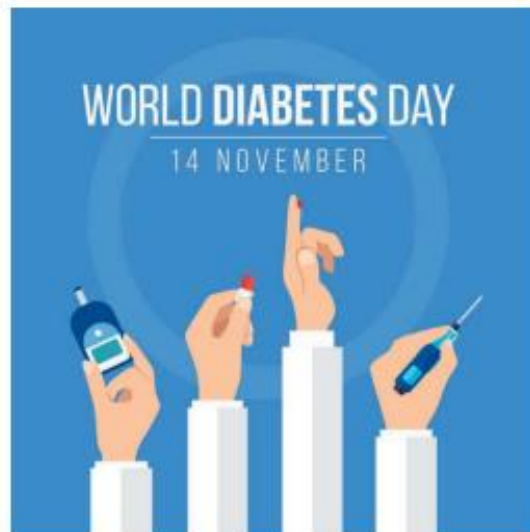




**BIOCONGMC - 2022  
WORKSHOP/CME ON  
DIABETES - EDUCATION TO PROTECT TOMORROW**



# SOUVENIR



**ORGANISED BY  
DEPARTMENT OF BIOCHEMISTRY  
GOVERNMENT MEDICAL COLLEGE SRINAGAR  
14TH NOVEMBER (WORLD'S DIABETES DAY)**





**BIOCONGMC-2022**  
**WORKSHOP/CME ON**  
**DIABETES – EDUCATION TO PROTECT TOMORROW**  
**14<sup>TH</sup> NOVEMBER (WORLD DIABETES DAY)**  
**Organized by**  
**DEPARTMENT OF BIOCHEMISTRY**  
**GOVERNMENT MEDICAL COLLEGE, SRINAGAR**



**ACCREDITED WITH 4 CME CREDIT HOURS AS APPROVED BY J&K MEDICAL COUNCIL (MRC/J/CME/2022/174; DATED 7.11.22)**

**SUB COMMITTEES:**

<b>WORKSHOP/ CME</b>	<b>Diabetes Screening/Monitoring Camp</b>
<b>REGISTRATION</b> I. Dr Arif Akbar Bhat II. Dr Shabhat Rasool III. Dr Sumaya Nabi IV. Mr. Javaid Ahmad V. Ms. Sunia Faiz VI. Ms. Insha Bashir VII. Student Volunteers	<b>REGISTRATION</b> I. Dr Shaziya Nazir & Dr Mujeeb II. Dr Shagufta III. Dr Iraam Hamid IV. Dr Jasiya Qadir V. Mr Naieem Ahmad Pir VI. Mr Zahoor Ahmad VII. Student Volunteers
<b>DAIS / STAGE</b> I. Dr Tabassum Rashid II. Dr Faizan Asrar Nazki III. Dr Ahlam Mushtaq IV. Dr Zarka V. Student Volunteers	<b>PHLEBOTOMY &amp; SAMPLE COLLECTION</b> I. Mr Ruheel Ahmad II. Mr Bashir Ahmad III. Ms Bukeerat Shaheen IV. Ms Zahida V. Ms Juvaria VI. Mr Mushtaq Ahmad VII. Student Volunteers
<b>CME PROCEEDINGS:</b> I. Dr Rafiqa Eachkoti II. Dr Mohd Younis Rather III. Dr Ajaz Ahmad IV. Mr Gulzar V. Ms Sanah Farooq VI. Ms Heena Shafi	<b>PROCESSING OF SAMPLES</b> I. Dr Mohammed Obaid II. Mr Zahoor Ahmad Dedmari III. Dr Javaid Ahmad Bhat IV. Mr Arshad Ahmad V. Mr Feroz Ahmad Baba
<b>POSTER DISPLAY</b> I. Dr Sumiya      II. Dr Aaliya III. Ms Sadaf Saleem	
<b>LOGISTICS AND FOOD:</b> I. Dr Nissar Ahmad Naikoo IV. Mr Mohd Amin Nazki VII. Mr Sajad Ahmad Senior X. Mr Ashiq	II. Mr Ruheel Ahmad V. Iqra Farooq VIII. Mr Sajad Ahmad Junior III. Mr Zahoor Ahmad Dedmari VI. Mr Farooq Ahmad IX. Ms Shahnaz
<b>SOUVENIR COMMITTEE</b> I. Dr Mohammad Younis Rather IV. Mr Gulzar Ahmad	II. Dr Ajaz Ahmad V. Mr Suhail S Lone III. Dr Haamid Bashir

**Organizing Chairperson**

Prof. (Dr.) Sabhiya Majid  
 (HOD Biochemistry)

**Organizing Secretary**

Prof. (Dr) Roohi Ashraf



*Rajeev Rai Bhatnagar*



*Advisor to Lt. Governor  
Jammu & Kashmir*

No. : PS/Adv(B) 022/211

Dated : 14th Nov. 2022

**MESSAGE**

I am delighted to know that Department of Biochemistry, Government Medical College Srinagar is organizing BIOCONGMC-2022, Workshop/CME on the eve of World Diabetes Day on 14<sup>th</sup> of November 2022 on theme “**Diabetes- Education to Protect Tomorrow**”. Reportedly, in this conference faculty members, clinician and laboratory personnel research scientists, scholars, students shall gather to update their knowledge on latest advancements in the Diabetes Care & Research. I am of the hope that the deliberations in this conference shall definitely stimulate further research in the field and ensure concrete value addition in the diabetic patient care facilities in the premier health care institution of the state i.e. Government Medical College, Srinagar.

I wish this conference a great success and hope that such CMEs become regular academic feature here with an eye on ensuring healthy patient care in each and every nook and corner of our state.

*Rajeev Rai Bhatnagar*  
**Rajeev Rai Bhatnagar**



**Prof. (Mrs.) Nilofer Khan**

Vice Chancellor  
University of Kashmir  
Hazratbal, Srinagar - 190006  
Jammu and Kashmir (India)

November 11, 2022

## MESSAGE

I am pleased to learn that Department of Biochemistry, Government Medical College Srinagar, is organising BIOCONGMC-2022 on 14<sup>th</sup> of November, 2022 on the theme “Diabetes – Education to Protect Tomorrow” which has great importance and shall lead to deliberations benefitting patient care and research.



Department of Biochemistry, Government Medical College Srinagar is rapidly evolving into sophisticated biomedical centre where in addition to regular teaching and patient care support, advanced collaborative biomedical research is being carried out.

I believe that this Workshop/CME will greatly benefit all- including students, young research scholars, faculty and laboratory workforce. Experienced speakers of repute will go a long way in updating knowledge and inspire them to pursue research in the field of diabetes, in the context of understanding mechanisms underlying various processes in the field of diabetes to help in developing advanced diagnostics.

I compliment the organisers and wish the Workshop/CME a great success.

A handwritten signature in blue ink, appearing to read 'N. Khan'.

