, including tumour necrosis factor- α (TNF- α), have been shown to promote insulin resistance and also leads to α -cell dysfunction. Cytokines and saturated fatty acids are known to induce oxidative stress, which results in metabolic disturbances and a reduction in insulin secretion. One more important factor may be nitric oxide-mediated DNA damage, depletion of NAD levels and toxic effects of oxygen free radicals and eicosanoids generated.

Free (mobile) electrons from the earth are natural antioxidants. Free electrons from the earth can serve a simple and direct “anti-inflammatory” role by neutralizing free radicals. Plasma IL-6 levels were significantly lowered at the end of a 20-min 47 degrees C mud-pack treatment, thus suggesting that mud can reduce inflammation.

Mud packs of pulverized uranium ore rock dust in sealed plastic bags delivering bag surface, dose-rates of 10-450 μ Gy/h were used with apparent success to treat several inflammatory and proliferative conditions in humans. This may be due to high content of minerals and trace elements that possibly act as anti-microbial, anti-inflammatory and antioxidant. A significant reduction in oxidative stress and inflammation was seen in a group of individuals taking mud pack treatment for a period of 21 days. Mud has been shown to have anti inflammatory and antioxidant properties. In humans, it has been suggested that the improved glucose tolerance observed in the presence of thiazolidinediones or statins is likely related to their anti-inflammatory properties.

Keywords: Mud therapy, Type 2 Diabetes Mellitus, Free electrons, antioxidant, anti-inflammatory

USE OF SWEET VEGETABLES IN DIABETES MELLITUS

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Type 2 diabetes mellitus (DM) is a metabolic disorder with insulin resistance leading to hyperglycaemia. Occurrence of diabetes leads to faster aging due to formation of free radicals, increased infections and inflammation with increased insulin resistance. Lifestyle modifications through diet and physical exercise are essential part of the management of DM. The diet prescription for DM should have low glycaemic index (GI), low glycaemic load (GL) and high oxygen radical absorbent capacity (ORAC). It is a common practice to avoid sweet foodstuff in DM, since they are assumed to increase the blood glucose levels.

On the contrary, vegetables like sweet potatoes, carrots, sweet corn and peas, which taste sweet, can be consumed as their constituents may help in regulation of blood sugar levels. Sweet potato (GI-54; GL - low; ORAC-301) is rich in dietary fibres, Magnesium (Mg), Calcium (Ca), Vitamin C and Vitamin B-6; Carrot (GI-49; GL-low; ORAC-207) too is rich in dietary fibre, Potassium, Mg, Vitamin A and Vitamin C; Sweet corn (GI-55; GL-low ;ORAC-400) rich in Ca, Zinc, Mg, Vitamin K, Vitamin C; Peas (GI-48; GL-medium; ORAC-364) are gluten – free and slow digesting complex carbohydrate.

Carotenoids, Batatosides in sweet potato; Beta-carotene, Polyacetylene Antioxidant Falcarinol in carrot; Ferulic acid, Beta and Alplacarotenes in sweet corn; Carotene, Beta-sitosterol, lutein, zea-zanthine in peas prolong the effects of ageing, reduces inflammations. Magnesium and potassium increase insulin sensitivity and reduces stress. Vitamin – C acts as a scavenger against pro-inflammatory free-radicals and increases resistance in diabetics. Fibres checks the cholesterol level, thereby preventing complications of diabetes like Coronary artery diseases.

Hence inclusion of vegetables, though tasting sweet, in moderate amounts is a potent dietary option for the prevention and management of DM.

ROLE OF EFFECTIVE COMMUNICATION OF YOGA-BASED CAPSULE AS MOTIVATION TO LIFESTYLE CHANGES IN TYPE-2 DIABETICS

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Around 347 million people are suffering from diabetes across the globe. Of which more than 60 million people are in India. (Projected Figures are 85 million by the year 2025). In developing countries like India, diabetes-type 2 is more prevalent in the productive age group of 35-64 years. This is not only as a grave impediment to the economic progress of the country at the macro level, but also cripples the family by the twin blow of disability of the family member, loss of income and expensive medical care at the micro level. Though Diabetes type 2 is a non-

communicable common condition which can be prevented/controlled by adapting a healthy lifestyle, it is escalating at an epidemic pace.

*Spread Awareness -by Effective communication-
make mindful lifestyle changes;*

This is the need of the hour. The philosophy and science of Yoga, Bhagavad-Gita, Ayurveda and other spiritual texts can provide excellent knowledge base and techniques required to adopt a healthy lifestyle. Various research projects have already established the efficacy of these texts. Effective communication of relevant information (based on these texts and research work) to the enormous targeted population is a huge task. It requires meticulous planning on a large scale at the national level, integrating various local bodies, authorities, and institutions. Use of technology and mass communication media is crucial. These steps can certainly reach to the people, motivate them to mindfully reset their priorities and adapt healthy lifestyle thereby be a healthy society. As a part of this strategy, I propose to do a pilot study –with the intervention of a short yoga module highlighting the complications of uncontrolled diabetes, stress induced ailments with specific stress on diabetes type-2, and philosophy of priorities in life (based on yoga vasistha, sankya philosophy, and patanjali yoga sutras) using power points and animations to illustrate the same. I propose to conduct this course at various organizations, offices and other community centers so as to reach out more and more people and to motivate them towards leading a healthy progressive life. A healthy lifestyle will not only have its impact on diabetes but also will contribute to build a healthy, contented, and progressive nation.

Keywords: yoga, diabetes type 2, mindfulness, lifestyle



AYURVEDA BASED DIETARY AND LIFE-STYLE PRESCRIPTION FOR PREVENTION OF MADHUMEHA.- A CONCEPTUAL STUDY

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Amongst the many dreadful conditions arising because of modern-day living, Diabetes Mellitus (DM) is a giant disease considered as one of the archenemies of the humankind caused by improper diet and lifestyle. It is often referred to as a “silent killer.” Diabetes and its complications pose a major threat health resources throughout the world. Looking at its gravity, the World Health Organization (WHO) has taken up a close vigilance and survey about this problem the world over. The WHO’s statement on primary health care program states that there is a “collective failure to deliver in line with these values which is painful and deserves our greatest attention.” Also, there is “an inability of health services to deliver the level of national coverage that meets the stated demand and changing needs.” This scientific holistic work inspired from Ayurveda with a special focus on diet and lifestyle can seriously contribute into the DM management and primary health care programme.

In this endeavour Ayurveda and Yoga the age old natural systems of health care, which primarily focus on prevention of diseases through life style modifications

and interventions based on the fundamental concepts of ahara, vihara and vichara (proper food, activity and thoughts) by dinacharya (Daily regimen) rurtucharya (seasonal regime) and following customized pathya for particular disease to prevent that disorder.

The concept has developed by understanding the cause and pathogenesis of madhumeha which is explained elaborately in classic texts of Ayurveda like Charaka samhita, Sushruta Samhita, Astanga hrudaya, Astanga Sangraha etc. The prescription has designed in the basis of ahara, vihara and vichara by following daily regime, seasonal regime and dosha and dants on regular basis.

DIABETES MELLITUS AND BLUE LIGHT – UNDERLYING PHYSIOLOGICAL MECHANISMS OF CURE – A NOVEL HYPOTHESIS

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Short-duration and poor-quality sleep predicts the development of type 2 diabetes and obesity after age, body mass index and various other confounding variables are taken into account. Lack of sleep disrupts the circadian rhythm, which has been shown to impair or reduce glucose control, beta-cell function, beta-cell mass, turnover, and insulin sensitivity, thus leading to T2DM. Moreover, the induction of hunger may be partially related to reduced circulating levels of leptin (an adipose tissue-specific hormone which promotes satiety) and increased levels of the orexigenic hormone ghrelin (a peptide

released primarily from the stomach) induced by sleep deprivation. Both hormones may also impact energy expenditure.

