“Every person having diabetes should be helped to live his/her normal span of life in perfect health”

Prof. M. Viswanathan

Prof. M. VISWANATHAN, M.D., FAMS.,
(26.8.1923 – 1.3.1996)
Founder President
Diabetes Research Centre Foundation
Royapuram, Chennai, India

The Relentless Crusader against diabetes
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No.14/7/88-TU-V

The President
Diabetes Research Centre Foundation
4, Main Road,
Rayapuram,
Chennai – 600 013

Subject: Renewal of Recognition of Scientific and Industrial Research Organisations (SIROs).

Dear Sir,

This has reference to your application for renewal of recognition of Diabetes Research Centre Foundation, Chennai as a Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research under the Scheme on Recognition of Scientific and Industrial Research Organisations (SIROs) - 1988.

2. This is to inform you that it has been decided to accord renewal of recognition to Diabetes Research Centre Foundation, Chennai from 1.4.2007 up to 31.3.2010. The recognition is subject to terms and conditions mentioned overleaf.

3. Receipt of this letter may kindly be acknowledged.

Yours faithfully,

(R. R. Abhyankar)
Scientist – G
Title of the centre:
**WHO Collaborating Centre for Research, Education and Training in Diabetes**

Director / Head:
Dr Vijay Viswanathan  
[dr_vijay@vsnl.com](mailto:dr_vijay@vsnl.com)

Institution:
Diabetes Research Centre and M.V. Hospital for Diabetes

Address:
No. 4, Main Road, Royapuram, Chennai - 600 013

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<tr>
<td>(91-44) 2595 4913 / 14 / 15</td>
<td>(91 - 44)2595 4919.</td>
<td><a href="http://www.mvdiabetes.com">http://www.mvdiabetes.com</a></td>
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Date of Designation: 01/Aug/2002  
Last Redesignation: 15/Nov/2006  
Expiry: 15/Nov/2010

Terms of Reference:
1. To conduct epidemiological research in diabetes prevention at community level, its complications & cardiovascular risk factors.
2. To strengthen education & training in diabetes research, prevention & control.
3. To design & test on models of diabetes health care delivery system for developing countries in the region & contribute to activities of national diabetes programme.

Subjects:
1. Diabetes

Types of activity:
1. Information dissemination
2. Product development (guidelines; manual; methodologies; etc.)
3. Research

OWERs:

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<tr>
<td>Gojka ROGLIC</td>
<td>(41-22) 791 4306</td>
<td><a href="mailto:roglicg@who.int">roglicg@who.int</a></td>
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You can also contact:

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<tr>
<td>Jerzy Leowski</td>
<td></td>
<td><a href="mailto:leowskij@searo.who.int">leowskij@searo.who.int</a></td>
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Registry file Ref: D5/286/39

Access to annual progress reports and the current workplan (this is accessible to WHO Staff Members only):
[Link to eWork](http://www.who.int/whocc/Detail.aspx?cc_ref=IND-85&cc_c...)

[WHO Collaborating Centres](http://www.who.int/whocc/Detail.aspx?cc_ref=IND-85&cc_c...)

**WHO Collaborating Centres Global database**
Dear Colleagues & Friends

I am happy to write this foreword for the 2007 – 2008 Report of Diabetes Research Centre, the WHO Collaborating Centre for Research, Education and Training in Diabetes. This report gives the reader information about the various activities conducted by our centre during the past two years.

DRC has been actively working towards achievement of the terms of reference given to the centre by WHO to fulfill its role as a collaborating centre.

The centre is also working hard to fulfill the mission statement of our Founder Director Prof. M. Viswanathan “To make every person with diabetes lead his normal span of life in perfect health.”

I must place on record the selfless and dedicated service of all our competent scientific staff, for the help rendered to achieve these goals.

I am thankful to Dr. K. Satyavani & her team for preparing this Report.

Soliciting your encouragement & support

With warm personal regards

Dr. Vijay Viswanathan
Director
Dr. Vijay Viswanathan, MD., Ph.D., MNAMS.

Clinical Researchers
Dr. K. Uma Mahesh, M.B.B.S., MDRC.,
Dr. A. Syed Abuthaahir, M.D.,
Dr. D. Hemanga Barman, M.B.B.S., MDRC.,
Dr. H. Mitalee, M.B.B.S., MDRC.,
Dr. Sarweswar Agarwal, M.B.B.S., MDRC.,
Dr. M. Deepa, M.B.B.S., FDRC.,

Department of Internal Medicine
Prof. S. N. Narasingan, MD (Dean of Studies)
Prof. S. K. Rajan, MD (Chairman of Academic Committee)
Dr. Vijay Viswanathan, MD
Dr. S.S. Lakshmanan, MD
Dr. K. Shanmugam, MD
Dr. A. Syed Abuthaahir, MD

Department of Biochemistry
Dr. M. Parthiban, M.Sc., Ph.D.,
Dr. K. Satyavani, M.Sc., M.Tech., Ph.D
Dr. S. Shila, M.Sc., Ph.D.,
Mr. Meerza Rafiullah Baig, M.Sc., M.Phil.,
Mr. Thanigaivel, M.Sc., M.Phil.,
Ms. Ezhilarasi, M.Sc., M.Phil.,
Mr. A.Pandian, B.Sc.,
Mrs. Sandhya, B.Sc.,
Mr. S. Dhas, DMLT
Ms. J. Jenifer, B.Sc., DMM., (Microbiologist)

Department of Nutrition and Dietetics
Dr. Varsha, Ph.D.,
Mrs. Sheela Paul, B.Sc., D.N.D., M.A.,
Ms. S. Vimala, M.Sc.,
Mrs. M. Malini, B.Sc., DND.,
Ms. Priya, M.Sc., M.Phil.,
Ms. Suvetha, M.Sc.,

Department of Epidemiology
Dr. Shabana Tharkar, BDS., M.Sc., (Epidemiology)
Dr. K. Satyavani, M.Sc., M.Tech., Ph.D.,
Ms. D. Arut Selvi, M.Sc., (Psycho), PGDMS
Ms. J. Kalaivani, M.Sc.,
Mr. Pinto Chan, M.A., (Medical Sociology)

Department of Community projects
Dr. K. Karunanithi, B.D.S., (Chief Project Officer)
Mr. K. P.Sasikumar, B.A., DCA.
Mr. Pinto Chan, M.A., (Medical Sociology)

Department of Diabetes Education, Social Science Research
Dr. M. Deepa, M.B.B.S., FDRC,
Mr. B. Elayaraja, M.Sc, M.Phil., PGDGC.,
Mrs. Anujiji, M.Sc.,
Ms. M. Indhumathi, B.Sc., PGDND.,
Ms. Ramya, B.Sc.,
Ms. Divya, B.E.S, M.Sc, M.Phil,
Department for Prevention of Diabetes
Mrs. Clementina, B.A
Mrs. Sampoornam, M.Sc., M.Phil

Department of Diabetic Kidney Disease
Dr. Vijay Viswanathan, MD., Ph.D., MNAMS.
Ms. Priyanka Tilak, M.Sc.,
Ms. Zenith Khashim, M.Sc.,

Diabetic Foot Clinic
Dr. Vijay Viswanathan, MD., Ph.D., MNAMS.
Dr. Rajesh Kesavan, M.B.B.S., M.S., FPS,
Mrs. Seena Rajasekar, B.A.
Ms. Kavitha, D.P.S.
Mr. Abilash, D.P.S

Department of Medical Records
Mr. Ravichandran, B.Sc.(Psyco), DMRSc, PGPCG.
Mr. Ramesh Prabu, B.Sc.(Psyco), DMRSc,

Library
Mrs. Saratha, B.Sc., M.L.I.S.,

CEO of DRC
Mr. V. Gopinathan.
Research Committee of DRC

Dr. Vijay Viswanathan, *MD.,Ph.D.,MNAMS.,*
Dr. K. Satyavani, *M.Sc.,M.Tech.,Ph.D.,*
Dr. Shabana Tharkar, *BDS.,M.Sc.,(Epidemiology)*
Dr. M. Parthiban, *M.Sc.,Ph.D.,*
Dr. S. Shila, *M.Sc.,Ph.D*
Dr. K. Karunanithi, *BDS.,*
Mrs. Sheela Paul, *B.Sc.,D.N.D.,MA.,*
Ms. Priyanka Tilak, *M.Sc.,*
Mrs. B. Sampoornam, *M.Sc.,M.Phil.,*
Ms. D. Arut Selvi, *M.Sc.,(Psycho),PGDMS*
Mr. Meerza Rafiullah Baig, *M.Sc.,M.Phil.,*
Mr. Thanigaivel, *M.Sc., M.Phil.,*
Mrs. Anujiji, *M.Sc.,*

Ethics Committee of DRC

<table>
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<tr>
<th>Name</th>
<th>Title and Role</th>
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<tbody>
<tr>
<td>Dr. S. N. Narasingan</td>
<td>Consultant Physician</td>
</tr>
<tr>
<td>Dr. Vijay Viswanathan</td>
<td>Diabetologist, Scientist</td>
</tr>
<tr>
<td>Dr. Muthu Jayaraman</td>
<td>Nephrologist</td>
</tr>
<tr>
<td>Dr. M. Parthiban</td>
<td>HOD of Biochemistry</td>
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<tr>
<td>Dr. K. Satyavani</td>
<td>Scientist</td>
</tr>
<tr>
<td>Dr. Shabana Tharkar</td>
<td>Scientist</td>
</tr>
<tr>
<td>Justice Mr. G. Ramanujam</td>
<td>Former Judge, High Court of Tamilnadu</td>
</tr>
<tr>
<td>Mr. A. S. Ranganathan</td>
<td>Advocate, Madras High Court</td>
</tr>
<tr>
<td>Dr. T. P. Jacob</td>
<td>Retd. Vascular Surgeon, Stanley Medical College &amp; Hospital, Chennai</td>
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<tr>
<td>Mrs. Geetha Padmanabhan</td>
<td>Journalist</td>
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Training Committee of DRC

Dr. Vijay Viswanathan, Diabetologist, Research Scientist.
Dr. S. N. Narasingan, Dean of Studies.
Dr. M. Parthiban, Vice Dean.
Dr. Manjula Datta, Professor, Research Scientist.
Dr. Shabana Tharkar, Scientist.
Dr. K. Satyavani, Scientist.
Dr. Rajesh Kesavan, Podiatric Surgeon.
Dr. Geetha Laksmi, Consultant Microbiologist.
Dr. Varsha, Professor (Nutrition).
Dr. Kumaravel, Endocrinologist.
Dr. Uma Mahesh, Diabetologist.
Dr. Hemanga Barman, Diabetologist.
Dr. S. Agarwal, Diabetologist.
Mrs. Sheela Paul, Dietician.
In January 1996, a Felicitation Committee consisting of leading Senior Citizens of Madras decided to felicitate Prof. M. Viswanathan in April 1996 as Prof. M. Viswanathan had completed 50 years as clinician and scientist in the field of Diabetology. As part of the felicitation it was decided by the committee to create an Endowment in Prof. Viswanathan’s name for funding outstanding research in diabetes in India by an Indian Scientist. This decision was taken as no such research grant is available for diabetes research in our country and foreign research institutions are not prepared to fund research that will be exclusively carried out by an Indian in India without foreign collaboration and/or participation.