**Prof. Nilofer Khan**





सत्यमेव जयते

**Bhupinder Kumar  
IAS**



Secretary to Government  
Health & Medical Education Department  
Government of Jammu & Kashmir  
Srinagar /Jammu

D.O. No. Secy/H&ME/2022/59

Dated 10.11.2022

**MESSAGE**

I am happy to learn that Department of Biochemistry, Govt. Medical College, Srinagar is organizing BIOCONGMC-2022, Workshop/CME on World Diabetes Day, 14<sup>th</sup> of November, 2022.

2. The Conference theme "Diabetes-Education to protect tomorrow": is aptly chosen and will encourage the galaxy of Speakers of International and National repute to deliberate on the theme relevant to patient care as well as research. BIOCONGMC-2022 is expected to bring together eminent specialized clinicians, scientists, academicians, young researchers and diagnostic industry personnel. I believe that this conference greatly benefits all stakeholders including faculty, clinicians and laboratory workforce, research scientists, scholars, students and the patient at large.
3. I Compliment Prof. (Dr.) Masood Tanvir, Principal/Dean, Government Medical College, Srinagar and organizing Chairperson, Prof. (Dr.) Sabhiya Majid along with the team for organizing this conference.
4. I wish this endeavor a grand success and hope that such events become a regular feature in times to come.

  
(Bhupinder Kumar)

# GOVERNMENT MEDICAL COLLEGE SRINAGAR



(Ph) Medical College:- 0194-2503115

0194-2504119

Fax No.: 2504114

***Prof (Dr) Masood Tanvir***

**Principal/ Dean**

*Govt. Medical College & Associated Hospitals,  
Srinagar (J&K)*



## **MESSAGE**

It gives me immense pleasure that Department of Biochemistry, Govt. Medical College, Srinagar is Organizing, BIOCONGMC-2022, Workshop/ CME on World Diabetes Day scheduled on 14th of November, 2022.

This Department has evolved into a sophisticated biomedical center where in addition to regular teaching and patient care support, advanced collaborative bio-medical research is being carried out. Appreciably this Department has taken keen interest in starting advanced diagnostic investigations that strengthen hospital diagnostic services.

The Department of Biochemistry of this college has a glorious past of organizing various conferences and workshop. The Conference Theme "Diabetes- Education to protect tomorrow": is aptly chosen and will encourage the galaxy of Speakers of International and National repute to deliberate on the dynamic field benefitting both patient care and Research. I am sure that experiences of Speakers will go a long way in updating knowledge of delegates – benefitting faculty, clinicians and laboratory technologists, students, research scholars, alike.

I give full credit to Department of Biochemistry for arranging this event. The team effort of Department of Biochemistry under guidance of the Head of Department Prof. (Dr) Sabhiya Majid is deeply appreciated.

I believe and trust that such interactive academic events are beneficial both for the faculty and postgraduates and other doctors to enhance their skill and scientific aptitude. The lectures/talk by experts will inculcate a sense of more expertise and learning avenues both for the faculty and students who in turn offer better healthcare delivery system in our society at large.

I wish this scientific feast a big success and express my good wishes for the organizers of this conference and pledge to meet or exceed the expectations of the people we serve. I am looking forward in achieving a high level of excellence through a change in work culture which takes patience, time and most of all, persistence.

  
Principal/ Dean

**Department of Biochemistry  
Government Medical College Srinagar  
Karan-Nagar, Srinagar, Jammu & Kashmir, India-190010**

Message

**Prof (Dr) Sabhiya Majid  
Head Department of Biochemistry/  
Organizing Chairperson  
BIOCONGMC-2022  
WORKSHOP/CME ON  
Diabetes -Education to protect tomorrow**



Greetings!

Diabetes is a major global healthcare challenge with approximately 537 million adults presently living with diabetes (1 in 10) and burden growing every day. BIOCONGMC-2022 shall get together eminent scientists, academicians, young researchers and diagnostic industry personnel. I believe that this Workshop/CME will greatly benefit all including faculty, students, young research scholars and laboratory workforce. The Workshop/CME theme “Diabetes - Education to protect tomorrow” chosen by International Diabetes Foundation prompted us to provide a platform for interdisciplinary discussions in dynamic fields of Clinical biochemistry including laboratory medicine – benefitting both academics and patient care. BIOCONGMC-2022 can serve to foster interdisciplinary research collaborations between clinicians and basic medical scientists-need of the hour. A diabetes screening/monitoring camp for faculty, students and general public is a part of this event. This event was approved by International Diabetes Federation (IDF), Brussels Belgium. This conference has been possible due to kind patronage and blessings of our worthy Principal/Dean, Professor (Dr) Masood Tanvir. This department is actively involved in teaching, research and patient care, with around 1.5 lac advanced cum routine biochemical and immunological investigations being done per month in the NABL accredited diagnostic biochemistry labs of associated SMHS hospital.

I deeply appreciate untiring efforts of the organizing committee, all staff of Biochemistry Department and well-wishers who went out of their way to help. The zeal with which first year MBBS students participated in the event is deeply valued. Profoundly appreciating the efforts of the organizing committee, I am hoping for an academic feast that will be enlightening for all.

**Department of Biochemistry  
Government Medical College Srinagar  
Karan-Nagar, Srinagar, Jammu & Kashmir, India-190010**

Message

**Dr Roohi Ashraf  
Organizing Secretary  
BIOCONGMC-2022  
WORKSHOP/CME ON  
Diabetes -Education to protect tomorrow**



**Greetings!!**

At the onset, I would like to extend my warm greetings to all those who had been associated with the organization of this CME/ Workshop, on the occasion of World Diabetes Day, held every year on 14<sup>th</sup> November. As has rightly been said that " if Diabetes were a country, it would be the world's 3rd largest". The reality is that every 6 sec. somewhere in the world a person dies from the disease or its complications, and when that someone is one of our loved one, then only do we recognize the scale and significance of the disease. The diabetic patient faces a tough challenge while taking care of his physical and emotional well-being, but tougher challenge is faced by his family members, caregivers and educators in diabetes. This demands an urgent need for the diabetes education in whole. Education to protect tomorrow" On this world Diabetes Day, let's forge and reinforce the bonds that bring us all.... Clinicians, researchers and academicians together, to pledge our shared mission of Teaching Research and Patient care.



**Department of Biochemistry  
Government Medical College Srinagar  
Karan-Nagar, Srinagar, Jammu & Kashmir, India-190010**

Message

**Dr Rafiq Eachkoti  
Organizing Secretary  
BIOCONGMC-2022  
WORKSHOP/CME ON  
Diabetes -Education to protect tomorrow**



Greetings!

Diabetes is a chronic metabolic disorder and a global health concern. It is a progressive disease that if not managed result in serious long-term complications. The disease is multifactorial and specialized education in all disciplines is the need of the hour. “Increase access to Education” is the only way to deal with this pandemic which has affected nearly half billion (537 million) people around the globe. Awareness of the people about the simple management strategies in the form of life style modifications, healthy diet, and glycemic control with their practical execution / implementation is the easy cost-effective way to curb the incidence and reverse/delay the onset of diabetic complications.