Intrinsically photosensitive Retinal Ganglion Cells (ipGRCs) of retina play a major role in synchronizing circadian rhythms to the 24 hour light/ dark cycle, providing primarily length of the day and length of the night information. The physiological properties of these ganglionic cells match, known properties to daily light entrainment (synchronization) mechanism regulating circadian rhythms.

IpRGCs have an increased sensitivity for blue light. This property makes them better equipped to detect the arrival of dawn and dusk, hence precisely synchronizing circadian rhythm.

This article discusses the mechanism by which application of blue light at specific times may reverse the pathology causing T2DM by regulating the circadian rhythm through ipGR Cells, especially in individuals with short-duration and poor-quality sleep.

Keywords: Type 2 Diabetes Mellitus, Blue light, Circadian rhythm, ipRGC, short-duration poor-quality sleep

OVERCOMING INSULIN RESISTANCE IN TYPE 2 DIABETES MELLITUS & PRE-DIABETES – NATURALLY

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Insulin resistance is believed to precede type 2 Diabetes mellitus, Metabolic syndrome and pre-diabetes (Impaired Glucose tolerance). The commonly used drugs for treating insulin

resistance in conventional medicine are metformin and Thiazolidinedione's (TZDs).

Our search for the equivalent alternate sources to overcome insulin resistance yielded some useful results about some of the natural methods to overcome insulin resistance like Resveratrol (an antioxidant, rich in berries), Epigallocatechin 3-gallate (a flavonoid, rich in green tea), alpha lipoic acid (rich in spinach, broccoli, and yeast), bittermelon extracts and exercise. The common pathway through which all these act is by activating cyclic Adenosine 5-Mono Phosphate Kinase (AMP kinase). Though it is too early to conclude whether these natural products can be used as an alternate or substitute to metformin or the TZD's, it is definitely worth using them as a complementary therapy to some of the other treatments we use in Yoga and Naturopathy to treat patients with type 2 Diabetes mellitus in a holistic way, and by knowing the pathway or mechanism through which they act is an important step in carrying forward further research on the efficacy of these particular antioxidant/alkaloids for diabetes.

Keywords: Insulin resistance, Diabetes, yoga, pre-diabetes, metabolic syndrome

IN SEARCH OF A DIABETES CURE-AN ALTERNATE APPROACH TO DIABETES

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Systematic review on the efficacy of yoga on Diabetes showed yoga as effective, not just in managing diabetes and also diabetic complications with no reported



adverse events. We tried to explore the possible mechanism by which yoga acts, to design a treatment for diabetes and its complications, with minimum adverse effects. The exploration started with Manjunatha *et al.*, 2002 where the researchers hypothesised that yoga increased the uptake of glucose in beta cells, in other words, increased activity of GLUT-2 (Glucose Transporter-2). Equivalent alternative to this pathway in conventional medicine is found in just 2 drugs, that too indirectly. Most other treatments focused on either 'insulin resistance' or 'insulin secretion', for 100 years now, and still we could not find a 'cure for diabetes.'

Diabetes could not be cured, not because it is a metabolic disorder but because of our 'narrow vision', focusing only on insulin and insulin resistance.

1. Diabetes is best controlled not just with insulin, but effectively with other hormones as well like GIP, GLP-1 analogues, leptin, Testosterone and even glucagon. Surprisingly, once a week GLP-1 (Bydureon) controls diabetes effectively, but insulin has to be taken everyday.
2. There are a few target organs apart from pancreas which helps in managing DM like liver, kidney (phlorozine) and brain (Bromocryptine)

Cause & Effect relation:

1. Vitamin D levels found lesser in diabetic patients and they concluded that vitamin D causes Diabetes. But, diabetes could cause vitamin D deficiency too, as sunlight has to be processed through liver and kidney to be converted into active form, which might get damaged in DM and alter the pathway in vitamin D formation. Is vitamin D deficiency a cause or effect of diabetes?
2. People with depression have twice

chance of getting diabetes, and diabetes patients have twice the chance of getting depression. Is depression a cause or effect of diabetes?

3. Diabetes is known to cause impotency and testosterone deficiency. But, testosterone replacement therapy is proven to improve hyperglycaemia. Is testosterone deficiency a cause or effect of diabetes?

Conclusion: Considering the landmark research work by the Unger and Lee(2010)... With a tint of uncertainty in few of the cause & effect relations...And, if Insulin and treating insulin resistance not being the only modes of treating diabetes... 'Insulin and Insulin resistance MIGHT only be the effect and not the cause of Diabetes mellitus.

EFFECT OF INTEGRATED APPROACH OF YOGA THERAPY ON IMPLICIT AND EXPLICIT DEPRESSION IN OBESE

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Background: Obesity and depression pose a definite problem in terms of their physical and their mental health threats at an individual level. Obese individuals are more likely to report stronger depressive symptoms. Studies have shown that yoga practices reduce depressive symptoms and improve psychological and physical wellbeing.

Objective: The aims of the study were to, (1) To study the effect of IAYT on Implicit depression in obesity. (2) To study the effect of IAYT on Explicit depression in obesity. (3)

To study the effect of IAYT on congruence between implicit and explicit depression in obesity. (4) To study the effect of IAYT on anthropometric variables in obesity. (5) To study the effect of IAYT on clinical variables in obesity.

Materials and Methods : In this short-term interventional study with a pre-post design on 70 participants with obesity. Were taught integrated yoga module. It included *asanas*, *pranayama*, relaxation, notional correction and devotional sessions. Assessment were carried out on the 1st and 7th day of the therapy, using a Implicit association test(IAT) to measure the implicit depression, BDI-II questionnaire and feeling thermometer were used with help of inquisit.3 software.

Results: Significant reduction in implicit and explicit depression, BMI, fat mass, blood pressure, pulse rate, respiratory rate respectively ($p < 0.05$). Similarly, there was a significant reduction in incongruence between implicit and explicit measures ($r_s = -0.53$) were observed after IAYT And there was an interesting finding which supports the earlier studies, obese are slightly depressed compare to non-obese group.

Conclusion: This study provides evidence that Integrated approach of yoga therapy, a short term intensive program helps obese in Reducing depressive mood by both implicitly and explicitly, Reducing the incongruence between implicit and explicit cognition, Shows obese are mild depressed than non obese, The incongruence between implicit and explicit cognition is more in obese compared to non obese and also Reduces BMI, fat mass, blood pressure, pulse rate, and respiratory rate.

Key words: Implicit, explicit, BDI-beck's depression inventory, IAYT- integrated approach of yoga therapy.

EFFECT OF YOGIC PRACTICES IN IMPROVEMENT OF NEURO MUSCULAR COORDINATION AND MOTOR SKILL IN DIABETICS

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Introduction: GMM is a part of 'Stop Diabetes Movement' of S-VYASA and has conducted 10 batches under SDM. More than 450 Diabetics have participated up till now. The present study was carried out on 10th batch to determine the effects of yogic intervention on peripheral nerves and muscle power as raised blood glucose level in diabetes affects neuro muscular system.

Method: During 2months (8weeks), an integrated approach of yoga therapy designed S-VYASA for SDM was practiced one hour daily, in the morning for 6 days in a week. Considering the extreme anxiety factor in diabetes, emphasis was given on chanting of Mantra, devotional songs, individual and group counseling. To increase the awareness about the diabetes and its complications, lectures of eminent diabetologist, ophthalmologist, nutritionist and yoga experts were arranged. 40 diabetics were enrolled for the batch. However data of 27 participants is available for analysis. Following parameters were applied:

Nine hole Hand Steadiness test: For static motor performance.