Prof. Viswanathan approved the idea and stated that the grant should be created to stimulate innovation in the field of diabetes research in India leading to practical advances in the prevention, detection and treatment or cure of diabetes. He also informed the committee that the ultimate fulfillment of the mission of Diabetes Research Centre and M. V. Hospital for diabetes is research and that only research can lead to prevention or cure for diabetes or to ways to improve the lives of people affected by diabetes.

Unfortunately, this Endowment could not be created during his life time as Prof. Viswanathan passed away on 1st March 1996. The establishment of an Endowment entitled Prof. M. Viswanathan DRC National Research Endowment was announced by the management of the Diabetes Research Centre in September 1996.

The Scientific Committee selected Prof. Gunasekaran, Prof. of Physiology and Ms. Daisy Mythili who was appointed as Prof. M. Viswanathan Research Fellow by the Christian Medical College, Vellore for the award of this research grant for the years 1999 – 2000 & 2000 – 2001 for their project “Electron microscopic studies on normal, cultured and transplanted, isolated monkey pancreatic islets.”
Dr. Manickam Krishnan, Lecturer cum Asst. Research Officer, Genetics Research Cell, Sri Ramachandra Medical College and Research Institute was awarded DRC National Research Grant for the year 2002 for his project “A study on HNF-1 alpha mutations in maturity onset of diabetes of the young (MODY 3).”

Dr. R. Suresh, Prof. & Head, Periodontics, Sir Ramachandra Dental College, Sri Ramakrishna Medical College and Research Institute (DU) was awarded DRC National Research Grant for the years 2004-2006 for his project “Type 2 diabetes mellitus and Periodontitis – two way phenomena?.”

Scientists and Researchers in this field interested in applying for this grant may write to the Director, Diabetes Research Centre for the necessary details.
Activities of the WHO Collaborating Centre for Research, Education & Training in Diabetes in India

WHO Collaborating Centre for Research, Education and Training in Diabetes was established on 1st August, 2002. Ever since the WHO Collaborating Centre was started, it has been closely associated with WHO, SEARO and Department of Chronic Diseases and Health Promotion of WHO, Geneva. It has been redesignated as a WHO Collaborating Centre for Research, Education and Training in Diabetes for a further period of four years w.e.f 15th November, 2006.

The terms of reference of the centre are:

- To conduct epidemiological research in diabetes prevention at the community level, its complications and cardiovascular risk factors
- To strengthen education and training in diabetes research, prevention and control.
- To design and test on models of diabetes health care delivery system for developing countries in the region and contribute to activities of the national diabetes programme.

The WHO Collaborating centre has been actively involved in carrying out activities such as:

- Organizing awareness raising programmes to high risk groups.
- Conducting diabetes screening camps for the general population and for different occupational groups such as bank employees, police officers, railway employees, software professionals, Marvadi Trust association members, etc.
- Conducting training programmes on “Prevention on Diabetes” and “Management of Diabetes” to doctors within India and from abroad.
- Conducting diabetes training for the doctors and paramedical staff under WHO/IDF sponsorship from abroad and India of different duration ranging from one week to three months.
Sharing experiences with other WHO collaborating centres and SEARO, New Delhi.

On World Diabetes Day, 2007, Diabetes Research Centre released a manual on “Prevention of Childhood Obesity and Diabetes” and a poster showing ten rules for prevention of childhood obesity on November 11th, 2007. Five thousand copies of the manual and posters were handed over to the Director of School Education and distributed to all government schools of Tamil Nadu.

The centre brought out a pocket sized manual on “Primary Prevention of Diabetes” for the benefit of health professionals, paramedics and lay public and this was released on 20th January, 2008 by Dr. Roglic Gojka, Responsible Officer, WHO, Geneva. Reprints of the manual in local regional language were made for free distribution in primary health centres.

For creating awareness on primary prevention of diabetes among the public, a postal cover customized and carrying ten golden rules for primary prevention of diabetes by DRC was released on 6th April 2008, by the Principal Chief Post Master General, Tamil Nadu Circle.

WHOCC has taken up a major campaign on Primary Prevention of Diabetes with the Govt. of Tamil Nadu by training both rural and urban doctors. This is a structured training programme with basic and advanced level of training on the Primary Prevention of Diabetes. With the permission of the Director of Public Health, the training programme is being conducted for doctors in Primary Health Centres of Vellore and Villupuram districts.

A similar training programme is being conducted for doctors working in various Chennai Corporation Hospitals spread over entire metropolitan Chennai.

WHOCC has also brought out for first time in India, a manual and multicolor poster in Tamil on the Primary Prevention of Diabetes for free distribution, educating doctors, paramedics and also the general public.
A Doctor and a Nurse from Vietnam had undergone one month training programme in *“Diabetic Foot Care”* in September – 2007

A Nurse from Malaysia had undergone one month training in *“Diabetes Management”* in October – 2007
WHO Fellows, who have undergone in “Country Fellowship” training in September – October 2007

Doctors from Indonesia underwent training programme in “Diabetic Foot Care” in August – 2008
India ranks first, both in the prevalence of diabetes and tuberculosis (TB). Diabetes increases the risk for TB which leads to poor control, so it is necessary to prevent / control diabetes among TB patients especially in a country like India with a high prevalence of both the diseases. Severe hyperglycemia interferes with TB treatment thereby causing a delay in effective management of the disease. There is an urgent need to focus on training the doctors and health personnel for prevention, screening and effective management of diabetes among TB patients. In order to develop skills of doctors and paramedics on the above aspects, World Diabetes Foundation, is funding a project “Education and Training in prevention of diabetes for tuberculosis health personnel” under the WHO Collaborating Centre for Diabetes in India.

This project aims to train doctors and paramedical staff in selected areas such as Chennai, Kanchipuram and Thiruvallur. The main goal of this project is to develop an effective model for prevention of diabetes among TB patients and contribute to the National TB control programme.

The objectives of the WDF project are to train and educate the TB health personnel – doctors, paramedics and health workers in prevention and control of diabetes and to conduct awareness camps and facilitate diabetes education for TB patients.

This project, is expected to train around 300 paramedics on the screening and diagnosis of diabetes mellitus, around 300 health workers would be trained in prevention of diabetes and 1000 doctors would be trained in prevention and management of diabetes. Around 50 screening camps would be conducted for a period of three years (2009-2011).

Expert external and in - house faculty members will be involved as resource faculty members in conducting the training. Effective training methods and aids will be used during the conduct of the training programmes. Awareness raising camps will be organized to facilitate diabetes education for TB patients. They will be more focused on prevention, early detection, education and counselling patients to control blood sugar and prevent complications of diabetes.
Work in Progress

Epidemiology

1. Effectiveness of behavioural intervention program on childhood obesity

At a time when various public health policies are being implemented to prevent malnutrition and stunted growth among the pediatric population of India, overweight and obesity have become a major concern especially in the urban areas. Intake of calorie dense foods, decreased physical activity, television viewing and high socio economic status have all been cited as probable causes for the recent trends in increasing weight among children and adolescents from urban societies. Research suggests that in urban India, the prevalence of overweight and obesity among children and adolescents ranges from 8.5% to 29% and 1.5% to 7.4 % respectively. Research data on behavioural intervention studies on children is sparse. Hence this study was designed with the aim of assessing the impact of intensive intervention programme by lifestyle modification among obese children. Initial assessment on risk factors, prevention, diet and physical activity will be done along with anthropometric measurements and other biochemical investigations like fasting blood glucose, insulin, lipid profile and inflammatory markers for both control and intervention. Motivation sessions will be organized only for the intervention arm wherein they will be educated on lifestyle modification, healthy diet, and physical activity in order to bring down their weight. A special session on counseling for parents of obese children and teachers will be conducted once. The effect of intervention will be assessed for both the groups at the end of one year.

2. Metabolic Syndrome Intervention Trial in COPS.

Diabetes is one of the major health problem world wide and the number of people with diabetes will increase from 176 to 370 million by the year 2030. Prevalence of diabetes is increasing globally and the maximum increase is seen in developing countries such as India. Several epidemiological studies conducted by Diabetes Research Centre, Chennai, in urban areas in the past two decades have shown that prevalence of type 2
Diabetes has increased dramatically over the years. Modern lifestyles, consumption of fast food, refined and processed food, decreased physical activity and mental stress are associated with lifestyle related diseases like diabetes and heart disease. The prevalence of pre diabetic conditions such as IGT and IFG are also high in Asian Indians. It is known that IGT is associated with cardiovascular risk and high rates of metabolic syndrome. Diabetes Research Centre published a paper on the high prevalence of metabolic syndrome among police personnel. Since life style modification including changes in diet and enhanced physical activity helps to delay or prevent the conversion of IGT to diabetes and since no studies have been performed on a specific occupational group, an interventional study was planned with an objective to determine the effect of intervention by lifestyle modification on the prevalence of metabolic syndrome and to prevent or delay the development of type 2 diabetes in the high risk group.

North and Central police stations of Chennai city will be included in the study for a period of two years. Biochemical and anthropometric measurements will be done. Motivation and reinforcement will be done once in 3 months regarding lifestyle modification, healthy diet and enhanced physical activity to the intervention group while only basic advice will be given to the control group. Expected outcome should be a decrease in conversion rate from IGT to Diabetes in the intervention arm and changes in prevalence of metabolic syndrome and its parameters at the end of two years.