Considering the burden of disease, a one: one ratio between diabetes education providers and education takers (diabetes patients) is an impossible solution to this problem. Embracing technological innovations which enable virtual consultations through telemedicine; access to digital health through mob. Apps, and self-management tools (devices empowered by Artificial intelligence) and wellness mobile apps, etc, together can help the practitioner to “deliver more” as and when needed. Timely interventions can significantly curb this pandemic and bring down the incidences, complications, comorbidities/mortality associated with this disease



## BIOCONGMC - 2022 WORKSHOP/CME ON DIABETES - EDUCATION TO PROTECT TOMORROW



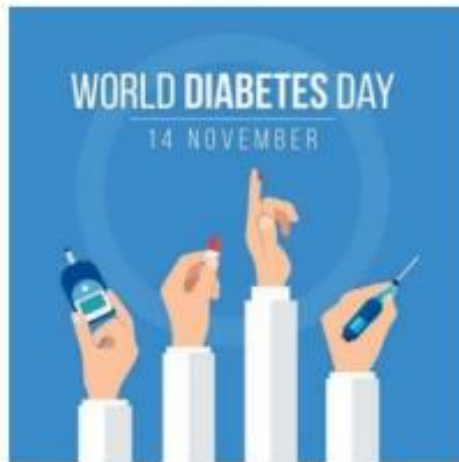
ORGANISED BY  
DEPARTMENT OF BIOCHEMISTRY  
GOVERNMENT MEDICAL COLLEGE SRINAGAR

14TH NOVEMBER (WORLD'S DIABETES DAY)  
VENUE: AUDITORIUM HALL, GOVERNMENT MEDICAL COLLEGE SRINAGAR

**THE CME IS ACCREDITED WITH J&K UT MEDICAL COUNCIL FOR 04 CREDIT POINTS**

### HIGHLIGHTS

- Free diabetes screening/monitoring camp for faculty/students/general public. Investigations: fasting/random blood sugar/ HBA1C & spot urinary micro-albumin.
- Demonstration of point of care HBA1C testing.
- Renowned multidisciplinary speakers: endocrinologists, ophthalmologists, biochemists and biotechnologists from GMC SGR and various universities of Kashmir.
- Symposium and poster presentation of 1st year MBBS students.
- Felicitation of students.



Last Date of Registration: 13th Nov 2022  
Spot Registration: 8:30 am - 10:30 am on  
14th Nov 2022  
Registration Fee: Rs. 500 (offline mode only)

For registration and other queries, contact:  
Dr. Arif Akbar Bhat: 7006508935  
Dr. Haamid Bashir: 9797066614  
Email: biocongmc22@gmail.com

**Conference Secretariat, Department of Biochemistry, Ground Floor,  
GMC Srinagar, Karan Nagar - 190010**

### ORGANIZING COMMITTEE

PROF. DR. MASOOD TANVER  
PRINCIPAL DEAN  
PATRON

PROF. DR. SAHEBA MAJID  
HOD BIOCHEMISTRY  
ORGANIZING  
CHAIRPERSON

PROF. DR. ROOCHI ASHRAF  
DR. RAJGA RAOHOTA (JAF)  
ORGANIZING  
SECRETARIES

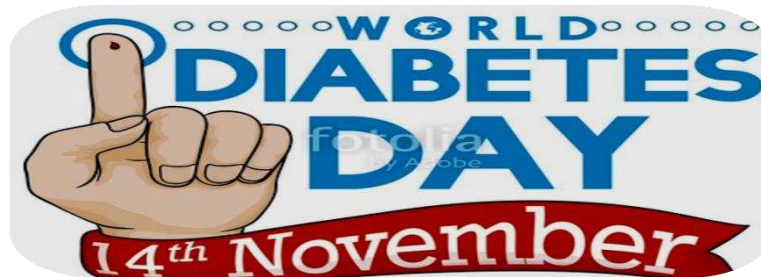
DR. TABASSUM RASHID (JAF)  
DR. NUSAR AHMAD NAJROO (JAF)  
CO-ORGANIZING  
SECRETARIES

### Members:

Dr. Arif Akbar Bhat - Registration  
Dr. Shobhat Rasool, Dr. Mohammad Obaid - Logistics

Mr. Zahoor Ahmad Dedmari - Technical Supervisor  
Mr. Ruheel Ahmed - Treasurer





## **2022 -Theme: Diabetes - Education for Better Tomorrow**

### **Organized by**

**Department of Biochemistry**

**Government Medical College Srinagar**

**Karan-Nagar, Srinagar, Jammu & Kashmir, India-190010**

Diabetes is a major global health care challenge. **The theme for World Diabetes Day (WDD) 2021-23 is Access to Diabetes Care. The focus of the campaign in 2022 is access to diabetes education, with the slogan “Education to protect tomorrow**

**Department of Biochemistry, Govt Medical College Srinagar** in support for this cause is organizing a workshop/ CME in which healthcare professionals, scientists and students will share their ideas and scientific work in line with the theme of WDD 2022. Free diabetes panel, diagnostic investigations camp on **14<sup>th</sup> November 2022 for faculty, staff, students and general public** in Govt. Medical College Srinagar & it's Associated SMHS Hospital under the worthy patronage of Principal/ Dean GMC Srinagar. **Fasting/ Random Blood Sugar, Glycated Hemoglobin (HBA1C) and Microalbumin in urine will be done free of cost.**

**WDD-2022 theme, Diabetes-Education for Better Tomorrow and International Diabetes Federation (IDF)'s key endeavours:**

### **Understanding diabetes:**

Understanding diabetes is the first step towards managing and preventing the condition. A new online education platform is available in the IDF School of Diabetes to help people with diabetes and those who care for them to make informed decisions about their condition.

### **Update your diabetes knowledge and skills**

Stay ahead in your clinical practice with IDF School of Diabetes certified online courses

### **Type 1 Diabetes Index (T1D Index):**

More than 100 years have passed since the first successful use of therapeutic insulin, yet early diagnosis and access to appropriate standards of care are still not universally achieved.

Type 1 diabetes (T1D) is one of the fastest-growing chronic health conditions, impacting nearly nine million people across the globe. There is currently no cure for T1D, leading to profound

human, emotional and financial burden for people who live with it. T1D prevalence is on the rise.

This year IDF has proudly launched the Type 1 Diabetes Index (T1D Index), a first-of-its-kind data simulation tool that measures the human and public health impact of T1D in every country across the globe. The T1D Index uniquely illuminates the human burden of T1D. IDF will support its promotion and further development to provide uninterrupted access to affordable insulin, along with the technologies and education that support successful insulin therapy for all people living with T1D.