Finger Dexterity Score: To judge the perceptual motor task requiring skill and attentiveness.



Hand Grip Strength: To measure grip or forearm muscle strength using grip dynamometer.

Leg back strength: To measure the strength of leg muscles.

Questionnaire: Sinha's comprehensive anxiety test (S C A T) by A.K.P.Sinha and L.N.K.Sinha, (validity and reliability as per National Psychological Corporation, Agra) was used to measure anxiety.

Results: Reduction in blood glucose level and anxiety resulted in improvement in Neuromuscular coordination and motor skill in diabetics.

Key Words: Neuro muscular co-ordination, motor skill, Diabetes

DEVELOPMENT OF YOGA MODULE FOR PATIENTS WITH TYPE II DIABETES MELLITUS

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Introduction: Yoga modules described by earlier authors have provided their own rationale behind the choice of yoga asanas/program. However, there is no mention whether these modules have been endorsed by other specialists in the field than the researcher themselves. Also, there are very few studies which discuss the development of a yoga module. Hence the aim of this study was to develop a yoga module for patients with type II diabetes mellitus.

Methodology: Classical texts and the contemporary research evidence in the

field of yoga were reviewed for eliciting the components of yoga that should be incorporated in the module. This was done by using the Inductive method of inquiry of qualitative research to develop a conceptual framework.

Results: 71 research papers from Pubmed and Google Scholar; and 54 books related to yoga were reviewed. A conceptual framework consisting of ten main themes reflecting the concepts on which earlier researchers had framed their yoga practices were identified. Asanas, pranayama, relaxation, meditation, chanting and special techniques, modifications, sequence of practice, duration of session, number of classes per week, time of practice and topics for yogic lectures were the other sub-themes that were elicited from the main themes. The outcome of the conceptual framework and content analysis was the development of a 3 step yoga module (based on increasing difficulty) – each step lasting for a period of 6 months of duration inclusive of daily practice for one hour each in morning and evening.

Conclusions: The 3 steps yoga module for diabetes was developed using a scientific methodology and can be used by researchers in the future for development of yoga modules for other disorders. Validation of this module with the help of in depth-interviews with experts would be the next step.

EFFECT OF INTEGRATED YOGA MODULE (IYM) ON ENERGY BALANCES AND ENDURANCE CAPACITY

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Introduction: Yoga is the way of life and is the ancient medicine for all kinds of illness. As per world Health Organization (WHO) the health is not merely the absence of disease but the wellbeing at physical, mental, social and spiritual levels. A one month IYM programs consists of practices for all levels of human existence (Panchakosha). This module for brings energy balance at subtler level and increase of endurance at physical level thereby better social and mental health. The balance of energy, the chakras of the body should be maintained for normal health. Energy is the dynamic flow in all beings, essentially the vehicle called “Ki” in Japan, “Chi” in China & “Prana” in India. Every living being has “Ki” but this energy and quality of that energy differs from one living being to another. The ancient Chinese medicine identified 26 meridian path ways, channels in the body through which energy (Chi) flows. Disease is believed to result where energy is blocked.

Parameters: Accugraph is reliable equipment for testing this energy of the body on the basis of Chinese Medicine. General Health Questionnaire, Guna Questionnaire.

Methods: 20 normal male and female volunteers of age 20 to 80 years from S-VYASA University, Bangalore. One month yoga intervention is Integrated Yoga Module (IYM).

Results: There is only significant p-value of 0.05, 0.009 for right and left heart meridian. The number of organs showing normal energy (green) were increased, showing imbalance (Pink) were reduced by 3rd test. The number of organs showing high energy (Red) and low energy (Blue) were keep fluctuating and met at 3rd test. These changes proves balance of energy. **Conclusion:** There is increased endurance capacity for the normal volunteers with Integrated Yoga Module (IYM). This can be the preventive measure for cardiac diseases.

Key words: Energy, Endurance

THE QUALITY OF LIFE AMONG YOGA PARTICIPANTS SUFFERING FROM TYPE 2 DIABETES IN CENTRAL PUNE

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Introduction: The aim of this study is to study the quality of life among yoga participants suffering from type 2 diabetes in central Pune.

Methodology: Using a descriptive research design, 169 yoga participants who were practicing yoga regularly were screened using the Diabetes Risk Test. Out of 169, 11 practitioners who were considered at risk for diabetes and 25 practitioners who were known diabetics (n = 36), were administered the Quality of Life Instrument for Indian Diabetes (QUOLID). Data was analyzed



using Independent sample t test based on the normality of the sample.

Results and Discussion: Shapiro-Wilk (normality analysis) showed that the quality of life data was normally distributed. The diabetes yoga participants had better quality of life than risk for diabetes. The practitioners with diabetes were aware of their disease and possibly were indulging in lifestyle modifications which improved their quality of life. On the other hand, people at risk for diabetes, may not have adopted lifestyle modification specifically to manage their risk for diabetes and hence the QUOLID scale was not able to tap their improved quality of life.

Conclusion: Quality of life of diabetes practitioners is better than that of practitioners in risk for diabetes group, as they are aware of their disease and they are positively adopting physical activity, habits, diet. Risk for diabetes group thus should be the target of all diabetes programmes and should be encouraged to have regular checkups, proper diet, and physical activity to help reduce stress levels and prevent diabetes.

BARRIERS IN CONDUCTING PREVALENCE STUDY OF TYPE 2 DIABETES

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Introduction: There are not many studies to depict the barriers in conducting epidemiological survey. In this context the

barriers in conducting an epidemiological survey of prevalence of diabetes in one area of urban Bangalore was conducted.

Methodology: The researcher went to each and every house in 5 sub-localities of JP Nagar 7th phase area, and explained about the survey. After signing of the informed consent form, the researcher filled up their demographic details in a socio-demographic data sheet. If the people refused to participate, the reasons for refusal were recorded verbatim. The first reason that was spontaneously stated was recorded and analyzed.

Results: 124 refused to participate in the study (86.1%) and 20 people were tagged (13.9%) as they stated that they were willing to participate but not at the time the researcher was available. The reasons for the refusal were: not interested to participate (n=15; 10.41%), unable to contact via telephone (n=27; 18.75%), apprehension in giving data (n=4; 2.7%), repeated visiting but no response (n=16; 11.11%) not opened the door because of security problem (n=25; 17.36%), door locked (n=12; 8.3%), on vacation (n=13; 9.02%), going for job (n=12; 8.3%), no reasons ascribed though they accepted to be part of the study (n=4; 2.7%) the reasons for tagged were in completed forms (n=6; 4.1%), form not returned (n=10; 6.9%).

Conclusion: It is essential to minimize these barriers by using proxy respondents, increasing the length of collecting period, having good communication skill, maintain basic ethics of research such as confidentiality, conduct survey in local language, explain the purpose and value of a survey and provide feedback of results to the participants.

EFFECT OF 10 DAYS OF YOGA INTERVENTION ON COGNITIVE DYSFUNCTION IN TYPE-2 DIABETES MELLITUS PATIENTS

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Background: Yoga and other modalities of adjunct therapies viz., Tai chi & Qi Gong have been found to be useful in improving the cognitive abilities in both healthy volunteers as well as diseased conditions

Aim and Objectives: The present study was aimed at assessing the cognitive function tests in Type II Diabetes Mellitus subjects

Material and Methods: A sample size of 56 subjects (n=56) were assessed before and after a 10 days yoga intervention. The variables viz., Stroop Test (ST), Whislers Memory Scale (WMS), Six Letter Cancellation Test (SLCT) and Symbol Digit Modalities Test (SDMT) were recorded in all subjects as per the prescribed design.