3. Diet Activity and Community Health (DACH) - An inter community comparison of diet pattern and its role in prevalence of cardiovascular abnormalities

The epidemiological transition has led to increased prevalence of non-communicable diseases globally, affecting mostly the urban population. Pre-diabetic conditions and cardiovascular disease (CVD) risk factors are on the rise and are manifesting at an early age. There is sparse data available on the diet pattern and its relation to prevalence of dysglycemia and CVD risk factors among the general population aged ≥ 12 years from different communities within a geographic region. So the current study is designed to determine and compare the diet pattern and its effects on CVD risk factors among the general population. All the above parameters will be assessed among the subjects and comparison will be made between i) North Indian and South Indians (Vegetarian and Non Vegetarian community) and ii) Upper, middle and lower socioeconomic strata. It is expected that the study will assess the effect of diet on health status of the population.
4. Diabetes Amputation Prevention Initiative in the Community (DAPIC)

On the eve of the World Diabetes Day on November 14, a path-breaking project titled ‘Diabetes Amputation Prevention Initiative in the Community (DAPIC)’ was been launched by M V Hospital for Diabetes & Diabetes Research Centre, Royapuram, the WHO Collaborating Centre for Diabetes in India. People with diabetes are up to 40 times more likely to undergo lower-leg amputation. In poor countries like India, treating diabetic foot may account for 40 per cent of health resources. Hence, tackling this menace by encouraging prevention of complications at the level of the primary care physician and the general practitioner is the best solution to avoid this economic burden on the individual and society.

The first such project in the country, DAPIC is a unique project that will screen and monitor the population in 20 villages in the vicinity of Chennai for a minimum of three years with the objective to reduce foot amputation rates in the community.

The aims of this project were to determine the prevalence of diabetic foot complications in the community, risk factors predisposing to diabetic foot complications, developing low-cost methods to diagnose and treat patients with foot problems in the community, particularly in the rural areas and to develop cost effective footwear for patients with high risk foot which could be a alternative for the contemporary “Hawaii slippers”

Once the project is established, DAPIC has the potential to become a model that can be replicated in other villages across the country with the help of policy-makers and other health institutions.

Biochemistry

1. GA study 1: 2007 – 2008

Aim: To determine the level of Glycated Albumin among type 2 diabetic subjects having diabetic nephropathy.

Study design: cross sectional

Many studies reported that Glycated Albumin (GA) is useful for the evaluation of short term glycemic control (2 – 4 weeks) in patients with diabetes. Reports suggest that albumin turnover should change in patients with chronic renal failure having massive proteinuria, in whom GA levels theoretically should be reduced as a result of
shorter exposure to plasma albumin. Hence our study aimed to assess the GA levels at different stages of diabetic nephropathy.

A total of 198 subjects with different degrees of renal impairment were studied. The levels of Glycated Albumin were estimated using Lucica GA-L kit from Japan. The study determines the levels of Glycated Albumin at each stage of diabetic nephropathy and elicits the stage at which the levels decline.

2. GA study 2: 2008 – 2009

**Aim:** To determine the efficacy of Glycated Albumin when compared with glycated haemoglobin among type 2 diabetic subjects without any complications

**Study design:** Prospective (3 months)

Glycated Haemoglobin (HbA1c) which is an index of long term glycemic control (2-3 months) in diabetic patients is measured in majority of patients world wide. Several studies reported that Glycated Albumin (GA) is useful for the evaluation of short term glycemic control (2 – 4 weeks) in patients with diabetes. This data was lacking in Asian Indian population. The aims of this study were to derive a normal cutoff value for Glycated Albumin in our population and to determine the efficacy of GA over HbA1c among type 2 diabetic subjects without complications.

A total of 150 type 2 diabetic subjects without any complications are involved in this study. Levels of Glycated Albumin (GA) were estimated by enzymatic procedures and Glycosylated Haemoglobin (HbA1c) was measured by immunoturbidimetric method. The comparison between GA and HbA1c is done to derive a better marker for the short term evaluation of glycemic status. A normal cut off for Glycated Albumin is derived using non diabetic controls. All the study subjects were followed for 3 months with monthly once as their review visit.


**Aim:** To determine the degree of insulin resistance among type 2 diabetic patients at various stages of diabetic nephropathy.

**Study design:** Cross sectional

Insulin resistance (IR) is associated with diabetes and cardiovascular disease. Many studies have shown that IR is present in chronic renal failure and evidences suggest
that IR can also occur in the early stages of renal disease. There is paucity of data from Indian population hence this study was planned with the aim of defining the degree of insulin resistance among patients with different stages of diabetic nephropathy. A total of 159 subjects with type 2 diabetes and different levels of diabetic nephropathy are involved in this study. Insulin was estimated by chemiluminescence method and insulin resistance was calculated using HOMA IR method. Association between diabetic nephropathy and insulin resistance will be determined.


**Aim:** To determine the clinical significance and different levels of urinary Monocyte Chemoattractant Protein 1 (MCP-1) among type 2 diabetic subjects with nephropathy.

**Study design:** Cross sectional study.

MCP-1 is a cytokine that exhibits the most potent chemotactic activity towards monocytes. It is suggested to be implicated in the development and progression of diabetic nephropathy by playing a role in the infiltration of monocytes or macrophages in the kidney. Hence this study is planned to determine the levels of urinary MCP-1 at different stages of diabetic nephropathy and define its clinical significance among Asian Indians as a non-invasive measure of Kidney inflammation. Urine samples of all the study subjects are collected and MCP-1 levels will be estimated using ELISA method.

**Complications**

1. FFA and 24 hour proteinuria: 2008 – 2009

**Aim:** To study the eye changes in diabetic nephropathy using gold standard tests for diagnosis (FFA and 24 hour proteinuria).

**Study design:** Retrospective

Eye damage and diabetic nephropathy often develops parallely among subjects with diabetes. Both of these microvascular complications of diabetes have high morbidity and mortality. Several studies define their combination in a community setup using sub standard tests for diagnosis, but no studies till date have been reported where the diagnosis is made using gold standard methods for detection. Hence we planned to study the association of the two microvascular complications using gold standard methods in a hospital setup.
A total of 500 subjects undergoing FFA and 24 hour proteinuria will be studied retrospectively. Association of both micro vascular complication occurring in parallel will be determined.


**Aim:** To prevent the development of diabetic kidney disease through counseling and education programme.

**Study design:** Prospective

Kidney disease due to diabetes can be detected and prevented at an early stage. If kidney disease is not detected early it can lead to kidney failure and several other complications. Hence preventing this devastating disease is the prime task to avoid mortality occurring due to diabetes. In order to prevent the development of kidney disease the study was initiated to identify the high risk group and educate them about the disorder. The study also focuses on the affected individuals to avoid further damage.


**Aim:** To investigate whether significant renal impairment can develop in diabetes in the absence of a history of albuminuria.

**Study type:** Retrospective study.

Elevated urinary albumin excretion rate (albuminuria) is a marker of renal disease in individuals with diabetes and a predictor of DKD progression. Its validity as a biomarker of DKD has however been questioned because of reports of diabetic patients developing renal impairment in the absence of albuminuria. In view of these reports, our study was planned to investigate if nephropathy develops in the absence of albuminuria. The study will also define the period of transition from normoalbuminuria to microalbuminuria.


Lower-extremity ulcers are a serous complication of diabetes. More than 28.9 million people have diabetes and 15% of them can expect to develop a foot ulcer at some point in their lives. This is a pilot study planned to study the extent of microvascular and bone strength impairment, skin and plantar fascia structural impairment in diabetic patients in order to improve the risk management of diabetic foot disease.
The study will be conducted in collaboration with a centre in United Kingdom. A total of 180 subjects will be recruited in the study. 120 study subjects with diabetes (n=60 from each centre) and 60 control (n=30 from each centre).

Neuropathy will be determined by Biothesiometer, Semmes-Wieinstein 10-gm monofilament, Rydel seiffer graduated tuning fork, Sudomotor dysfunction by Neuropad, heat and cold sensitometer.

Vasculopathy will be assessed by hand held Doppler, photoplethysmography transducer, Arterial duplex study. Joint mobility, Skin stiffness, plantar fascia thickness and bone mineral density are evaluated by Goniometer, Durometer and High-resolution ultrasound scanner. The causes of foot ulcerations would be identified through the study proposed in order to reduce the number of lower extremity amputations.

**Genetics**


   **Aim:** To study the association between Monocytes Chemoattractant Protein 1 (MCP-1) gene polymorphism among type 2 diabetic subjects having nephropathy in India.

   Studies examining the influence of MCP – 1 gene polymorphism on diabetic kidney disease have focused on -2158 A/G single nucleotide polymorphism (SNP) in the distal regulatory region of MCP 1 which is believed to regulate gene expression. But there is paucity of such data from the Indian population. Hence a total of 159 type 2 diabetic subjects with different degrees of renal impairment are recruited to study the association of MCP – 1 gene polymorphism in Indian population. Whole blood sample are collected and DNA was isolated. MCP-1 gene polymorphism is determined by PCR based RFLP technique.


   **Aim:** To study the ACE gene polymorphism among the type 2 diabetic subjects having renal impairment and to determine the efficacy of intervention of ACE inhibitor among the subjects with positive association.

   ACE gene polymorphism has been extensively studied in various populations and has been found to be highly associated with the occurrence of diabetic nephropathy. This pilot study aims at taking the next leap after identifying the susceptible genes and intervening with the suitable therapy.
A total of 50 type 2 diabetic subjects having different degrees of renal impairment will be recruited. ACE gene polymorphism among all the study subjects will be studied and intervention will be given to all the subjects suitably.

3. Association of SNP in +838 C/G MT (Metallothionine) 2A gene with Type 2 Diabetes in Indian population

Metallothionine (MT) is one of the proteins in the human genome, dedicated exclusively to the task of regulating cellular zinc. MT-1 and MT-2 are the major isoforms found in most tissues, which carry out antioxidant function and deliver zinc whenever is needed. Since zinc plays a clear role in the synthesis, storage and action of insulin as well as conformational integrity of insulin in the hexameric form, the decreased zinc, which affects the ability of the islet cell to produce and secrete insulin, might then compound the problem, particularly in type 2 diabetes. The study aims to find the association of SNP in +838 C/G MT2A gene with type 2 diabetic patients. Genomic DNA was isolated from type2 diabetic patients and normal healthy controls without type2 diabetes mellitus. Amplification of DNA-using Polymerase Chain Reaction (PCR), restriction digestion, agarose gel electrophoresis will be continued.