**The International Diabetes Federation (IDF) has launched a global survey to explore the levels of access that healthcare professionals and people living with diabetes have to diabetes education. Healthcare professionals or a person living with diabetes, can go to international diabetes federation website [idf.org](http://idf.org) and spare 10 minutes of their time to complete the survey.**

- 1 in 10 people are living with diabetes.
- Approximately 537 million adults (20-79 years) are living with diabetes.
- The total number of people living with diabetes is projected to rise to 643 million by 2030 and 783 million by 2045.
- 3 in 4 adults with diabetes live in low- and middle-income countries
- Almost 1 in 2 (240 million) adults living with diabetes are undiagnosed
- More than 1.2 million children and adolescents (0-19 years) are living with type 1 diabetes
- 1 in 6 live births (21 million) are affected by diabetes during pregnancy
- 541 million adults are at increased risk of developing type 2 diabetes.
- Diabetes mellitus predisposes to a particularly severe course of the disease and doubles the COVID-19 mortality risk due to pulmonary and cardiac involvement. In addition, diabetes patients often suffer from comorbidities which further worsen clinical outcomes.

**Dr Haamid Bashir and Suhail Shafi Lone**  
Department of Biochemistry, GMC Sgr.



*Courtesy: IDF Website.*

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# BIOCONGMC - 2022

## Symposium-1st Yr MBBS

### DIABETES - EDUCATION TO PROTECT TOMORROW

ORGANISED BY

DEPARTMENT OF BIOCHEMISTRY

GOVERNMENT MEDICAL COLLEGE SRINAGAR

Pre-CME Event 11 Nov 2022

Pre-CME Event 11 Nov 2022

GOVERNMENT MEDICAL COLLEGE SRINAGAR

**List of Prize winners of Oral Presentation (MBBS)**

<u>Prize winners</u>	<u>Award of Participation</u>
1. Annam Hussain	1. Naveed Pandit
2. Fatima Yousuf Madiha Manzoor	2. Zainab Shamim
3. Avril Attri Aymaan Khan	3. Abrar Majeed Bhat
	4. Baiza Manzoor
	5. Madiha Naseem

**List of Prize winners of Poster Presentation (MBBS)**

<u>Prize winners</u>	<u>Award of Participation</u>
1. Shah Imad	1. Souban Ajaz Rather
2. Farzana Arif Sayyed Malika	2. Taimoor Mushtaq
3. Sageer Ajaz Muneeb Ahmad	3. Noor-ur-Neher
	4. Adeeba Hamid
	5. Komal Attri

**List of Prize winners of Poster Presentation (B.Sc Nursing)**

<u>Prize Winners</u>	<u>Award of Participation</u>
1. Khulat Ibrahim	1. Sobiya Zahoor
2. Rehana Majeed	
3. Afshana Riyaz	

**BIOCONGMC – 2022**  
**Symposium – 1st Year 2022**  
**DIABETES – EDUCATION TO PROTECT TOMMORROW**  
**ORGANISED BY**  
**DEPARTMENT OF BIOCHEMISTRY**  
**GOVERNMENT MEDICAL COLLEGE SRINAGAR**  
**Pre – CME Event 11th NOVEMBER 2022**











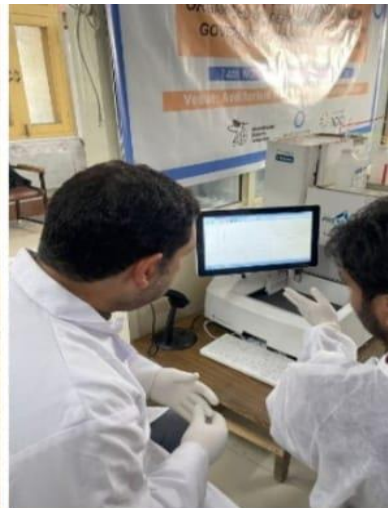
# Workshop

Workshop on Estimation of Glycated Haemoglobin (HbA1c) by gold standard latest Boronate Affinity High Performance Liquid Chromatography (HPLC) in Diagnostic Biochemistry laboratory of Associated SMHS Hospital (13<sup>th</sup> to 15<sup>th</sup> November 2022)

- A workshop on Estimation of Glycated Haemoglobin (HbA1c) by gold standard latest Boronate Affinity HPLC by fully automated method was held.
  - Thirty (30) participants including Lab technicians and faculty were trained in the technology by experts in the field. HbA1c as per latest guidelines (ADA/WHO) has gained immense importance in diagnosis and management of diabetes. Accuracy and validity are highly important, the test was validated.
  - This Boronate HPLC technology is the gold standard for HbA1c estimation.
-



### Glimpses of participants getting trained in the Workshop





### Proceedings of the CME at a glance





### Glimpses of Proceedings and felicitations.



# **RECENT RESEARCH IN THE FIELD OF DIABETES FROM THE DEPARTMENT OF BIOCHEMISTRY**

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The research in the field of diabetes started in a big way in the year 2013 when the Department of biochemistry received the first funding of ~48 lacs for 3 years (2013-2015) from DST on Adiponectin and its association with T2 Diabetes mellitus and metabolic syndrome (PI- Prof Sabhiya Majid).

Presently various aspects of this disease /disease association at molecular level is being unravelled with an aim to understand the molecular basis of the diabetes in general and specific to Kashmiri sub-population Which eventually in future, will be used to have more personalized approach towards this disease.

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Molecular Biology Reports  
https://doi.org/10.1007/s11033-022-08055-z

ORIGINAL ARTICLE



## Mitochondrial uncoupling protein 2 (UCP2) gene polymorphism – 866 G/A in the promoter region is associated with type 2 diabetes mellitus among Kashmiri population of Northern India

Inshah Din<sup>1,2</sup> · Sabhiya Majid<sup>1</sup> · Fouzia Rashid<sup>2</sup> · Mumtaz Din Wani<sup>3</sup> · Jasiya Qadir<sup>1</sup> · Hilal Wani<sup>1</sup> · Mohd Fareed<sup>4,5</sup>

Received: 27 May 2022 / Accepted: 21 October 2022  
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### Abstract

**Objective** The study aimed to evaluate the association of *UCP2* gene polymorphism – 866 G/A and its expression with diabetes predisposition in the North Indian population.

**Methods** The study involved 850 subjects, including 425 each T2DM and control subjects. The serum metabolic and clinical parameters were estimated using standard protocols. The PCR–RFLP based genotyping was performed to determine *UCP2* gene polymorphism, while the expression was measured by real-time quantitative PCR.

**Results** The genotypic and allelic frequencies showed a significant difference in cases compared to controls ( $p < 0.05$ ). The diabetes patients had a 4.2-fold decrease in *UCP2* gene expression. The expression was 29.8 and 8.4 fold lower in diabetes patients with homozygous (AA) and heterozygous (GA) mutation at –866 locus of *UCP2* nucleotide sequence, respectively. When categorized according to age and BMI, the T2DM subjects with age  $\geq 50$  and BMI  $\geq 25$  had a 5.53 and 8.2-fold decrease in *UCP2* expression, respectively. The diabetes subjects with homozygous and heterozygous mutation demonstrated a pathological increase in serum metabolic and clinical parameters, which corroborated with *UCP2* gene expression, indicating a strong association between the two. Intriguingly, we did not find any association between –866 G/A polymorphism of *UCP2* with serum insulin levels.