Result: It was observed that the digit forward scores ($p < 0.05$) of WMS was higher and colour and word colour ($p < 0.05$) scores of ST was also found to be higher following a 10 days of yoga intervention. No significant changes were noticed in other variables following the yoga intervention.

Conclusion: It was demonstrated that there was improvement in digit forward, colour and word-colour scores suggestive of better enhancement of working memory and executive functions in Type II Diabetes Mellitus patients.

Key words: Yoga, Cognitive functions, Diabetes mellitus

PREVALENCE OF TYPE 2 DIABETES IN J P NAGAR 7TH PHASE, BANGALORE

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INTRODUCTION: The aim of this study was to determine the prevalence of type 2 diabetes in JP Nagar 7th phase, a southern locality in Bangalore.

METHODOLOGY: In a cross-sectional survey 223 people from randomly selected five sub-localities of JP Nagar 7th phase, an urban southern locality in Bangalore were screened for Type 2 diabetes using the Diabetes Risk Test (DRT), Fasting Blood Sugar (FBS), and Post Prandial Blood Sugar (PPBS). The data was analyzed using Pearson's correlation analysis, t test and Univariate ANOVA and linear regression analysis.

RESULTS: The overall prevalence of Diabetes was 17.5% (0.12-0.23), 9.2% (0.05-0.13) of the sample were diagnosed to be 'At Risk' for diabetes and the remaining 73.3% (0.67-0.78) were found to be Non-diabetic. The regression model was significant at $p < 0.001$ and explained 42% of variance (Adjusted R Square = 0.419). Age of the participants (Beta=0.564; $p < 0.01$) emerged as the only significant predictor of risk for diabetes. For qualitative responses nearly half of the participants (50.97%) were not interested in responding to the answers and few of them depicted they were aware of the risk for diabetes as well as the benefits of yoga practice for prevention of diabetes.



CONCLUSION: Age is found to be significantly associated with prevalence of type 2 diabetes and the need for regular lifestyle modifications among the elderly is recommended.

PREVALENCE OF TYPE 2 DIABETES IN YOGA PRACTITIONERS IN ERNAKULAM DISTRICT, KERALA

Narayanan V V, Aarti Jagannathan and Subramanya P

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Introduction: The aim of this study was to assess the prevalence of type 2 diabetes among the yoga practitioners to know how regular practice of yoga can help influence the management of type 2 diabetes.

Methodology: In a cross-sectional field survey, 192 yoga practitioners above 40 years of age from Ernakulam district were screened using the Diabetes Risk Test (DRT), Fasting Blood Sugar (FBS) and Random blood sugar. The data collected was entered in a statistics software package and analyzed using the Pearson's correlation analysis, t test and univariate and linear regression.

Results: The overall prevalence of diabetes was 26% [95% confidence interval: (0.05 – 0.06)] with 12% of practitioners [95% confidence interval: (0.05 – 0.06)] diagnosed to be 'At Risk' for diabetes (pre-diabetic). Age of the yoga practitioners (Beta=0.546; p=0.000) and duration of physical activity (in minutes) indulged by the practitioners (Beta

= -0.183; p = 0.005) emerged as significant predictors of risk for diabetes. The qualitative responses depicted that a large number of yoga practitioners were aware of the risk for diabetes as well as the benefits of yoga practice for prevention of diabetes.

Conclusion: Older age and longer duration of yoga practice are significant predictors of diabetes in Ernakulam District of Kerala. In this context, it is essential for every person above the age of 40 to undergo regular health check-ups and screening for diabetes and involve himself in lifestyle modification programmes such as yoga for significantly long duration of time on a daily basis, to control diabetes.

IMMEDIATE EFFECT OF CYCLIC MEDITATION ON FASTING BLOOD SUGAR IN TYPE 2 DIABETES MELLITUS PATIENTS

Rahul Narang, Kashinath Metri, Hemant Bhargav

Swami Vivekananda Yoga Anusanddhana Samsthana, Bangalore

Background/Aim: Diabetes is one of the leading non-communicable diseases characterised by deregulation blood in glucose control. Cyclic Meditation (CM) is one of the advanced yoga techniques developed by S-VYASA University, Bangalore. The main principal of CM is stimulation followed by deep relaxation. Many previous studies have shown that CM corrects the imbalance of the autonomic nervous system (reduces sympathetic tone). The present study was done to see the immediate effect of CM on Fasting Blood Sugar level (FBS) in type II diabetes patients.

Materials and Methods: This self as control study recruited 16 patients with established DM2 of > one year (with or without good control on oral hypoglycaemic agents) registered for a week long inpatient treatment at the holistic health home, Prasahnti Kutiram, the campus of the yoga university, Bengaluru. The Study Group (SG) practiced CM for 40 minutes and Control Group (CG) also practiced Physical exercises (PE) for the same duration of 40 minutes on two different days (days 5 and 6 after admission) in fasting state (5-30 to 7 am) before breakfast. Venous blood samples were collected for glucose estimation immediately before and after the practice of CM and physical exercise. Data were analyzed using the SPSS version 18.

Results: The results showed a significant reduction ($P=0.002$, Wilcoxon matched-pair signed rank test) in FBG immediately after the practice of CM, whereas, some marginal changes were found in PE group which is not significant ($P=0.159$ paired samples *t*-test).

Conclusion: Immediate practice of CM is effective in reducing the FBS in Type II Diabetes Mellitus patients.

Key words: CM, DM, Cyclic meditation, Diabetes mellitus, blood sugar levels

PREVALENCE OF DIABETES IN MANCHENAHALLI VILLAGE, JIGANI HOBBLI, BANGALORE

**Simla Nixon, Aarti Jagannathan
and Subramanya P**

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INTRODUCTION: There are many studies to depict the prevalence of type 2 diabetes,

but none have been conducted to assess the prevalence of diabetes in the city of Bangalore or semi-urban/rural areas in and around Bangalore. In this context, we planned to conduct a cross sectional survey in a semi-rural area of Manchenahalli, Anekkal taluk, Jigni hobli, to estimate the prevalence of Type 2 Diabetes

METHODOLOGY: In a cross-sectional survey 226 people from Manchenahalli village in Bangalore were screened for Type 2 diabetes using the Diabetes Risk Test (DRT), Fasting Blood Sugar (FBS), and Post Prandial Blood Sugar (PPBS). The data was analyzed using Pearson's correlation analysis, *t* test and Univariate ANOVA and linear regression analyses,

RESULTS: The overall prevalence of Diabetes was 20.8% [95% confidence interval; CI: (20.70 – 20.89)], which included 74.5% (95% CI: 74.09 – 74.40) in known diabetic subjects and 25.5% (95% CI: 25.40 – 25.59) in subjects with newly detected diabetes. 25.7% of participants [95% confidence interval; CI: (25.60 - 25.79)] were diagnosed to be 'At Risk' for diabetes and the remaining 53.5% [95% confidence interval; CI: (53.40 - 53.59)] of participants were not found to be diabetic/ at risk for diabetes. The regression model was significant at $p<0.001$ and explained 27% of variance (Adjusted R Square = 0.277). Age of the participants (Beta=0.529; $p<0.001$) emerged as significant predictors of risk for diabetes.

CONCLUSION: It is essential that people with age, should consider concrete lifestyle modifications. The findings of this study advocate for need for national programmes to screen diabetes at rural community level.