4. Genotyping of TLR4 gene (toll like receptor) in type 1 and 2 diabetic subjects

The gene coding for endotoxin receptor TLR4 (toll like receptor 4) has been sequenced recently, and the polymorphic spectrum of the gene has been elucidated. TLR4 interacts with endogenous ligands such as the stress protein hsp 60 (heat shock protein 60). Since hsp60 is an important player in chronic inflammatory conditions, the TLR polymorphism may regulate the subclinical inflammation underlying the late diabetic complications in both type1 and 2 diabetic individuals. The study has been carried out so far in 40 type 2 patients in the prevalence of alleles of the Asp 299 Gly and Thr 399 Ile polymorphisms. The study will be extended to larger sample size in type 1 and type 2 diabetic subjects.

5. A study on finding association between the angiotensinogen II type1 receptor gene polymorphism and hypertension in type 2 diabetic subjects.

Hypertension is considered a multifactorial trait resulting from a combination of environmental and genetic factors. The angiotensin II type I receptor mediates the vasoconstrictor and growth promoting effects of Ang II. The A1166C polymorphism of the AT1 receptor gene may be associated with cardiovascular phenotypes, such
as high arterial blood pressure, aortic stiffness, and increased cardiovascular risk. The polymorphism study has been carried out with type 2 diabetic subjects with cardiovascular disorders and the study will be extended to a larger sample size.

**Prevention**

1. **Study the effect of yoga to prevent/delay the onset of diabetes in prediabetic subjects**

   Prevalence of diabetes is increasing in Indian subcontinent. People are yet to gain knowledge about diabetes and related disorders. Widespread awareness is needed to be created among the general public about prevention of diabetes. So this study is focused to stress the importance of diet control, physical activity, walking and yoga in delaying the onset of diabetes in prediabetic subjects who have a positive family history of diabetes.

   The study was planned for 2 years from 2008 to 2010 with 1 year and 2 year follow ups. Subjects with elevated GTT values at fasting, 1 hour or 2 hour are selected and divided into groups. Group1 for control (standard care advice given), Group 2 for yoga therapy and Group 3 for LSM (diet & exercise). Anthropometric measurements are taken, biochemical details like GTT values, Lipid profile and HbA1c details will be collected. Plasma and serum samples are collected and stored for estimation of biochemical markers.

   Subjects are motivated for diet control and physical activity, walking and yoga, during baseline visit and follow-ups. Finally at the end of 2nd year the final data collection for anthropometric and biochemical details will be done. Out come of the study will be assessed by comparing baseline and 1 year and 2 year follow up details.

2. **To study the effect of Yoga / OHA on newly diagnosed diabetic subjects**

   This study was planned to study the effect of Yoga / OHA on newly diagnosed diabetic subjects. Newly diagnosed subjects who are not under any medications previously and those subjects who are diagnosed positive for diabetes in this center are selected. They are divided into two groups. Group1 is Yoga and Group 2 is OHA + Yoga. Baseline data will be collected and the subjects are followed after 3 months. Baseline anthropometric measurements, biochemical details like plasma glucose, lipid profile, and HbA1c, urea, creatinine details are collected. During follow-ups motivation will be done for yoga and diet control, biochemical details and anthropometric details are collected.
3. To study the effect of Metformin intervention in the treatment of metabolic syndrome

Metabolic syndrome is a combination of medical disorders that increase the risk of developing cardiovascular disease and diabetes. It affects one in five people, and prevalence increases with age. The dominant underlying risk factors for this syndrome appear to be abdominal obesity and insulin resistance. Other conditions associated with the syndrome include physical inactivity, aging, hormonal imbalance and genetic predisposition. Individuals in prediabetic states such as IGT and EGI (elevated intermediate glucose response during OGTT) are at high risk of developing both type2 diabetes and cardiovascular diseases.

The study was planned for 2 years from 2009 to 2011. Prediabetic subjects with EGI or IGT are randomly selected based on IDF criteria for metabolic syndrome and were divided into groups. Group1 Control, Group 2 Life style modification and Group 3 metformin. Details of demography, baseline anthropometric parameters like height, weight, waist, hip measurements, body fat % and daily calorie intake are taken. Biochemical investigations like plasma glucose, lipid profile, urea, creatinine and insulin are measured. Annually, OGTTs, anthropometric, lipid profile, blood pressure measurements will be taken. Outcome will be assessed at the end of the second year.
| I. Diabetic Kidney Disease | **Prof. Giancarlo Viberti**, M.D., FRCP.  
Professor of Diabetes and Metabolic Medicine, 
Dept of Diabetes and Endocrinology, Guy’s Campus, 
Kings college, London  
**Dr. Kumar Sharma**, M.D., F.A.H.A.  
Professor of Medicine, Director, Translational Research in Kidney Disease, University of California at San Diego/VA Medical System, Stein Building 4th floor 9500 Gilman Drive, MC 0711, La Jolla, CA 92093 – 0711  
**Dr. B. S.Kasinath**, M.D.,  
Professor of Medicine, Division of Nephrology, 
Mail code 7882, University of Texas Health Science Center,  
7703, Floyd Curl Drive, San Antonio, Tx 78229 – 3900. |
| II. School Children Studies | **Dr. Goutham Rao**, MD.,  
Clinical Director, Weight Management and Wellness Centre, 
Children’s Hospital of Pittsburgh,  
Pittsburgh – PA 15213 |
| III. Diabetic Foot | **Dr. Aristidis Veyes**  
Research Director, Microcirculation Lab and Joslin-beth Israel Deaconess Foot Centre, Asst. Professor, Harvard Medical School, USA.  
**Dr. Jayesh Shah**, M.D., / **Dr. Bhavesh Shah**, M.D.,  
South Western Gen. Hospital,  
San Antonio, |
### III. Diabetic Foot

**Mr. Gautham Gopalakrishna**  
Senior Asst. Director.

**Mr. B.N. Das**  
Deputy Director.

**Mr. Md. Sadiq**  
Senior Asst. Director.

*Shoe Design and Development Centre, CLRI, Adyar, Chennai 600 020*

**Dr. David Campbell**  
Vascular Surgeon, Beth Israel Deaconnes Foot Centre & Associate Clinical Prof. of Surgery, Harvard Medical School, USA

**Dr. Thomas Lyons**  
Podiatrist & Clinical Instructor  
Harvard Medical School, USA

**Dr. Z.G. Abbas,**  
Consultant Physician,  
P.O. Box: 21361 Daresalam, Tanzania

### IV. Wound Healing

**Dr. Mary Babu,**  
Retd. Scientist, Head - Bio Materials Division, CLRI, Chennai 600 020

**Dr. Raj Mani,**  
D. Sc., FACA., FIPEM., C CSci.  
Consultant in Clinical Sciences& Senior Lecturer.  
Editor-in-Chief, International Journal of Lower Extremity Wounds. Mail point 29, Southampton University Hospitals Trust, Tremona Road, Southampton SO16 6YD, United Kingdom.

### V. Nutrition Studies

**Dr. Naomi Trostler,**  
Ph.D.,  
Hebrew University of Jerusalem, Rehovot, Israel Evidence based Nutrition Practice

**Dr. Varsha,**  
M.Sc., Ph.D.,  
Founder Chair, Indian Institute of Nutritional Sciences, Professor Emeritus, Wyambe University, Srilanka
| VI. Cost of Diabetes Care | Prof. Rhys Williams  
Prof. of Clinical Epidemiology,  
The Clinical School, University of Wales, Swansea Singleton Park SA2 8PP, UK |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| VII. DRC – WDF Project   | **Tuberculosis Research Centre**  
WHO Collaborating Centre for Tuberculosis Research & Training, Chetpet, Chennai 600 003  
**Resource Group for Education and Advocacy for Community Health (REACH)**  
No. 9/5, State Bank Street, II Floor, Mount Road, Chennai 600 002 |
1. Footwear for Diabetic Patients with Different Risk Foot Categories

Foot related problems present a major challenge to professionals involved in diabetes care. Approximately 40-72% of all lower extremity amputations are related to diabetes. Many ulcerations occur at the toes due to poorly fitting footwear. Proper footwear is one of the most important aspects of preventive foot care. New types of footwear are now being prepared at M.V. Hospital, Royapuram with technical assistance from Central Leather Research Institute (CLRI) Chennai, for diabetic patients with foot complication.

Patients in risk category 0, 1 (Low risk) are provided comfortable footwear made of good insole materials. These patterns are more attractive and acceptable to the patients, than the conventional MCR footwear. Patients in risk category 2, 3 (high risk) are given custom made footwear with moulded insole. Those patients with previous ulceration, foot deformity are given custom made footwear with moulded insole.

An ongoing collaboration is on between DRC and CLRI wherein many different types of footwear are being developed for patients with diabetes. This collaboration has resulted in the development of footwear which is inexpensive compared to the therapeutic footwear available in Europe and USA.

The Central Leather Research Institute and Diabetes Research Centre have applied for international patent and a registered trade mark under the name ‘Diastep’ for a special foot wear.

2. Research and Wound Healing in Diabetes

An active collaboration is going on between the foot clinic at DRC and the CLRI in the field of wound healing. Different types of wound dressings and growth factors for wound healing are being studied in diabetic foot ulcers. These studies are being carried out under the able guidance of Dr. Mary Babu, Former Deputy Director, Head Biomaterials Division, CLRI, Chennai.
## Participation in Seminars and Conferences