**Conclusion** Our investigation is the first among the studies conducted in Jammu and Kashmir to work on adipose tissue and *UCP2* gene polymorphism. The association of –866 G/A SNP of the *UCP2* gene with its expression in diabetes patients appears to be an important genetic determinant in the progression of T2DM. Moreover, age  $\geq 50$  years and BMI  $\geq 25$  could be considered risk factors for developing T2DM in the studied population.

**Keywords** *UCP2* · Diabetes · Obesity · Homozygous mutation · Kashmiri population · India

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<sup>5</sup> Academy of Scientific & Innovative Research (AcSIR), Ghaziabad, Uttar Pradesh 201002, India

### Introduction

Current global estimates evidenced over 537 million young adults are living with diabetes worldwide [1]. Diabetes mellitus is a metabolic disorder characterized by disruption of glucose homeostasis and is associated with hyperglycemia. It primarily occurs due to defects in insulin secretion and action. World Health Organization reported that 9% of the world population are diabetes, of which 90% cases have type-2 Diabetes Mellitus (T2DM) [2]. T2DM is a condition of impaired glucose regulation due to dysfunctional pancreatic  $\beta$ -cells and insulin resistance [3]. Studies on genetic linkage analysis and the T2DM association have shown a dynamic interplay between genetic and environmental

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journal homepage: [www.cell.com/heliyon](http://www.cell.com/heliyon)

## Research article

## Inter-relationship of Pro- and Anti- inflammatory Biomarkers with the development of Type 2 Diabetes Mellitus

Haamid Bashir<sup>a,1</sup>, Sabhiya Majid<sup>a,\*</sup>, Mosin Saleem Khan<sup>a,b,1</sup>, Mohammad Hayat Bhat<sup>c</sup>, Rabia Hamid<sup>d</sup>, Roohi Ashraf<sup>a</sup>, Sunia Faiz<sup>a</sup><sup>a</sup> Department of Biochemistry, Government Medical College Srinagar and Associated SMHS and Super Speciality Hospital, Karan Nagar, 190010, Srinagar, J&K, India<sup>b</sup> Department of Biochemistry, Government Medical College Baramulla and Associated Hospital, Kanth Bagh, 193101, Baramulla, J&K, India<sup>c</sup> Department of Endocrinology, Government Medical College Srinagar and Associated SMHS and Super Speciality Hospital, Karan Nagar, 190010, Srinagar, J&K, India<sup>d</sup> Department of Biochemistry, University of Kashmir, Hazratbal, 190006, Srinagar, J&K, India

## ARTICLE INFO

## Keywords

Type 2 diabetes mellitus  
T2DM  
C-Reactive protein  
CRP  
Tumor necrosis factor  
TNF $\alpha$   
Interleukin-6  
IL-6  
Interleukin-10  
IL-10

## ABSTRACT

**Purpose:** There has been growing evidence that inflammatory markers play a role in the development as well as severity of Type 2 diabetes mellitus (T2DM). This study has been designed to decipher the involvement of C-Reactive Protein (CRP), Tumor Necrosis Factor (TNF $\alpha$ ), Interleukin-6 (IL-6) and Interleukin-10 (IL-10) in the etiopathogenesis of T2DM.

**Basic procedures:** A total of 480 T2DM cases and 540 healthy controls were recruited for the study. Blood samples were collected from each study subject to measure the serum levels of CRP, TNF $\alpha$ , IL-6 and IL-10.

**Main findings:** We found that serum levels of CRP in mg/dl ( $4.2 \pm 0.9$ ), TNF $\alpha$  in pg/ml ( $34.5 \pm 8.8$ ), IL-6 in pg/ml ( $19.2 \pm 7.2$ ) in T2DM patients were significantly high as compared to control participants (CRP:  $1.4 \pm 0.6$ , TNF $\alpha$ :  $12.7 \pm 3.4$ , IL-6:  $3.1 \pm 1.4$ ;  $P < 0.0001$ ). The serum levels of IL-10 in pg/ml were lower in T2DM cases compared to controls ( $4.35 \pm 1.2$  vs.  $9.6 \pm 1.2$ ). In addition, we observed a significant association of CRP levels with insulin resistance, obesity and dyslipidemia. Increased TNF $\alpha$  levels were strongly associated with female gender, Poor glycemic control and strong family history of diabetes. Poor glycemic control was significantly associated with elevated IL-6 levels. Moreover, significantly reduced IL-10 levels were found in T2DM patients with sedentary lifestyle; low educational and rural background.

**Conclusions:** This study showed a strong relationship between TNF $\alpha$ , IL-6, CRP, IL-10 and T2DM patients of Kashmiri ethnicity, treated at SMHS Hospital. Thus, supporting other studies and showing that cytokines may be good markers for T2DM development.

## 1. Introduction

Type 2 Diabetes Mellitus (T2DM) is a group of genetically determined diseases which may be controlled by diet and/or hypoglycemic agents and/or exogenous insulin [1,2]. It accounts for about 90%–95% of all diagnosed cases of diabetes. T2DM, previously referred to as non–insulin dependent diabetes or adult-onset diabetes, encompasses individuals who have insulin resistance and usually have relative insulin deficiency towards later stages [3]. T2DM is recognized as a serious public health concern with a considerable impact on human life and health expenditures. Rapid economic development and urbanization have led to a rising burden of diabetes in many parts of the world [4]. T2DM affects

individuals' functional capacities and quality of life, leading to significant morbidity and premature mortality [5].

T2DM for the entire world is not an epidemic anymore but has covered into pandemic. Globally, an estimated 537 million adults aged 20–79 years are currently living with diabetes. The total number is predicted to rise to 643 million (11.3%) by 2030 and to 783 million (12.2%) by 2045 [6]. As far as human suffering (DALYs - Disability-Adjusted Life Years) are concerned, diabetes ranks as the 7th leading disease [7].

Among the countries of south-east Asia, India has highest number of people with diabetes in the age group of 20–79 years accounting to 74.2 million in 2021 with an age adjusted prevalence of 9.6%. There are estimated 39.4 million undiagnosed cases of diabetes in India as of 2021.

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# Implication of Leptin and Leptin Receptor Gene Variations in Type 2 Diabetes Mellitus: A Case-Control Study

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## Abstract

**Background:** Global increase in the prevalence of type 2 diabetes mellitus (T2DM) has affected about 6% of the population and is one of the major healthcare challenges worldwide. Apart from other factors, genetics play a pivotal role in the development of diabetes. Recent studies have drawn attention to the role of leptin (*LEP*) and leptin receptor (*LEPR*) gene polymorphisms in the pathogenesis of T2DM, that being the reason for the uptake of this study.

**Methods:** A total of 390 T2DM cases and 408 controls matched with respect to age and gender were taken for the study. Biochemical analysis was performed on all study subjects. Polymerase chain reaction (PCR) amplification of the genomic regions encompassing the single nucleotide polymorphisms (SNPs) under study was followed by digestion using specific restriction enzymes to analyze the SNP genotype through restriction fragment length polymorphism (RFLP).