DEMOGRAPHIC AND MEDICAL PREDICTORS OF TYPE 2 DIABETES: A RETROSPECTIVE FROM AROGYADHAMA, S-VYASA

Yumnam Bishenchandra, Aarti Jagannathan and Subramanya P

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Introduction: Diabetes is one of the fastest growing disorders in modern life and hence any data depicting the effect of yoga for diabetes is useful and needs to be analyzed. The aim of this study is to retrospectively assess the efficacy of yoga treatment for patients with diabetes (patients who presented to primary treatment centre – Prashanti, S-VYASA, Jigni).

Methodology: The study was a pre post longitudinal design (Retrospective study). 560 subjects who were suffering from Type 2 Diabetes (according to ADA criteria; for more than one year) and who were admitted for treatment at Swami Vivekananda Yoga Anusandhana Samasthana (S-VYASA), between January 2008 – December 2010 were considered as sample for the study. Patient files in which more than 25% data is missing, were excluded from data analysis. The subjects were assessed at baseline (at admission) and at the time of their discharge (post yoga intervention) for Respiratory Rate (RR), Pulse Rate (PR), Systolic blood Pressure (SYS), Diastolic Blood Pressure (DIA), Weight (WT), Breath Holding Time (BHT), Fasting Blood Sugar (FBS) and Post Prandial

Blood Sugar (PPBS). The patients stayed for a minimum of 6 days to a maximum of 15 days, during which the Integrated Approach to Yoga Therapy (IAYT) for Diabetes was imparted to them.

Results: The baseline values of all variables were not normally distributed ($p < 0.01$). Non parametric test analysis of pair wise time effect using the Wilcoxon signed ranks test showed that there was a significant improvement in Respiratory rate, Pulse rate, Systolic blood pressure, Diastolic blood pressure, Weight, Breath holding rate, Fasting blood sugar and Post prandial blood sugar from before yoga to after yoga practice ($p < 0.001$). The gender difference for varied outcome measures after yoga intervention showed that males had a significantly lower values than females after 15 days of yoga treatment practice in Pulse Rate (PR), Fasting Blood Sugar (FBS) and Post Prandial Blood Sugar (PPBS). However with respect to Diastolic blood pressure (DYS), Weight (WT), Breath Holding Time (BHT) the females had significantly lower values than males after completion of 15 days of yoga treatment.

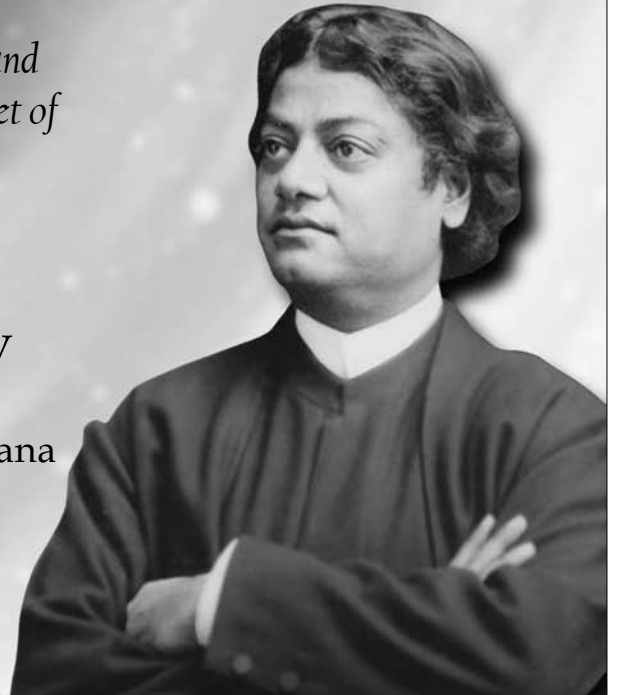
Conclusion: Integrated Approach to Yoga Therapy (IAYT) can make a substantial contribution to the treatment of Diabetes in improving respiratory rate, pulse rate, Systolic blood pressure, Diastolic blood pressure, Weight, Breath holding rate, Fasting blood sugar and Post prandial blood sugar.

Best wishes for the Success of the Conference

*Infinite patience, infinite purity and
infinite perseverance are the secret of
success in a good cause.*

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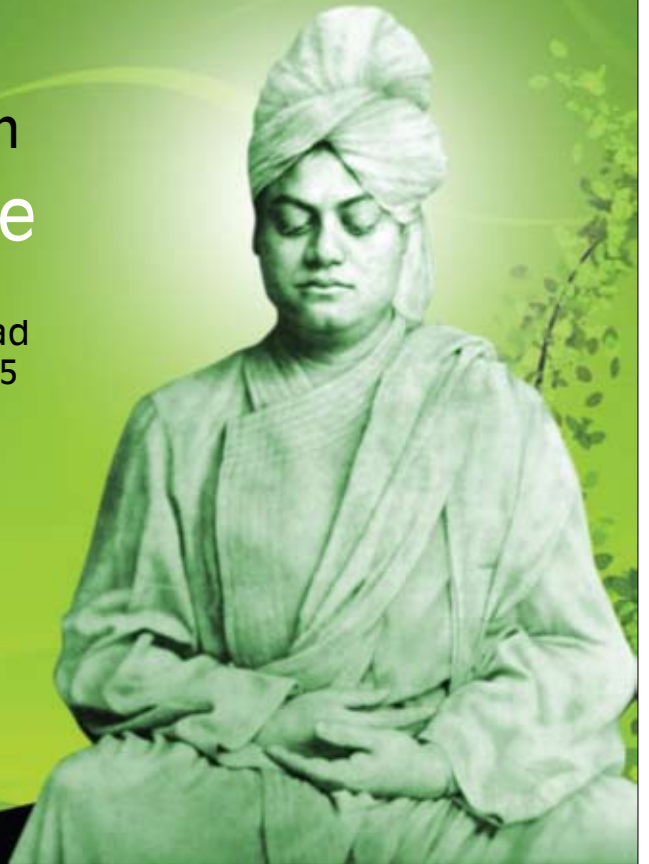
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Arise, Awake!
And stop not till the goal is reached



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*He who can become mad
with an idea he alone sees light*





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*He who sees Shiva in the poor, in
the weak, and in the diseased,
really worships Shiva*



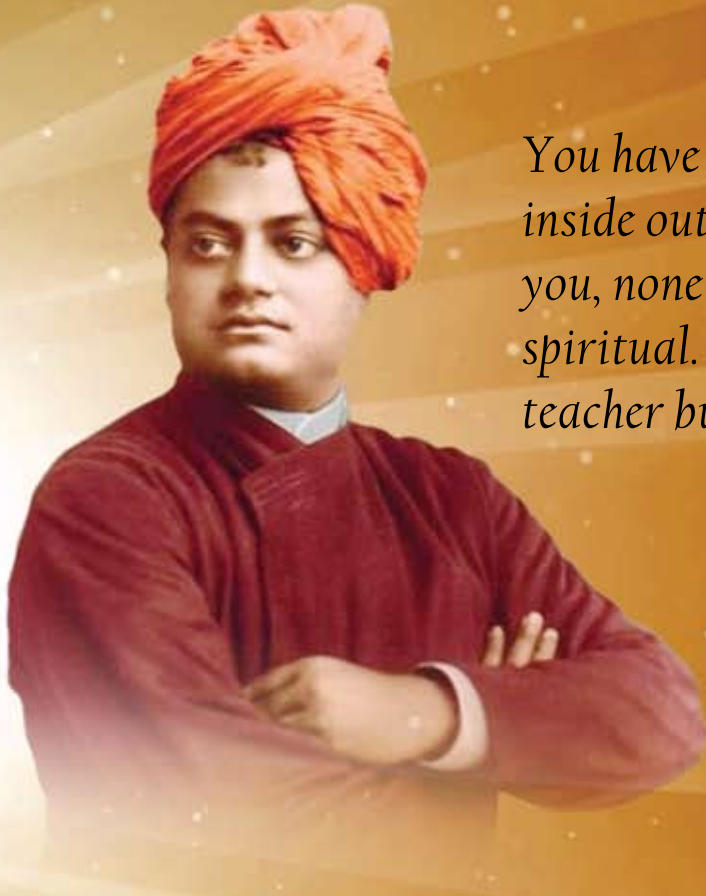
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*All knowledge depends
upon calmness of mind*

*With best wishes
for the success of the conference*



*You have to grow from
inside out. None can teach
you, none can make you
spiritual. There is no other
teacher but your own soul.*

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The man from whom this veil is being lifted is the more knowing man; the man upon whom it lies thick is ignorant, and the man from whom it has entirely gone is all-knowing, omniscient.