**Dr. Vijay Viswanathan**

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting / Conference</th>
<th>City / Country</th>
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<tbody>
<tr>
<td>6th January 2007</td>
<td>INDUS 2007 – delivered a lecture on “Early Insulin Intervention”</td>
<td>Kodaikanal, Tamil Nadu</td>
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<tr>
<td>11th to 13th January 2007</td>
<td>5th CMC winter symposium 2007 – Guest Lecture on Diabetic Foot Complication: An Indian Perspective</td>
<td>Vellore, Tamil Nadu</td>
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<tr>
<td>26th January 2007</td>
<td>Anniversary Celebrations of IMA – delivered a lecture on “Management of Diabetes in Patients with Heart Disease”</td>
<td>Chennai</td>
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<tr>
<td>3rd – 5th February 2007</td>
<td>Diabetica 2007 - Talk on “Diagnosis and Management of Diabetic Nephropathy in Indian Perspective”</td>
<td>Singapore</td>
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<tr>
<td>10th March 2007</td>
<td>Singapore General Hospital to deliver a lecture on “Wound Care” at the CME programme</td>
<td>Singapore</td>
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<tr>
<td>March 2007</td>
<td>International Wound Care Meeting – Delivered a lecture on “Management of Diabetic Foot Ulcer”</td>
<td>Seoul</td>
</tr>
<tr>
<td>25th &amp; 26th May 2007</td>
<td>The International Consensus Working Group on Diagnosing and Treating the Infected Diabetic Foot</td>
<td>Bangalore</td>
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<tr>
<td>9th June 2007</td>
<td>CME Programme by IMA – Guest Lecture on Diabetic Foot Care</td>
<td>Chennai</td>
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<tr>
<td>Date</td>
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<tr>
<td>31st August 2007</td>
<td>Meet your Medical Expert Session organized by Tamil Nadu Science and Technology Centre – talk on “Preventing the Explosion of Non-Communicable Disease in India”</td>
<td>Chennai</td>
</tr>
<tr>
<td>23rd – 25th November 2007</td>
<td>35th Annual Conference of RSSDI – delivered a lecture on Neuropathy</td>
<td>Kolkata</td>
</tr>
<tr>
<td>22nd – 26th October 2007</td>
<td>The SEANET-NCD Meeting – participated in the panel discussion on Prevention and Management of NCDs at Primary Health Care Level</td>
<td>Thailand</td>
</tr>
<tr>
<td>6th February 2008</td>
<td>Attended the Daiichi – Sankyo – India Investigators Meeting</td>
<td>Mumbai</td>
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<tr>
<td>30th March &amp; 2nd April 2008</td>
<td>7th International Diabetes Federation – Western Pacific Region Congress (IDF 2008)</td>
<td>New Zealand</td>
</tr>
<tr>
<td>4th May 2008</td>
<td>Delhi Diabetes Foundation – Talk on Diabetic Nephropathy: Role of tight glycemic control and blood pressure Control in the progression to ESRD-&gt; is there any Evidence?</td>
<td>Delhi</td>
</tr>
<tr>
<td>16th – 19th October 2008</td>
<td>Delivered a lecture on “Preventing End-Stage Kidney Disease” at the Diabetes in Asia Study Group (DASG) Conference</td>
<td>Nepal</td>
</tr>
<tr>
<td>1st &amp; 2nd November 2008</td>
<td>Meeting on “Package of Essential Non-Communicable Diseases Interventions for Primary Health Care Level” at the WHO head Quarters.</td>
<td>Geneva</td>
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<tr>
<td>28th – 30th November</td>
<td>Diabetes Summit for South-East Asia (IF/WDF/WHO)</td>
<td>Chennai</td>
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<tr>
<td>5th December 2008</td>
<td>Debate on BMI or Waist Measurement</td>
<td>Bangalore</td>
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<tr>
<td>December 2008</td>
<td>Symposium on “Diabesity” during the Indian Medical Association’s College of General Practitioners National Conference</td>
<td>Madurai</td>
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### Dr. Satyavani & Dr. Shabana

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting / Conference</th>
<th>City / Country</th>
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<tbody>
<tr>
<td>March 2008</td>
<td>Poster Presentation on “Obesity and Cardiovascular risk factors among Police Personnel” in the conference “All India Association for Advance Research in Obesity”</td>
<td>Hyderabad</td>
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### Dr. M. Parthiban & Dr. K. Uma Mahesh

<table>
<thead>
<tr>
<th>Date</th>
<th>Meeting / Conference</th>
<th>City / Country</th>
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<tbody>
<tr>
<td>December 2007</td>
<td>Dr. M. Parthiban delivered a guest lecture and chair a session on “Laboratory investigations in Diabetes” in the Dia-Can ‘07</td>
<td>Chidambaram, Tamil Nadu</td>
</tr>
<tr>
<td>15th &amp; 16th May 2008</td>
<td>DR. M. Parthiban - Member of the expert committee in the preparation of the curriculum for the course “Certificate in Diabetes for Community Worker” by IGNOU</td>
<td>New Delhi</td>
</tr>
<tr>
<td>10th &amp; 11th July 2008</td>
<td>Dr. M. Parthiban and Dr. K. Uma Mahesh are in the editorial board have attended the course writer’s meeting for the above course.</td>
<td>Guwahati</td>
</tr>
<tr>
<td>21st – 23rd November 2008</td>
<td>Dr. M. Parthiban attended the 36th Annual Scientific Meeting of the Research Society for the Study of Diabetes in India (RSSDI)</td>
<td>Hyderabad</td>
</tr>
</tbody>
</table>
Mrs. Sheela Paul, Senior Dietitian was invited to Mahalaksmi Women’s College, Arcot, to inaugurate the Nutrition Exhibition and gave a Guest Lecture on the National Nutrition Day Celebration.


Dr. Srikanth presented a paper on “Association of Non Alcoholic Fatty Liver Disease with Diabetic Micro and Macro Vascular Complications in South Indian Diabetic Subjects” in the 36th Annual Scientific Meeting of the Research Society for the Study of Diabetes in India (RSSDI) held at Hyderabad from 21st – 23rd November 2008.

Dr. Srikanth presented a paper on “Knowledge and Outcome Measure of HbA1c Testing in Asian Indian Patients with Diabetes in IMA College of general practitioners National Conference at Madurai.

Mrs. Malini, Dietitian from the diet department made a poster presentation at a National Conference conducted by Indian Diabetic Association of National Institute of Nutrition at Hyderabad on the theme “Evidence Based Dietetics for Healthy Nation.”

Miss. Priyanka Tilak, Research Scholar, presented two papers in the 36th Annual Scientific Meeting of the Research Society for the Study of Diabetes in India (RSSDI) held at Hyderabad from 21st – 23rd November 2008.

Miss. Priyanka Tilak, Research Scholar represented DRC in a National Conference held by Indian Society of Nephrology and gave two oral presentations at Pune from 17th – 19th December 2008.

Mr. Thanigaivelan K, Research Scholar presented a paper on “Association of Thr 256 Ser, Coding Polymorphism of AHSG gene, with South Indian Type 2 Diabetes” in the 36th Annual Scientific Meeting of the Research Society for the Study of Diabetes in India (RSSDI) held at Hyderabad from 21st – 23rd November 2008.
After undergoing a two-year Postgraduate Residential Training Program in Diabetology and having passed the Fellowship Examination through M.V. Institute of PG studies in Diabetology, the following doctors have been awarded the Fellowship of Diabetes Research Centre (FDRC) during the period 2007-2008.

2007


Dr. C. Roopesh Jain, Chennai, Tamil Nadu.

Dr. T. Anilkumar, Nizamabad, AP.

Dr. Mriganka Talukdar, Nalbari, Assam

Dr. Sanjay Kishor, Patna, Bihar

Dr. Preetham B. Eshhwarappa, Shimoga, Karnataka

Dr. A. Jeswanth, Vijayawada, AP

Dr. Ajay Kumar Patwari, Dhanbad, Jharkhand

Dr. Mahesh. P. Talegaonkar, Maharashtra.

Dr. K. Mahesh, Chittoor, AP

Dr. Muthuswamy Ravikannan, Madurai, Tamil Nadu

2008

Dr. Hari ballav Mahapatra, Puri, Orissa

Dr. Mukul Borah, Guwahati, Assam


Dr. K. Satheeswari, Tamil Nadu
An alarming increase is seen in the prevalence of type 2 diabetes in India. There is a need to provide professional care to the patients to treat the complications and to help in the prevention of the non communicable diseases in high risk group. It is possible only by conducting training programmes and to address this issue the WHO Collaborating Centre in Collaboration with Tamil Nadu state chapter of IMA has launched a one year distance education programme (Fellowship Certification in Diabetes, FCD) for general practitioners on February 10th, 2008. About 300 doctors have registered in the first batch. Curriculum includes management of diabetes and its complications.

The curriculum consists of contact classes and one week of hands on experience to give practical exposure and train the doctors to manage diabetes and its complications effectively. Preference will be given to the candidates from the rural areas of India.


Abstract

**Risk of Future Diabetes is as High with Abnormal Intermediate Post-Glucose Response as with Impaired Glucose Tolerance**

V. Viswanathan, M. Clementina, B. Mamtha Nair, K. Satyavani

JAPI • VOL. 55 • 833-837 • DECEMBER 2007

This analysis was done to compare the risk of development of diabetes among subjects with impaired glucose tolerance (IGT) and early glucose intolerance (EGI; intermediary post glucose level ≥ 160mg/dl) when compared with normal (NGT). Profile of insulin secretion and insulin resistance was compared in a subgroup of subjects with EGI, IGT and diabetes. A program on ‘primary prevention of diabetes’ was initiated and high risk subjects were encouraged to join the program and were followed up. Out of 4084 (M: F 2344 : 1740) subjects enrolled in the program, a total of 1659 (M:F 1044 : 615) subjects with mean age 41.3 ± 10.2 years who had at least two follow up visits were selected for this analysis. OGTTs were performed once in every 6 months. The median follow up duration was 5 years. The conversion rate to diabetes in subjects with persistent IGT or EGI was determined. In a subgroup of subjects, plasma insulin at fasting, 30 min and 2 hr were measured and insulin resistance (HOMA-IR) was calculated by HOMA method. Insulinogenic index (Δ I/G) was also calculated. The rate of conversion of IGT 251 (40.5%) and EGI 210(36.5%) subjects to diabetes was similar and significantly higher when compared with the NGT subjects 99 (21.3%). Similar results were noted both in men and women. By using ROC procedure, a cut – off value of one hour post glucose of ≥ 160 mg/dl gave a sensitivity of 80% and specificity of 70% to detect abnormal glucose tolerance. Insulin resistance (IR) was the highest in DM [Geometric mean (SD)] 6.6(1.9)), followed by EGI (4.5(2.3)) (p < 0.0001 vs NGT, 2.9(2.4)) and IGT (3.9(2.2)). Insulinogenic index was normal in EGI, NGT and IGT, and it was lower in DM in comparison with other groups. The multiple logistic regression analysis showed that EGI (odds ratio (OR) 2.11) and development of diabetes was strongly associated. The survival
curve (time free from diabetes) showed that the median survival time for NGT, EGI and IGT were 18.7, 11.6 and 9.6 yrs respectively. EGI which is a distinct entity with abnormal intermediate glucose response in glucose tolerance test (GTT) appears to be a risk factor similar to IGT in the development of diabetes. They had higher insulin resistance with normal insulin secretion. Therefore, it is important to determine the intermediate value also during the GTT in addition to fasting and 2 hr post glucose values.