**Results:** Serum leptin levels were elevated in 57.9% (226 of 390) of cases as compared to 11.8% (48 of 408) of controls ( $P < 0.0001$ ). Cases had significant homeostatic model assessment-insulin resistance (HOMA-IR) as compared to controls ( $5.3 \pm 5.9$  vs.  $1.4 \pm 0.4$ ;  $P < 0.0001$ ). In case of *LEP G2548A* SNP, the frequency of a variant genotype (GA + AA) was found to be higher for cases than controls (69.7% vs. 29.4%;  $P < 0.0001$ ). For *LEPR Q223R* SNP, the frequency of a variant genotype (AG + GG) was found to be higher for cases than controls (69.2% vs. 23.6%;  $P < 0.0001$ ).

**Conclusion:** We observed a significant association between the *LEP/LEPR* polymorphisms and T2DM in the ethnic population of Kashmir indicating that genetic susceptibility may play an important role in the pathogenesis of T2DM.

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**Keywords:** Leptin; Leptin receptor; Polymorphism; T2DM; Restriction fragment length polymorphism

## Introduction

Type 2 diabetes mellitus (T2DM) is a multifactorial disease that results from a genetic predisposition and various behavioral and environmental risk factors [1]. Its increasing trend around the world has led researchers as well as healthcare professionals to carry out studies in various ethnic populations for the identification of biomarkers so as to understand the etiology of T2DM more clearly.

The satiety hormone, leptin (*LEP*, also called OB for obese) is an adipokine primarily produced in adipocytes that regulate the energy expenditure and the intake of food. It plays a vital role in the regulation of glucose homeostasis and insulin sensitivity [2, 3]. Besides, it has also been suggested that leptin could affect the serum insulin levels and the development of T2DM [4] and is involved in the pathophysiology of obesity [5]. The *LEP* gene, located at chromosome 7q31.3, encodes a 16 kDa protein that has been consistently shown to be associated with endocrine metabolism [6]. Leptin exerts its physiological action through its receptor (*LEPR*, also called CD295). *LEPR* gene is located at chromosome 1p31, and encodes for 1165 amino acid long single transmembrane protein distributed in many tissue types [7]. The *LEPR* gene is also called the T2DM gene [8], which is the reason that *LEP* and its receptor, *LEPR*, may be among the interesting and relevant genes responsible for the etiopathogenesis of T2DM.

*LEP* and *LEPR* genes are highly polymorphic and a number of SNPs have been identified in these two genes [4, 9, 10] that are potentially related to the pathophysiology of obesity, diabetes, and their associated complications [8]. As per the majority of studies, *LEP G2548A* SNP has been associated with T2DM and its related metabolic traits [11]. Accordingly, *LEPR Q223R* SNP has been associated with an increased risk of T2DM [12]. In addition, the relationship between the *LEP G2548A* and *LEPR Q223R* variant and increased body mass index (BMI) was reported in different ethnic populations [13, 14]. Moreover, the combination between *LEP G2548A* and *LEPR Q223R* polymorphisms has been related to increase in obesity [15]. It has been reported that obesity is a major risk factor for the development of T2DM; therefore, genetic vari-





Original Article

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## Role of inflammatory mediators (TNF- $\alpha$ , IL-6, CRP), biochemical and hematological parameters in type 2 diabetes mellitus patients of Kashmir, India

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Received: 1 May 2019

Published: 12 Feb 2020

### Abstract

**Background:** Type II Diabetes mellitus (T2DM) is a multifactorial disease and a leading cause of premature deaths. Inflammatory cytokines are reported that they have potential to enhance insulin resistance and hence T2DM. Assessment of immunological profile in T2DM patients of Kashmir valley is unclear. So, detection of cytokines is relevant to determine the extent and direction of immune responses. The current research was taken to study the role of inflammatory mediators in T2DM along with insulin sensitivity, biochemical and hematological parameters in mountainous valley of Kashmiri population.

**Methods:** A total of 340 subjects were selected in this study among them 160 were T2DM cases and 180 were healthy controls. Serum expression of inflammatory mediators (TNF- $\alpha$  and IL-6) were quantified by ELISA technique, WBC count was measured on Sysmax (Germany) hematology analyzer, biochemical and Immunoassay parameters were done on Abbott c4000 (USA) and Abbott C1000 (USA) fully automatic analyzer. Data was analyzed using statistical 'software SPSS 16.1' (Chicago, IL). For all assessments,  $p < 0.05$  were considered statistically significant.

**Results:** The expressions of candidate cytokines (TNF- $\alpha$ , IL-6, CRP, and WBC) were highly significant ( $p < 0.001$ ) in T2DM. Among inflammatory mediators, TNF- $\alpha$  shows a positive correlation ( $p < 0.001$ ) with glycemic profile and insulin sensitivity in T2DM cases in comparison with healthy normal. Biochemical (fasting sugar, HbA1c, insulin resistance, lipid profile) and anthropometric (BMI) parameters were highly significant ( $p < 0.001$ ) in T2DM cases as compared to non-diabetic normal.

**Conclusion:** Low grade inflammation and up regulation of inflammatory mediators has been purported to play a significant role in pathogenesis of T2DM. Our findings confirm that positive correlation of TNF- $\alpha$  and IL-6 with T2DM and insulin sensitivity. These can act as early prediction biomarkers of T2DM. Further studies on wider range of pro and anti-inflammatory cytokines i.e. mediators, in association with other biochemical, immunoassay and hematological parameters are needed to help clinicians manage and treat T2DM effectively.

**Keywords:** Inflammation, Biomarkers, Cytokines, Kashmir, Mediators, Adult onset type 2 diabetes mellitus, SMHS.

**Conflicts of Interest:** None declared

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#### ↑What is "already known" in this topic:

Effect of the pro and anti-inflammatory cytokines like (TNF- $\alpha$ , IL-6, CRP) has been reported in insulin signaling pathways, cross-linking and ultimately developing insulin resistance in  $\beta$ -cells of pancreas which further risks to T2DM. Stability among these Pro and anti-inflammatory cytokines is necessary to make  $\beta$ -cells immune to any infection which may lead to T2DM.

#### →What this article adds:

Our experimental findings provide evidence that the pattern and variation of these cytokines (TNF- $\alpha$ , IL-6, CRP, and WBC) are important in the pathogenesis of T2DM. The significant correlation of these inflammatory mediators in T2DM cases with glycemic profile and insulin sensitivity leads to the pathogenesis of diseases in this ethnic population. These findings confirm that TNF- $\alpha$ , IL-6, plays a positive role in the pathogenesis of T2DM in this ethnic population of Kashmir and can act as an early prediction biomarkers.