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*India will be raised,
not with the power of
the flesh, but with the
power of the spirit; not
with the flag of destruc-
tion, but with the flag of
peace and love, the garb
of the Sannyasin; not by
the power of wealth, but
by the power of the beg-
ging bowl.*



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for the success of the conference*

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*On our work depends
the coming of the
India of the future.
She is there ready
waiting. She is only
sleeping.*



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In the study of religion the control of the mind is absolutely necessary. We have to turn the mind back upon itself in this study.

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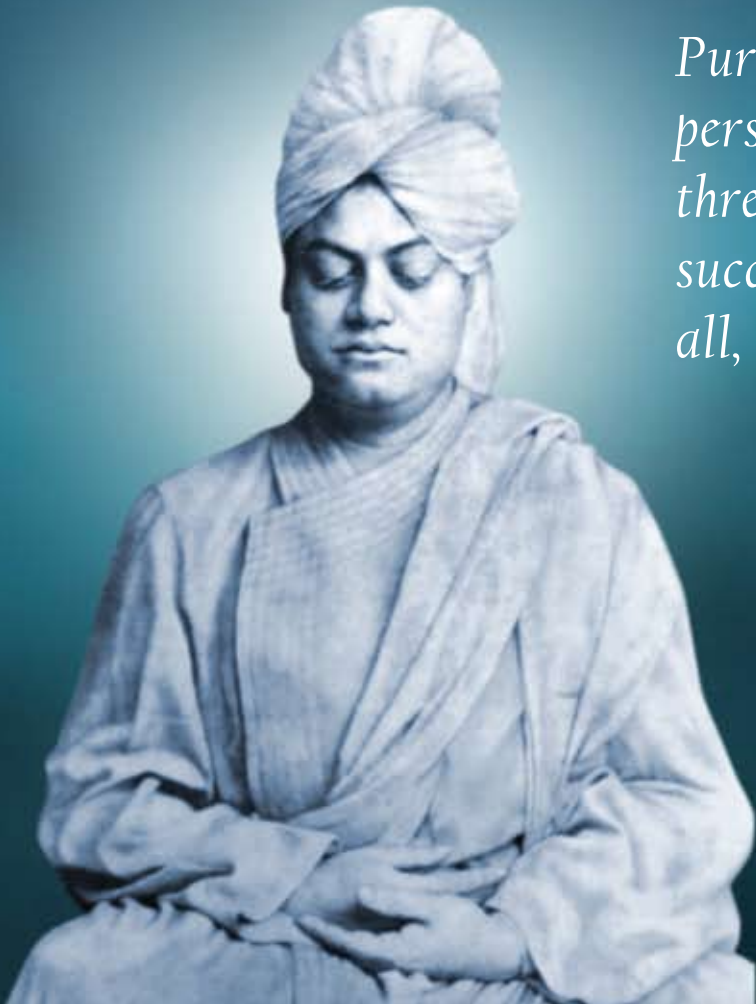
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*Purity, patience, and
perseverance are the
three essentials to
success, and above
all, love.*

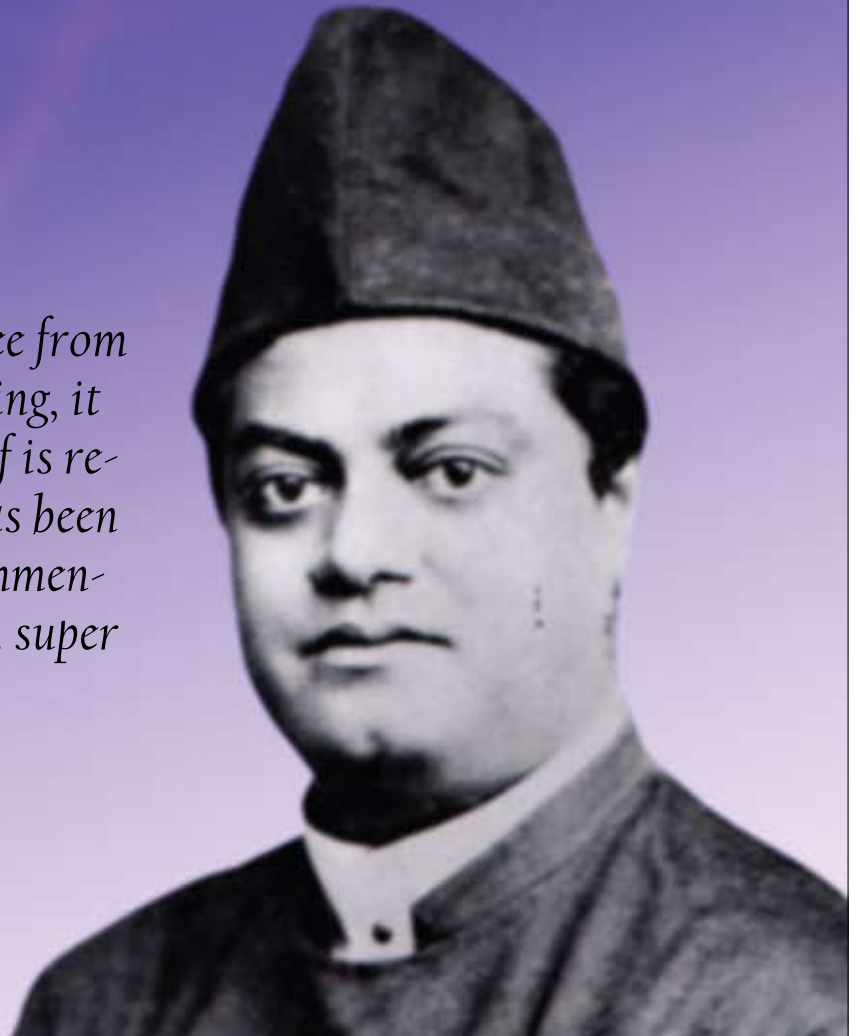
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*When the mind is free from
activity or functioning, it
vanishes and the Self is re-
vealed. This state has been
described by the commen-
tator Shankara as ... super
sensuous state.*



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One atom in this universe cannot move without dragging the whole world along with it. There cannot be any progress without the whole world following in the wake, and it is becoming everyday clearer that the solution of any problem can never be attained on racial, or national, or narrow grounds.



With hearty wishes



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All knowledge, secular or spiritual, is in the human mind. In many cases it is not discovered, but remains covered, and when the covering is being slowly taken off we say “we are learning”, and the advance of knowledge is made by the advance of this process of uncovering.

*Best wishes for
the success of the conference*

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*Every duty is
holy and
devotion to duty
is the highest
form of the
worship of God*

Welcome to
S-VYASA





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Holistic Research Health Home

A teaching
Hospital for
S-VYASA
University



Who we are?