Abstract

Wolfram Syndrome

V. Viswanathan, S. Medempudi, M. Kadiri

Wolfram syndrome is a rare neurodegenerative and genetic disorder, which should be suspected in patients with young onset non-immune insulin dependent diabetes mellitus and optic atrophy. Patients are most likely to develop diabetes insipidus, deafness, urinary tract, and neurological abnormalities. 60% of the people with Wolfram syndrome die at age 35, usually due to central respiratory center failure following brain stem atrophy. Though there is no treatment to reverse the underlying mechanism of neuro degeneration, early diagnosis and adequate hormonal replacement could improve quality of life and survival.
Abstract

Effect of taurine and acetylcysteine in attenuating microalbuminuria in type 2 diabetes

V. Viswanathan, M.B. Nair, P. Tilak

INDIAN JOURNAL OF NEPHROLOGY • VOL 18 • ISSUE 2 • 85-86 • APRIL 2008

It is shown that glomerular damage in diabetes can be prevented or at least attenuated by supplementation with taurine and N-acetylcysteine. Diet supplemented with taurine was found to reduce the morphological damage in experimental models with diabetes. Hence, this study was conducted to determine the benefits of treatment with combination of taurine (500 mg) and acetylcysteine (150 mg) (Nefrosave™, Fourrts(India) Laboratories Pvt. Limited) in reversal of microalbuminuria in type 2 diabetic subjects and to evaluate its potential in augmenting the renoprotective action of angiotensin-covering enzyme inhibitor (ACEI) or angiotensin receptor blocker (ARB).

Among the 41 well-controlled type 2 diabetic patients with microalbuminuria, 31 patients were given a combination of taurine and N-acetylcysteine along with an ACEI/ARB (treatment group) and 10 patients were treated with an ACEI/ARB alone (control group). Urinary albumin/creatinine ratio (UACR), and serum transforming growth factor (sTGF-β1) were determined at baseline and at the end of 3 months of treatment period.

There was no significant difference between the treatment group and the control group with respect to baseline parameters like age, duration of diabetes and weight. At follow-up, significant reduction in diastolic blood pressure (baseline: 82 ± 08 vs. follow up: 78 ± 05 mmHg, p=0.021), UACR (baseline: 85 ± 59 vs. follow up: 45 ± 25 mg/mg creatinine, p=0.001), and sTGF-β1 (baseline: 18.3 ± 12.4 vs. follow up: 13.2 ± 9.9 p=0.002) were seen in the treatment group. No such significant changes were noted in the control group.

This prospective study showed that taurine in combination with N-acetylcysteine was useful in attenuating UACR and sTGF-β1 levels in microalbuminuric type 2 diabetic patients. The benefits of taurine therapy on kidney function and blood pressure are noteworthy and may be useful in preventing the deterioration of microalbuminuria.
Limited joint mobility and plantar pressure in type 1 diabetic subjects in India
V. Viswanathan, Sivagami Madhavan, Seena Rajasekar, Satyavani Kumpatla
JAPI • VOL. 56 • 509 – 512 • JULY 2008

Limited joint mobility and plantar pressure in the foot has not been assessed in type 1 diabetes. The aim of this study was to investigate the joint mobility and plantar foot pressure in Asian Indian type 1 diabetic subjects and to see its association with duration of diabetes. The joint mobility and plantar pressure were measured in 115 consecutive subjects attending the foot clinic. The study groups were: control- non diabetic controls (n=40) (M:F 19:21) and type 1 diabetic patients (n=75) (M:F 42:33). Joint mobility was assessed using a goniometer at two sites, in the subtalar joint and in the hallux. Plantar pressure was measured using the rs-scan platform system. Data obtained on the metatarsal heads were used for analysis. Patients with type 1 diabetes had significantly lesser joint mobility (p<0.0001) and higher plantar pressure (p<0.0001) compared with the control group. Duration of diabetes had an inverse association with joint mobility (p<0.0001). The degree of joint mobility was more restricted in patients with longer duration of diabetes. Plantar pressure increased with increasing duration of diabetes. In conclusion, type 1 diabetic patients in India had limited joint mobility which decreased further with longer duration of diabetes and they had high plantar pressure also.
Abstract

High Prevalence of Metabolic Syndrome and Cardiovascular Risk Among Police Personnel Compared to General Population in India

Shabana Tharkar, S Kumpatla, P Muthukumaran, Vijay Viswanathan

JAPI • VOL. 56 • 845-849 • NOVEMBER 2008

There is a paucity of data on the prevalence of metabolic syndrome and diabetes in different occupational categories in India. The aim of this study was to determine the prevalence of metabolic syndrome and associated cardiovascular risk factors among police personnel and compare with the general population (GP). Two populations similar in demography were selected for this study. A total of 719 men aged ≥ 30 years from Chennai, were randomly selected (police n = 318, GP n = 401). Fasting blood samples were collected, glucose and lipid profile were estimated. Prevalence of metabolic syndrome was determined using IDF definition. Risk associations for metabolic syndrome and diabetes were analyzed using multiple logistic regression analyses. The prevalence of metabolic syndrome (57.3 vs 28.2 %; χ² = 64.5, p< 0.0001) was significantly higher among police compared to GP. Regression analyses showed that age, body mass index, alcohol consumption and smoking were associated with metabolic syndrome while age, family history of diabetes, abdominal adiposity and increased body mass index were associated with diabetes among the policemen. The police had higher prevalence of individual cardio metabolic abnormalities and diabetes in comparison with GP (p<0.05). Prevalence of metabolic syndrome and other cardio metabolic abnormalities were significantly higher among the police. Further research is required to determine the causative factors and effective intervention strategies must be planned to keep the police force healthy and vigilant.
Abstract

Prevalence of metabolic syndrome among Asian Indian subjects with elevated intermediate glucose response during OGTT

Vijay Viswanathan, Satyavani Kumpatla, Clementina Michael, Priyanka Tilak

Diabetes Research and Clinical Practice • 83 • e17–e18 • December 2008

Individuals in sub clinical stages such as IGT and IFG are at high risk of developing type 2 diabetes and cardiovascular disease (CVD). In India, many no diabetic subjects show abnormal intermediate glucose response with normal fasting and 2 h values during OGTT. We referred this condition as Early Glucose Intolerance (EGI). The aim of this study was to see the prevalence of metabolic syndrome among EGI subjects. A program on ‘Primary Prevention of Diabetes’ was initiated in our institution in view of high prevalence of diabetes in Indian population. All the high risk subjects, i.e. those with positive family history of diabetes were encouraged to join and were followed up in this program. A total of 1107 (M:F; 745:362) subjects with mean age of 42 ±10.7 years and who had all the required details at baseline visit were selected for this analysis. A standard OGTT was done and the subjects were divided into groups based on their glucose tolerance status. Subjects with known history of diabetes and newly diagnosed cases during the screening were excluded. Diagnosis of metabolic syndrome was made using ATPIII criteria with modified waist circumference appropriate for Indians. The analysis revealed that the prevalence of metabolic syndrome was significantly higher in EGI (36.1%) compared to NGT (27.9%) ($\chi^2 = 5.8$, $p = 0.015$). Presence of metabolic syndrome was higher in IGT (57%) when compared with NGT and EGI ($p < 0.0001$). Gender difference was not seen in the prevalence of metabolic syndrome among EGI group (Men vs Women: 33.5 vs 41.7%, $\chi^2 = 2.24$, $p = 0.134$). The results of multiple logistic regression analysis with presence of metabolic syndrome as dependent variable showed a significant association with EGI (Odds Ratio (OR) = 1.76; 95% Confidence Interval (CI) 1.23–2.5, $p = 0.001$) and IGT (OR = 3.97, 95% CI 2.7–5.8, $p = 0.001$). Age ($p = 0.88$) and family history of diabetes ($p = 0.53$) was not significant. EGI which is a distinct entity showed a significantly higher prevalence of metabolic syndrome than normoglycaemic subjects. Both categories of glucose intolerance seem to carry equal risk for future diabetes and CVD. There is an urgent need of some intervention strategies for this high risk individuals to reduce future risk of diabetes and CVD.
Abstract

Cost of medical care among type 2 diabetic patients with a co-morbid condition—hypertension in India.
Shabana Tharkar, Kumpatla Satyavani, Vijay Viswanathan
DIABETES RESEARCH AND CLINICAL PRACTICE (in press)

The aim was to estimate the cost of medical care among hospitalized diabetic patients and to assess the influence of an additional co-morbid condition—hypertension. A pre-tested and validated questionnaire was interviewer administered among 443 (male: female, 235:208) hospitalized diabetic patients. The JNC VII criteria for hypertension was considered to divide the study population into two groups; group I – diabetic patients without hypertension (n = 269) and group II – diabetic patients with hypertension (n = 174). Details of cost of inpatient and out-patient care and expenditure on hospitalization for the previous 2 years were obtained. The prevalence of hypertension among the study subjects was 39.3% (174 subjects). Presence of hypertension made a significant impact on the expenditure pattern. On average, a diabetic patient with hypertension spent 1.4 times more than a diabetic subject without hypertension. Median cost per hospitalization, length of stay during admission, and cost of 2 years for inpatient admission were all significantly higher for diabetic patients with a co-morbid condition. There is a need to develop a protocol on cost effective strategy for diabetes care. Strict control of hypertension should be targeted to avoid excess treatment cost on diabetes care.
Abstract

Impact of Socioeconomic Status on Prevalence of Overweight and Obesity among Children and Adolescents in Urban India

Shabana Tharkar and Vijay Viswanathan

THE OPEN OBESITY JOURNAL (in press)

To determine the prevalence and risk factors of overweight and obesity among the school children aged 8-15 years. A cross-sectional design was adopted and 3 schools (2 private and 1 corporation schools) were selected by stratified cluster-sampling technique. Data was collected by interviewer-administered method by trained research officers using a pre-tested and validated questionnaire to a total sample of 1193 school children from grades IV to X (i.e.) aged 8 to 15 years. Prevalence rates were calculated using WHO-BMI for age percentile chart 2007. Regression analysis was done to determine the risk factors associated with overweight. The overall prevalence of overweight was 12.1% among the children and 15.5% among the adolescents. Both overweight (22%) and obesity (13.7%) were highest among girls from affluent families. The mean anthropometric measurements, prevalence of overweight and obesity were higher among the urban affluent children. Factors associated with overweight were upper socioeconomic status (OR-3.4, CI-1.8 to 6.7, P<0.0001) and greater than 2 hours television watching (OR-2.5, CI-1.1 to 5.4, P<0.0001). The children had grossly inadequate knowledge about healthy lifestyle habits. Overweight and obesity are predisposing factors for many diseases. These findings suggest the need for early intervention programs, targeting the children from affluent society.
Diabetes Research Centre with the primary aim of creating awareness on Childhood Obesity and Diabetes, launched a nationwide campaign in Chennai on November 11th, 2007 on prevention of obesity and diabetes among children.