# Adipocytokines: unravelling the missing link in diabetes and metabolic syndrome

## Abstract

Type 2 diabetes mellitus (T2DM) and metabolic syndrome (MetS) is a major growing public health concern worldwide affecting approximately over 200 million individuals. It is on track to become one of the major global public health challenges of the 21st century. Prevalence of diabetes worldwide was expected to be 2.8% in 2000 and 4.4% in 2030 and 80% of these cases were related to obesity. India has the dubious distinction of being known as the "Diabetic Capital of the World" as the diabetic population is increasing in a geometric progression. There is an urgent need to understand the underlying etiology and develop primary prevention strategies to control this epidemic.<sup>2,3</sup> With advancement in the technologies for early detection, intervention, and prompt treatment of diseases, there is a growing scope for finding the most specific and sensitive biomarkers.

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## Introduction

Adipose tissue - composed of adipocytes, fibroblasts, immune cells, and various other cell types, once known as passive reservoir is now considered an endocrine organ secreting bioactive molecules including hormones now termed adipokines with various known and unknown endocrine functions in addition to regulating fat mass and nutrient homeostasis. Due to the dramatic rise in obesity and its metabolic sequelae during the past decades, adipose tissue gained tremendous scientific interest. Adipose tissue secretes variety of products known as 'adipokines', including leptin, adiponectin, resistin and visfatin, as well as cytokines and chemokines such as tumor necrosis factor- Alpha (TNF- $\alpha$ ), interleukin-6 and monocyte chemoattractant protein-1. These adipokines helps in the regulation of hemostasis, blood pressure, lipid and glucose metabolism, inflammation, and atherosclerosis. The release of these cytokines causes a chronic sub inflammatory state that could play a central role in the development of insulin resistance and type 2 diabetes, and the increased risk of cardiovascular disease associated with obesity, together referred as metabolic syndrome.<sup>4</sup> This chronic low-grade inflammation causes increase in macrophage infiltration, leads to increased adipocyte secretion of pro-inflammatory molecules such as resistin, tumor necrosis factor- Alpha, and interleukin-6 (IL-6).<sup>4</sup> These adipocytokines can act as key regulators of response to insulin in peripheral tissues.<sup>5</sup> Their role in causing insulin resistance via various mechanisms involving the flux of in pro-oxidant and antioxidant state has been seen.<sup>6,7</sup> Adipokines have a great potential for clinical use as potential therapeutics for obesity, obesity related metabolic, cardiovascular and other diseases.<sup>8</sup> Several extracellular factors cause obesity, related adipocyte metabolism and macrophage infiltration. Interestingly, recent research provides increasing evidence of the importance of regulating adipocyte function, adipose tissue metabolism and inflammation. In this mini review, we will briefly highlight roles of various adipokines (adiponectin, leptin, resistin, TNF- $\alpha$ , and IL-6) in regulating insulin sensitivity and resistance.

## Main body

### Adiponectin and Diabetes/MetS

Adiponectin is an adipocyte-specific hormone known to be involved

in a variety of metabolic, anti-inflammatory, and vasoprotective functions. Increase in body mass index leads to insulin resistance and type 2 diabetes. Hypoadiponectinemia correlates with the development of insulin resistance and type 2 diabetes.<sup>8,9</sup> Adiponectin promotes an insulin-sensitizing effect.<sup>10</sup> Adiponectin could suppress glucose production and increase insulin sensitivity.<sup>11</sup> The availability of adiponectin might reverse insulin resistance and therefore lead to decrease the risk of diabetes.

### Leptin and Diabetes/MetS

Genetic defects in anorexigenic pathway can cause obesity, such as mutations in the melanocortin-4 or leptin receptors.<sup>12</sup> Its levels are estimated to be higher in persons with diabetes mellitus.<sup>13</sup> Diet and leptin treatment is explored as a method of diabetes control. Obesity is not only influenced by lack of leptin but also leptin resistance. Leptin has been proven to increase with increasing adiposity among humans and rodents.<sup>14</sup> Leptin polymorphism has a role in hypertension.<sup>15</sup>

### Resistin and Diabetes/MetS

Resistin was latest adipokine to be discovered in the year 2001, resistin (RETN) genes helps in adipocyte differentiation, these were down regulated in mature adipocytes during exposure to Thiazolidinediones (TZD). Resistin was shown to be highly expressed among obese cases.<sup>16</sup> Exposure to higher glucose concentrations significantly increased resistin expression in 3T3-L1 adipocytes, while treatment with insulin reduced it.<sup>17</sup>

### IL-6 and Diabetes/MetS

IL-6 is a multifunctional cytokine that plays numerous roles in addition to controlling immune cell function, such as behaving as a hepatocyte-stimulating factor and a growth factor for metastatic cells.<sup>18</sup> T2DM shows elevated circulating levels of Interleukins and IL-6 is one among them.<sup>19</sup> IL-6 has been shown to activate SOCS-1 and -3 proteins in the liver, thus accompanying insulin resistance.<sup>20</sup>

## Conclusion

Researches provide strong evidence that adipose tissue plays important roles as an endocrine organ. This vast organ is capable of regulating many physiological processes by the secretion of adipokines

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## Adipokine interactions promote the pathogenesis of systemic lupus erythematosus



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### ARTICLE INFO

#### Keywords:

Systemic lupus erythematosus (SLE)  
Adipokines  
Complement  
Autoantibodies  
Disease activity

### ABSTRACT

**Background:** Adipokines are chemical mediators released from adipose tissue involved in regulation of appetite, insulin sensitivity, immune system and inflammatory responses. Adipokines contributes to low grade inflammatory response in autoimmune disease like Systemic Lupus Erythematosus (SLE) but the pathophysiology is yet not clear. The aim of this study is to understand role of adipokine interactions in SLE disease pathogenesis. **Methods:** Sixty newly diagnosed treatment naïve SLE patients fulfilling the ACR criteria and forty age-sex matched healthy subjects were enrolled in this case-control study. Disease activity in SLE patients was evaluated using SELENA-SLEDAI.

Array of adipokines, C1q circulating immune complexes (C1q-CIC), anti-C1q, anti-ribosomal P0 (anti-RibP0) and anti-mitochondrial antibodies (AMA) levels were detected by ELISA. Antinuclear antibodies (ANA) and anti-dsDNA autoantibodies were detected by Indirect Immunofluorescence (IIF), while antigen specificities were detected by Immunoassay blot. Serum levels of C3 and C4 complement factors were assessed by nephelometer. **Results:** Statistically significant elevation in progranulin, adiponin and resistin levels was seen among SLE patients when compared to healthy controls ( $p < 0.0001$ ). Leptin and omentin levels were significantly reduced in SLE patients ( $p < 0.0001$ ). There was no statistically significant difference in serum adiponectin, chemerin and visfatin levels when these two groups were compared ( $p > 0.05$ ). Adiponectin, adiponin and resistin levels were