- Arogyadhama is a Holistic Health Home imparting healing through evidence based modules of Integrated Approach of Yoga Therapy (IAYT), Naturopathy and Ayurveda.
- 250 bed inpatient capacity
- More than 30 years in patient care for prevention, treatment and rehabilitation.



What we do?

- According to ancient Indian texts, the origin of the disease is in the Mind, in the form of stress (Adhi), which manifests in the body as physical ailment (Vyadhi)
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Scope of Services

- For prevention of diseases and promotion of health
- Management of Non-communicable diseases
- Rehabilitation of Cancer, Degenartive diseases and Mental disorders



For whom?

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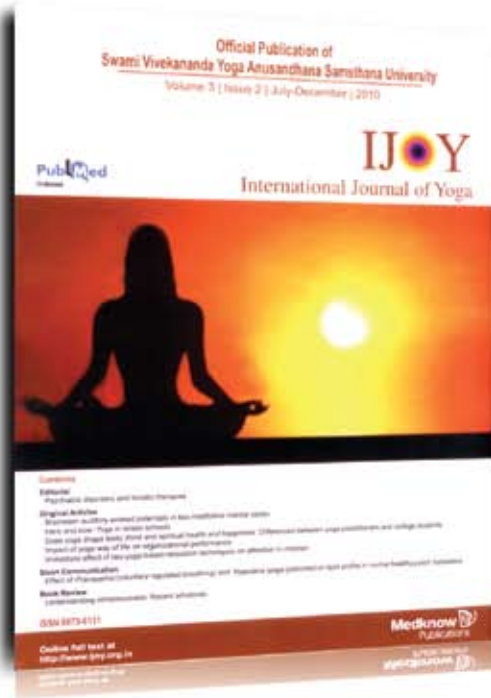
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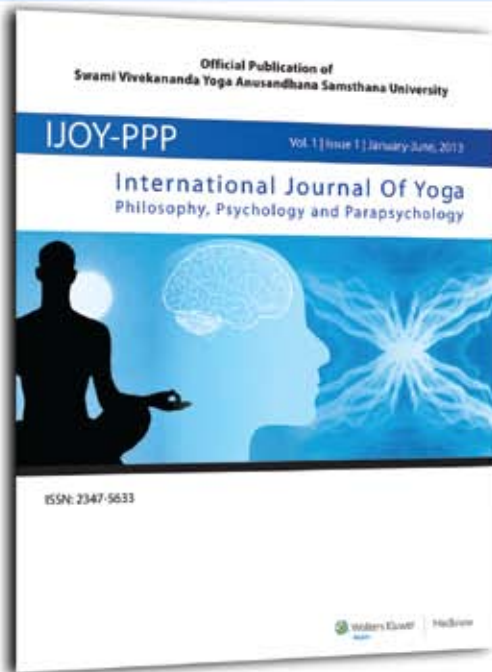
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Title: Neurophysiological Correlates of Phases of Wakefulness and Sleep in Meditators

Project No. 2001-05010; 2007-2012

S-VYASA Yoga University, Bengaluru

AIM

Understanding the neurophysiological differences
between states of the wakefulness, based on traditional yoga texts



Autonomic &
Respiratory
Variables: HRV,
Respiration, HR,
GSR, PLT



**Auditory Evoked
Potentials (AEPs)
across the neural axis:**

- Brain stem auditory evoked potentials [BAEP],
- Middle latency auditory evoked potentials [MLAEP],
- Long latency auditory evoked potential [LLAEP]
- P300 [Oddball Paradigm]



Polysomnography-
studying the sleep
architecture in mediators



Functional
Magnetic
Resonance
Imaging (fMRI)
in meditators

A participant in MRI scanner



Head
Shirley Telles
M.B., B.S., M.Phil.,
Ph.D., DSc. (Hon.)



Co-Head
Naveen K V
B.N.Y.S., Ph.D.



Co-Investigator
Manjunath N K
B.N.Y.S., Ph.D.

DEPARTMENT OF SCIENCE AND TECHNOLOGY

Cognitive Science Research Initiatives
[DST-CSI]



Title: Mapping Neurophysiological, neurochemical and cerebral blood flow changes in attentional processes related to Yoga

Project No. SR/CSI/22/2009; 2010-2013

S-VYASA Yoga University, Bengaluru

AIM

To assess the following before and after meditation or supine rest

YELLOW BLUE ORANGE
BLACK RED GREEN
PURPLE YELLOW RED
ORANGE GREEN BLACK
BLUE RED PURPLE
GREEN BLUE ORANGE

Stroop Color Word Test

Neuropsychological Tasks:

- Visual Oddball Task
- Stroop Color Word Task and
- n-Back Task

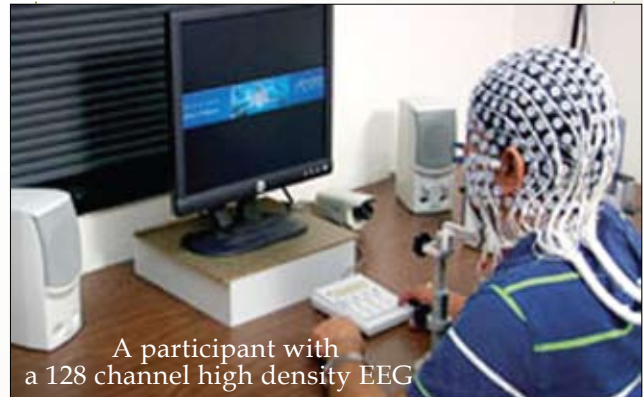
Event Related Potentials [ERPs]:

Electrical activity
in attentional processes

Event Related Functional Magnetic Resonance Imaging [er-fMRI]: Cerebral blood flow changes in attentional processes



A participant in MRI scanner performing an auditory test



A participant with a 128 channel high density EEG



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Shirley Telles
M.B., B.S., M.Phil.,
Ph.D., DSc. (Hon.)



Co-Head
Naveen K V
B.N.Y.S., Ph.D.



Co-Investigator
Manjunath N K
B.N.Y.S., Ph.D.



Department of AYUSH Govt. of Karnataka



A DEVELOPMENTAL GRANT TO ESTABLISH CENTRAL RESEARCH FACILITIES FOR YOGA RESEARCH

Project No: HFW/373/PTD/2011 DATED 12.02.2013 No AYUSH:50:BUD (1) 2010-11

S-VYASA Yoga University, Bengaluru

Background:

The need for mainstreaming AYUSH systems of Medicine in the management of range of Non-communicable Diseases is long felt. The available evidence to use them individually or as integrative medicine is relatively small compared to conventional medicine. Recent advances in Yoga research has established its efficacy both as a standalone intervention as well as an adjuvant. The available literature suggests that there is a strong need for undertaking indepth research in Yoga and other Indian Systems of Medicine to understand the underlying mechanisms of action.

Hence, the need for establishing research facilities at SVYASA University Campus was recognized by the Government of Karnataka.