Thiru. Thangam Thennarasu, Hon’ble Minister for School Education, Government of Tamil Nadu launched a manual on childhood obesity and the first copy of the manual was received by Thiru. D. Jaganathan, Director of School Education, Tamil Nadu.

Various activities were conducted by the centre such as an exhibition, poster competition and puppet show depicting childhood obesity, its problems and prevention.
The WHO Collaborating Centre has sought to create awareness on Primary Prevention of Diabetes which will benefit people who are at high risk of developing this disorder. As part of the programme, Dr. Vijay Viswanathan, Director, announced the campaign on Primary Prevention of Diabetes.

A manual on Primary Prevention of Diabetes and a colour poster containing ten golden rules for primary prevention of diabetes were released on 20.01.2008 by Dr. Meer Mustafa Hussain, Vice Chancellor, the Tamil Nadu Dr. MGR Medical University in the presence of Dr. Gojka Roglic, Responsible Officer, WHO Diabetes Programme, Geneva. The colour poster containing ten golden rules for primary prevention of diabetes was released by Dr. Ananthanarayanan, Deputy Director General, Directorate General of Health Services, New Delhi.
Dr. Gojka Roglic, Responsible Officer, WHO Diabetes Programme, Geneva inaugurated the Telemedicine Centre at M.V. Hospital for Diabetes on 19.01.08. Dr. Vijay Viswanathan, Managing Director is seen in the picture.

Launch of one year distance education programme for General Practitioners

M.V. Hospital for Diabetes in collaboration with Tamil Nadu state chapter of IMA launched a one year distance education programme, Fellowship Certification in Diabetes – FCD on 10th February, 2008. Director Dr. Vijay Viswanathan being felicitated by Dr. Ashraf from Trichy, Dr. A. Murugananthan, Dean, IMACGP.
The WHO Collaborating Centre designed a postal cover containing the message on how to prevent diabetes among the people who are at high risk. Tmt. Indira Krishna Kumar, I.P.S., Principal Chief Postmaster General, Tamil Nadu Circle released the Special cover on Ten Golden Rules for ‘Prevention of Diabetes’ and Thiru. V.K. Subburaj, I.A.S., Health Secretary, Govt. of Tamil Nadu, and Dr. P. Padmanabhan, Director of Public Health, Govt. of Tamil Nadu, received the special cover.
Launch of “Chennai Slim & Fit” programme - a major initiative for prevention of childhood obesity & diabetes among school children.

Diabetes Research Centre, a WHO Collaborating Centre for Research, Education and Training in Diabetes launched the “Chennai Slim and Fit” awareness programme for school children across Chennai to mark World Diabetes Day celebration on the 11th of November, 2008. The function was presided over by Dr. S. Elango, Director of Public Health and Preventive Medicine, Government of Tamil Nadu. The other event of the day was the release of a “Detection and Awareness of Childhood Obesity and Diabetes kit” by the Director of Public Health. The first kit was received by Mr. S. Nagaraju, Regional Director, CBSE Schools, Chennai. The content of the kit include a glucometer, literature on prevention of childhood obesity and diabetes and a tape for measuring waist circumference. The kits were distributed free of cost to the school principals. Free distribution of kits to schools may help in detection of obesity and blood sugar levels in children.

The programme drew interest of a large number of school children, teachers and parents. Some of the key highlights of the events were the variety of competitions held for children on the theme – “Prevention of Childhood Obesity”. Trophies and prizes were given for the winners.
Launch of the Training Programme - Primary Prevention of Diabetes for Tamil Nadu Government and Corporation of Chennai Doctors.

The Vellore Collector, Thiru. Dharmendra Pratap Yadav, IAS, speaking at the launch of training programme on “Primary Prevention of Diabetes” to Tamil Nadu Government Doctors at Vellore Collectorate on Tuesday, 20th May, 2008.
<table>
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<tr>
<th>S. No</th>
<th>Date</th>
<th>Topic</th>
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</table>
| 1     | 9.01.07| Treatment of Diabetic Foot ulcer: An overview: Strategies for clinical approach. | Dr. Rajesh Kesavan  
Consultant Podiatric surgeon |
| 2     | 2.05.07| Wound Healing in Diabetes “Newer approaches”               | Dr. V. P. Pandya  
Dr. Reddy’s laboratories. |
| 3     | 16.05.07| Basics of Quality Control Practices in Laboratory and importance of 3rd party control | Mr. K. V. Bijesh  
Product Specialist  
BIORAD |
| 4     | 23.05.07| Diagnosis and Management of thyroid problems               | Dr. Rekha Bhat |
| 5     | 18.07.07| Post exposure prophylaxis of HIV/AIDS                      | Dr. Balamurugan,  
M.D,DTRD  
Chest Physician |
| 6     | 31.07.07| Rational use of Commercial Nutritional Foods in Diabetes   | Dr. Varsha, Ph.D.  
Consultant Dietitian |
| 7     | 6.08.07 | GI disturbances, APD and Constipation                     | Dr. Revathy  
Gastroenterologist |
| 8     | 13.08.07| Diagnosis and Treatment of Mental Disorder                 | Dr. Venkatesh Ramachandran  
M.D, D.P.M  
Consultant Psychiatrist |
| 9     | 20.08.07| Ocular Disturbances in Diabetes                            | Dr. Rema Mohan  
MBBS, D.O,Ph.D  
Dr.Mohan’s,  
Diabetes Specialties Centre. |
| 10    | 27.08.07| Diabetes epidemic: Genes, Environment or both              | Dr. V. Mohan, M.D., Ph.D.  
Chief Diabetologist |
| 11    | 12.9.07 | Research Methodology & Epidemiology                        | Dr. Manjula Datta, M.D.,  
DCH, FRCP  
Professor and HOD  
Tamilnadu Dr. MGR Medical University |
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<tr>
<td>12</td>
<td>24.09.07</td>
<td>Insulin and C-peptide – analysis and interpretation</td>
<td>Dr. Bejoy Baby, Scientific Manager, Roche Diagnostic India Pvt Ltd.</td>
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<td>15.11.07</td>
<td>Respiratory Tract Infection and CAP</td>
<td>Dr. A.G. Gayathri, Chest Physician, Apollo Hospitals</td>
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<td>14</td>
<td>10.12.07</td>
<td>Diabetes and Pregnancy</td>
<td>Dr. N. Rajendran, MBBS, M.D, Professor of Diabetology, Madras Medical College</td>
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<td>15</td>
<td>18.12.07</td>
<td>Stroke and Diabetes</td>
<td>Dr. R. Pazhani, Consultant Neuro Physician, Apollo Hospitals</td>
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**2008**

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<tr>
<td>1</td>
<td>24.01.08</td>
<td>“Management of Type 1 DM with Acute Complication”</td>
<td>Dr. M. Chella Mariappan, Diabetologist</td>
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<td>2</td>
<td>14.02.08</td>
<td>“Application of Principle of Epidemiology for Non Communicable Disease”</td>
<td>Dr. Prabhdeep Kaur, Epidemiologist, National Institute of Epidemiology</td>
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<td>3</td>
<td>28.02.08</td>
<td>Case presentation on “Pneumococcal Pneumonia” – Vulnerable Population “Prevention Strategy with PPV23”</td>
<td>Dr. P. K. Thomas, Pulmonologist, Dr. Anujwalia</td>
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<td>4</td>
<td>13.03.08</td>
<td>“Proactive Management of Type 2 DM”</td>
<td>Dr. Vijay Kumar, Diabetologist</td>
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<td>5</td>
<td>27.03.08</td>
<td>“How to deal with Smoking and Alcohol Addiction”</td>
<td>Dr. Ashokan, Consultant Psychiatrist.</td>
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<td>6</td>
<td>24.04.08</td>
<td>“Management of Diabetic Foot”</td>
<td>Dr. Rajesh Kesavan, Podiatrist</td>
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<td>7</td>
<td>22.05.08</td>
<td>“Diagnosis and Management of Fever”</td>
<td>Prof. Dr. K. Shanmugam, Prof of Medicine</td>
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<td>8</td>
<td>05.06.08</td>
<td>“Prevention of Heart Attack”</td>
<td>Prof. Dr. Chockalingam, Cardiologist</td>
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<td>26.06.08</td>
<td>Nutritional intervention in lifestyle disease</td>
<td>Dr. A. Sree Kumar, Nutritional Medical Specialist</td>
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<td>2</td>
<td>2.07.2008</td>
<td>Inpatient protocol of insulination for hyperglycemic patients</td>
<td>Dr. Kumaravel, Endocrinologist</td>
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<td>9</td>
<td>10.07.08</td>
<td>“Diabetes and Stroke”</td>
<td>Prof. Dr. A.V. Srinivasan, Prof. of Neurology</td>
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<td>10</td>
<td>17.07.08</td>
<td>“Diabetic Foot Care”</td>
<td>Dr. Ali Foster, Podiatrist from London</td>
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<td>11</td>
<td>24.07.08</td>
<td>“An Approach to Diagnosis and Management Anaemia”</td>
<td>Dr. Krishna Ratnam, Oncohaematologist, Sri Ramachandra Medical College</td>
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<td>12</td>
<td>21.08.08</td>
<td>&quot;The Economic burden of Diabetes&quot;</td>
<td>Dr. Anil Kapur, Managing Director, World Diabetes Foundation, Denmark</td>
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<td>13</td>
<td>23.10.08</td>
<td>“Opportunities for Medical Research in India”</td>
<td>Dr. V.I. Mathan, Chair in Epidemiology, National Institute of Epidemiology</td>
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<td>14</td>
<td>27.11.08</td>
<td>“Normal Sleep Disorders of sleep and activities in the Sleep lab”</td>
<td>Dr. N. Ramakrishnan, AB(IntMed), AB (Critcare), FACP,FCCP,FCCM, MMM.</td>
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<td>15</td>
<td>4.12.08</td>
<td>“Prevention Amputation: The African experience”</td>
<td>Dr. Abbas, Diabetic Foot Specialist, Tanzania</td>
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</table>
Diabetes Research Centre awarded the following Gold Medal Oration Awards to distinguished scientists and researchers, in the field of Medical Care and Research. These awards carry a Citation and the Gold Medal.

(a) Prof. M. Viswanathan Gold Medal Oration Award
(b) DRC Gold Medal Oration Award
(c) Prof. M. Viswanathan Endowment Public Lecture Award

The following is the list of distinguished and internationally known Scientists and Researchers in the field of Diabetes Care and Research and other fields of medical care and research who have received these Awards.

1. Dr. M.M.S. Ahuja, Prof. of Medicine, AIIMS, New Delhi, India.
2. Dr. S. Podolsky, Chief of Diabetes, V.A.Hospital, Boston, USA
3. Dr. J.S. Bajaj, Prof. of Medicine, AIIMS, New Delhi, India.
4. Dr. Z. Skrabalo, Director of the Institute for Diabetes Endocrinology and Metabolism, Zagreb, Yugoslavia.
5. Dr. Eva Kohner, Senior Lecturer in Medicine and Head, Diabetic Retinopathy Unit, Hammersmith Hospital, London, UK.
6. Dr. Paul Zimmet, Prof. of Medicine and Diabetologist, Royal Southern Memorial Hospital, Melbourne, Australia.
7. Dr. E.F. Preiffer, Prof. of Medicine, Department of Internal Medicine, University of Ulm, West Germany.
8. Dr. B.M. Ogilvie, Deputy Director, (Science) Welcome Trust London, UK.
9. Dr. Malcolm Nattrass, Physician and Diabetologist, University of Brimingham, UK.
10. Dr. R.J. Dash, Prof. and Head, Dept. of Endocrinology, Post Graduate Medical School, Chandigarh, India.
12. Dr. Peter Bennett, Chief, Phoenix Epidemiology and Clinical Research Branch, National Institute of Health Arizona, USA & Director of the WHO Collaborating Centre for Research in NIDDM.
13. Prof. Marja-Riita Taskinen, University of Helsinki.
14. Prof. Steven M. Haffner, University of Texas.
15. Prof. Jaako Tuomilehto, Prof. of Epidemiology and Head of Diabetes Genetic Epidemiology Unit, National Public Health Institute, Helsinki.
16. Prof. Eva Tuomilehto, Senior Researcher, Finnish Academy, Helsinki.
17. Prof. Bibhuti Bhusan Tripathy, Post Graduate Prof. of Medicine, S.C.B. Medical College, Cuttack.
18. Prof. David Robert Rhys Williams, Prof. of Epidemiology & Public Health, University of Leeds, UK.
19. Dr. S.S. Badrinath, Medical Director, Sankara Nethralaya and Professor of Ophthalmology and C. U. Shah Postgraduate Training Centre, Chennai.
20. Prof. Hilary Owen Meredith King, Responsible Officer for Diabetes Mellitus, Division of Non Communicable Diseases, World Health Organization, Geneva.
21. Prof. B. Ramamurthy, Head of the Dept. of Neurosurgery, Voluntary Health Services, Chennai.
22. Prof. Graham Hitman, Prof. of Molecular Medicine, the Royal London School of Medicine, London.
23. Prof. Clive Stewart Cockram, Prof. of Medicine and Honorary Consultant Physician, (endocrinology), Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong.
24. Mrs. A.V.M. Foster, Chief Podiatrist, Kings College Hospital, London, UK.
25. Prof. Giancarlo Francesco Viberti, Prof. of Diabetes and Metabolic Medicine at GKT School of Medicine, Kings College of London.
26. Prof. Frank Vinicor, Director of Diabetes Translation, National Centre for Chronic Disease Prevention and Health Promotion, Atlanta.

27. Prof. Stephen Colagiuri, Dept. of Endocrinology, Diabetes and Metabolism, Prince of Wales Hospital, Australia.

28. Prof. Aristidis Veves, Research Director, Joslin-Beth Israel Deaconess Foot Centre, USA.

29. Prof. C.V. Bhirmanandham, Vice-Chancellor, the Tamilnadu Dr. M.G.R. Medical University, Chennai.

30. Prof. Hans-Henrik Parving, Chief Physician, Steno Diabetes Center, Copenhagen, Denmark and Prof. of Medicine at the University of Aarhus, Denmark.

31. Prof. Hertzel C. Gerstein, Prof. of Medicine McMaster University and Director of Division of Endocrinology & Metabolism, McMaster University Hamilton, Canada.

32. Prof. Pierre J. Lefebvre, Emeritus Prof. of Medicine, University of Liege, Belgium and President of International Diabetes Federation and Chairman of World Diabetes Foundation.

33. Prof. Andrew J.M. Boulton, Prof. of Medicine, University of Manchester, UK and Professor of Medicine, University of Miami School of Medicine, Florida, USA.

34. Dr. Mahendra A. Wijesuriya, Consultant Physician & Diabetologist and President, Diabetes Association of Srilanka, Colombo.

35. Dr. R. A. Mashelkar, Director General, CSIR & Secretary, Govt. of India, Dept. of Scientific & Industrial Research, New Delhi.

36. Prof. Philip David Home, Prof. of Diabetes Medicine, University of Newcastle Upon Tyne, UK and Consultant Physician in Diabetes, Metabolic and Acute General Medicine, Newcastle Upon Tyne Hospitals, NHS Trust.

37. Prof. Sally Margaret Marshall, Prof. of Diabetes, University of Newcastle Upon Tyne, UK Honorary Consultant Physician, Newcastle Upon Tyne Hospitals, NHS Trust.
38. Dr. Roglic Gojka, Responsible Officer, World Health Organization, Geneva.

39. Dr. T. Ramasami, Secretary, Dept. of Science and Technology, Govt. of India.

Dr. T. Ramasami receiving the “DRC Gold Medal Oration Award,” 2007.

The research Library established and developed under the directions of the Founder Director Prof. M. Viswanathan has grown steadily to become one of the foremost Research and Reference libraries in Diabetology. It is now a recognized resource by the medical fraternity. The Library is now housed in specially designed portion of the building. Eminent Diabetologists from all over the world have complimented DRC for having a Research Library of exceptional merit. Those who study in the library find the accommodation and ambience conductive for scholarly work.

The Library has a well-organized indexing system under Dewey Decimal Classification (DDC). It has fully computerized library data. The computerized system can retrieve instantaneously information regarding books and journals required by the users and generate reports required by the management. Photo copying facilities are available in the library and students from different academic institutions make use of the library facilities. One of the unique features of our library is a separate reprint section. We have a collection of over 5,000 reprints on various aspects of diabetes, which are classified and available for ready references.

The library subscribes to various National and International journals in the field of Diabetology, Internal medicine, Biochemistry, Microbiology and Nutrition. The library has internet facilities and the post graduate students and Research Scholars utilize this facility for upgrading their knowledge. The users can access databases like Medline, and MedLar and also access the international medical journals published online.
### List of Journals with the Subscription Year

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<td>Diabetes Care</td>
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<td>Diabetes Educator</td>
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<td>Diabetes Forecast</td>
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<td>18</td>
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<td>23</td>
<td>The Lancet</td>
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<td>24</td>
<td>The Asian Journal of Diabetology</td>
<td>2006</td>
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<td><strong>M.V. Diabetes Health Care</strong></td>
<td>No.6, Main Road, Royapuram, Chennai 600 013</td>
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<td><strong>Madras Diagnostic Centre</strong></td>
<td>No.4, Mian Road, Roayapuram, Chennai 600 013</td>
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<td>3</td>
<td><strong>Mr. Raj Mohan Maheswari</strong></td>
<td>Plastic Abhiyanta, No.25 A Chandi Chowk street Kolkatta, 700 072, West Bengal</td>
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<td><strong>M.K. Rasi Medicals</strong></td>
<td>East Kalmandapam Road, Royapuram, Chennai 600 013</td>
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<td>5</td>
<td><strong>Mr. Sastry VVSBSUM</strong></td>
<td>SCI Engineer - SE Scof /RO, SDSC - SHAR, Sri Harikota 524 / 24 , Nellore District</td>
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<td><strong>M/s. R.G.N. Price &amp; Co.,</strong></td>
<td>861, Anna Salai, Chennai 600 002</td>
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<td>7</td>
<td><strong>Max Tex Computer Systems</strong></td>
<td>No.5, Kattabomman, 8th street, R.V. Nagar, Chennai 600 118</td>
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<td><strong>Mr. Kamal Karanani</strong></td>
<td>C-54 , Shastri Nagar, Opp: TVS Jaipur, Rajasthan 302 016</td>
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<td><strong>Dr. Leelavathy</strong></td>
<td>Anangot House, Thoonooralkara, Chatakara, Kerala</td>
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<td><strong>A.K. Leela</strong></td>
<td>Ammanath Subhadra Mandiram, Iringalakuda Kerala 680 121</td>
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<td><strong>Dr. V. Mohan</strong></td>
<td>6 B, Conran Smith Road, Gopalapuram, Chennai 600 086</td>
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Diabetes Research Centre Foundation, a non-profit non-commercial organization, is an internationally known and respected centre of excellence in diabetes care and research. The mission of the Foundation is to undertake basic, epidemiological and clinical research in diabetes mellitus. We are taking up several research projects for the benefit of the community at large, as part of our crusade against diabetes.

State-of-the-art research in this field calls for heavy financial investment to establish and maintain the required physical facilities and acquire the necessary sophisticated lab equipments and other facilities such as maintaining and updating a modern research and reference library.

Being a non-profit organization, Diabetes Research Centre depends on donations for promotion of its research activities. We look forward to your donations to remain in the forefront of diabetes care and research and carry on our relentless crusade against diabetes and its complications. This will be a contribution to science and society and help to improve the lives of millions of diabetic patients.

It was a great achievement for the staff of M.V. Hospital for Diabetes as six papers were accepted for oral presentation at the country’s largest conference – RSSDI Meet 2008 held at Hyderabad. Seen in the photo from left to Right: Dr. Parthiban, Dr. Srikanth, Miss Priyanka, Dr. Shabana Tharkar, Dr. Satyavani and Mr. Thanigaivel.

Dr. Vijay Viswanathan, delivering a lecture on “Preventing End-Stage Kidney Disease” at the Diabates in Asia Study Group (DASG) meeting in Kathmandu, Nepal.

Dr. Vijay Viswanathan was invited to a meeting at the WHO head quarters at Geneva. Seen in the photo from left to right: Dr. Kono, World Health Organisation collaborating Centre (WHOCC), Japan, Dr. Samad Sharaa, WHOCC, Pakistan and Dr. V. Mohan, WHOCC for Non Communication Disease, Chennai, with Dr. Vijay Viswanathan.

Dr. Roglic Gojka addressing the audience during the Telemedicine conference at M.V. Hospital.