Objectives:

1. Research

- a. Establishing Research facilities
- b. CMEs (Bi-annual) in collaboration with other AYUSH institutions on the use of AYUSH systems in the management of Non Communicable Diseases
- c. Conducting Clinical trails in Four Major Non-communicable Diseases i.e., Type II Diabetes, Depression, Heart Disease, Obesity

2. Training

- a. Orientation in
- b. research methodology to AYUSH practitioners
- c. CMEs (Bi-annual) in collaboration with other AYUSH institutions on the use of AYUSH systems in the management of Non Communicable Diseases
- d. Annual Professional Development Program for AYUSH Researchers

3. Dissemination

- a. Publishing papers in High impact journals
- b. Awareness programs and booklets for common man
- c. Evidence based disease specific protocols for the above mentioned four conditions for use by all AYUSH hospitals and other medical professionals

Proposed Central Research Facilities

1. **Molecular Biology Laboratory:** To understand the physiology and mechanism of action of alternative medical systems at molecular and cellular level



2. **Psychophysiology laboratory:** Assessment of metabolic measurement systems, electromyographs, ergometers, oxygen consumption, treadmills and fitness status of individuals



3. **Cognitive Neuroscience Laboratory:**

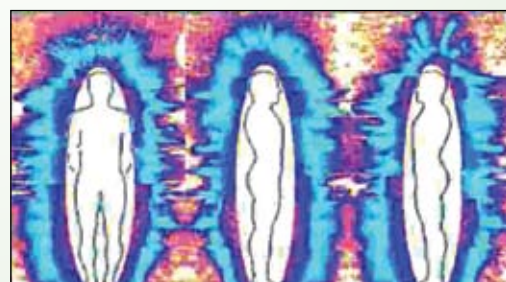
Understanding the basic neural processes that underlie complex higher-order cognitive operations and neural mechanisms of cognitive processes related to yoga practices



4. **Psychology:** Developing and standardising the questionnaires for AYUSH systems of medicine and novel investigation procedures exclusively in connection with AYUSH systems of medicine



5. **Bio-Energy Laboratory:** Bio Energy laboratory focusses over the subtle energy changes in various physiological, psychological and pathological states with NadiTaragini and Gas Discharge Visualisation



ANVESANA

Center for Yoga Research



Vivekananda Yoga Anusandhana Samsthana, (VYASA in short, translated as Vivekananda Yoga Research Foundation) was established in the year 1984 with a vision of making yoga as a socially relevant science. Following the path breaking work in evaluating the therapeutic use of yoga in the management of bronchial asthma, the institution was recognized as a Scientific & Industrial Research Organization (SIRO) from the Department of Scientific & Industrial Research, Ministry of Science & Technology, Government of India in the year 1988. The scientific accomplishments thereafter and the disciplined education based on the science and philosophy of yoga resulted in receiving University affiliations from Bangalore University's Faculty of Sciences. Since then VYASA has been offering Doctoral programs in yoga & allied sciences to qualified students. The quality of education imparted at VYASA earned it the recognition as a Deemed-to-be University (status of an independent University) by the Ministry of Human Resource Development, Government of India in the year 2002. The same year the university was renamed as Swami Vivekananda Yoga Anusandhana Samsthana, (S-VYASA).

The Govt. of India, Ministry of Health & Family Welfare, Department of AYUSH has accorded the status of Center of Excellence in Yoga for S-VYASA. And also S-VYASA has been designated as ICMR Center for Advanced Research in Yoga and Neurophysiology (ICMR CAR Y & N; 2007-2012).

1. Recognitions

- Scientific and Industrial Research Organization (SIRO) - 1988
- Deemed to be University, MHRD, Govt. of India - 2002
- ICMR Center for Advanced Research in Yoga and Neurophysiology [ICMR CAR Y & N] - 2007-2012
- DST-CSI - 2011-2013
- Center for Excellence in Yoga by Dept. of AYUSH - 2011

2. Accomplishments

- International Journal of Yoga (IJOY) - the first yoga journal in PubMed
- More than 250 Research Publications in national and international journals
- 25 candidates have completed Ph.D.
- Conducted 20 International Conferences
- DST - FIST supported Lab

3. Major Areas of Research

- Physiological effects of yoga practices
- Therapeutic applications of yoga
- Yoga for rehabilitation
- Yoga for perception and performance
- Higher states of consciousness

4. Infrastructure

- Molecular Biology Laboratory
- Autonomic Function Testing and Exercise Physiology Laboratory
- Sleep Laboratory (Polysomnography)
- Cognitive Neuroscience Laboratory
- Psychology Laboratory
- Bio-Energy Laboratory



14 MLD STP Plant, Kolkata



Transmission Line, Assam



1.80 Kms long tunnel between Udhampur - Katra

- Aviation Infrastructure
- Railway Network
- Power Transmission & Distribution
- Marine Infrastructure
- Sewerage & Drainage
- Bridges & Flyovers
- RMC Division
- Highways & Roads



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(Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka)

- INDIA'S premier medical degree college in Naturopathy & Yoga.
- Established in August 1989.
- The college provides a 5 year bachelors degree (BNYS) and a 3 year post graduate degree (MD) in the disciplines of Naturopathy as well as Yoga.
- Students from all over INDIA and abroad are studying in this college.
- Successful completion of 17 batches and over 800 doctors well placed worldwide.
- College provides teaching hospitals, well equipped laboratories, library (digital & literary), separate boys and girls hostels in the campus.
- Well experienced and dedicated staff.
- Yearly campus interviews from various multinational institutions.



ಶ್ರೀ ಧ.ಮ. ಪ್ರಕೃತಿ ಚಿಕಿತ್ಸಾ ಮತ್ತು ಯೋಗ ವಿಜ್ಞಾನಗಳ ಮಹಾ ವಿದ್ಯಾಲಯ, ಉಜಿರೆ

- ಭಾರತದಲ್ಲಿ ಪ್ರಪ್ರಥಮವಾಗಿ ಆರಂಭಗೊಂಡ ಪ್ರಕೃತಿ ಚಿಕಿತ್ಸೆ ಮತ್ತು ಯೋಗದ ಮಹಾವಿದ್ಯಾಲಯ.
- ಆಗಸ್ಟ್ 1989ರಲ್ಲಿ ಪ್ರಾರಂಭ
- ಮಹಾವಿದ್ಯಾಲಯವು 5 ವರ್ಷಗಳ BNYS ಎಂಬ ವೈದ್ಯಕೀಯ ಪದವಿಯನ್ನು ಹಾಗೂ 3 ವರ್ಷಗಳ MD (ಪ್ರಕೃತಿ ಚಿಕಿತ್ಸೆ ಮತ್ತು ಯೋಗದಲ್ಲಿ) ಸ್ನಾತಕೋತ್ತರ ಪದವಿಯನ್ನು ನೀಡುತ್ತಿದೆ.
- ದೇಶ ವಿದೇಶಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳು ಈ ಕಾಲೇಜಿನಲ್ಲಿ ವ್ಯಾಸಂಗ ಮಾಡುತ್ತಿದ್ದಾರೆ.
- ಇಂದಿನವರೆಗೆ 17 ತಂಡಗಳಲ್ಲಿ 800 ವೈದ್ಯರು ಪದವಿ ಮುಗಿಸಿ ದೇಶ ವಿದೇಶಗಳಲ್ಲಿ ಉನ್ನತ ಹುದ್ದೆಯಲ್ಲಿದ್ದಾರೆ.
- ಸುಸಜ್ಜಿತವಾದ ಆಸ್ಪತ್ರೆಗಳು, ಪ್ರಯೋಗಾಲಯಗಳು, ವಾಚನಾಲಯ ಮತ್ತು ವಸತಿ ನಿಲಯಗಳನ್ನು ಹೊಂದಿದೆ.
- ಅನುಭವಿ ಮತ್ತು ನುರಿತ ಉಪನ್ಯಾಸಕರ ತಂಡವನ್ನು ಹೊಂದಿದೆ.
- ಪ್ರತಿ ವರ್ಷ ಕ್ಯಾಂಪಸ್ ಇಂಟರ್‌ವ್ಯೂನಲ್ಲಿ ಹೆಸರಾಂತ ಸಂಸ್ಥೆಗಳು ಪಾಲೊಳ್ಳುತ್ತದೆ.

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