**Abbreviations:** ACR/SLICC, American College of Rheumatology/Systemic Lupus International Collaborating Clinics; AMA, Anti-mitochondrial Antibodies; Anti-dsDNA, anti-double stranded deoxy nucleic acid; Anti-RibP0, anti-ribosomal P0; ANA, Antinuclear Antibody; BUN, Blood Urea Nitrogen; C1q-CIC, C1q Circulating Immune Complexes; CKD, Chronic Kidney Disease; DC, Dendritic cells; ENA, Extractable Nuclear Antigen; ESRD, End Stage Renal Disease; ESRF, End Stage Renal Failure; GFR, Glomerular Filtration Rate; HEp-2, Human Epithelial type 2; IIF, Indirect Immunofluorescence; LN, Lupus Nephritis; MRL/lpr, MRL lymphoproliferation strain; pDCs, plasmacytoid Dendritic cells; SLE, Systemic Lupus Erythematosus; Sm, Smith; sVCAM-1, soluble Vascular Cell Adhesion Molecule-1

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# ABSTRACTS



# LIST OF SPEAKERS

1. *Dr Rafiq Eachkoti*
2. *Prof. Imtiyaz Murtaza*
3. *Prof. Sabhiya Majid*
4. *Dr Maqsood Ahmad Dar*
5. *Dr Mohammad Hayat Bhat*
6. *Dr Nissar-ul-Ashraf*
7. *Dr Asif Amin Vakil*
8. *Dr Arshad Hussain*
9. *Dr Haamid Bashir*
10. *Dr Parveen Srivastava*

## 001-DIABETES – EDUCATION TO PROTECT TOMORROW

Dr Rafiqa Eachkoti  
Associate professor,  
Department of Biochemistry GMC, Srinagar

Diabetes is a chronic metabolic disorder and a global health concern. It is progressive disease which if not managed results in serious long-term complications. The disease is multifactorial and specialized education in all disciplines is need of the hour. Different education modules like SMA and DMES have been formulated to create awareness among the masses. Self-management education (DSMES) and support by specialists, FDA approved and ADA recommended module of education, up to date knowledge and usage of technological innovation in the field of communication and in the form of self-management tools (Powered by Artificial intelligence) together can help in curbing this pandemic and bring down the figures of incidences, complications, comorbidities /mortality associated with this disease.

### **Dr Rafiqa Eachkoti**

Ph D (Skims), PDF (USA)

Active member of American Association of cancer research (AACR)

Member of working groups: Cancer immunology (CIMM), Women in Cancer Research (WICR) and Minorities in Cancer Research (MICR)

Qualified, All India Level Eligibility Test CSIR UGC, (NET)

Gold medalist and Awarded 1st prize for poster presentation in USA FELS Institute of Cancer Research Temple University

Recipient of Scholarship for Ph.D. from SKIMS, INDIA and Postdoctoral fellowship (PDF) in Fels institute Of Cancer Research Molecular Biology Temple University, School of Medicine, Philadelphia, USA

Around 20 national and international publications

Associate Professor at Dept. of Biochemistry GMC, Srinagar

Research interests are Cancer genetics and personalized medicine

## **002-NUTRACEUTICALS AS EMERGING ANTI-DIABETIC FUTURISTIC ALTERNATE MEDICINES.**

Prof. Imtiyaz Murtaza

PhD (JMI, N Delhi) Postdoc (University of Wisconsin, USA; University of Zurich,  
Switzerland)

Professor cum Chief Scientist (Biochemistry)

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In the present era, the universal trend has shifted from synthetic to food-based medicine due to their lesser side effects. Although there is regular advancement in modern medicines, but numerous diseases especially oxidative stress related disorders are also increasing day by day across the world at very fast pace. Epidemiological studies and case-controlled studies suggest that consumption of food rich in fruits and vegetables can prevent many oxidative stress related degenerative diseases including diabetes, hypertension, cardiovascular disease, cancer, aging and other health conditions due to the presence of bioactive constituents possessing Nutra-pharmaceutical properties. It has been found that fruits like apple, pear, berries, cherries, peaches, plums nuts and green leafy vegetables, tomato, turnip, cucumber etc. are treasure of pharmaceutically significant nutraceuticals particularly carotenoids, alkaloids, glycosides, phenolics, flavonoids, volatile oils, steroids etc. Due to the presence of these potential nutraceuticals, they can act as powerful instrument against acute and chronic oxidative stress related diseases, thereby promoting optimal health, longevity, and quality of life. Although, these nutraceuticals are nature's wonderful medicines, however, even today majority of them lack necessary data to convince the regulators and consumers alike of the efficacy, dose and toxicity. Due to this gap the pharmaceuticals thus represent the single entity with well-established mode of action and targeted to treat a specific disease. Though, exploitation of potent nutraceuticals is in its infancy stage, but in near future production of these nutraceuticals in the form of well-established form on large scale is a reality. In order to capture some pharma market share, such potential nutraceutical should be evaluated thoroughly through sufficient preclinical and clinical tests to develop a well-established Nutra-pharmaceutical that can in turn help to address health insecurity related problems due to potential nutritional, safety and therapeutic effects, as compared to synthetic therapeutic agents. From last few years aggressive research work is being carried out across the world on providing scientific justifications for using such bioactive compounds antioxidants as chemoprotective and chemotherapeutic agents. In my laboratory, a well-organized strategy is being adopted to develop botanical drugs in the form of nutraceuticals from plants with anecdotal health claims. We have reported mechanism of action of several fruit and vegetable based bioactive nutraceuticals like quercetin, fisetin, lupeol, delephidin, phenolic



enriched fenugreek plant extracts etc against oxidative stress related diseases like diabetes, colon cancer, prostate cancer, pancreatic cancer etc. These bioactive Nutraceuticals need further investigations including efficacy evaluation under both *in vitro* & *in vivo*, animal toxicity, dosage and bioavailability testing, product formulation for clinical investigations before recommending them as alternate medicines against various oxidative stress and inflammatory related degenerative diseases in humans.

**Prof. Imtiyaz Murtaza**

Visiting Assistant Professor in University of Wisconsin, USA

Postdoc from ETH, University of Zurich, Switzerland.

Published more than 200 research articles

Chief Inventor of 5 innovative patents

Member of American association of cancer Research/National Academy of Sciences, India (NASI).

## 003-MOLECULAR RESEARCH IN DIABETES: CURRENT TRENDS AND CHALLENGES

Dr Sabhiya Majid

Professor & Head, Department of Biochemistry GMC, Srinagar

Diabetes mellitus (DM) is a group of metabolic disorders characterized & identified by presence of hyperglycaemia. DM is complex with heterogeneous etiopathology. There is a globally agreed target to halt the rise in diabetes & obesity by 2025. **Diabetes** was responsible for **6.7 million** deaths **in 2021:1 every 5 seconds. 537 million** adults (20-79 years) are living with diabetes (**1 in 10**). DM predisposes to a particularly severe course of COVID-19 disease doubling mortality risk due to pulmonary & cardiac involvement.

Words of ‘Frederick Banting’ in his Nobel Prize lecture for the discovery of life-saving drug insulin a hundred years ago **“Insulin is not a cure for diabetes, but a treatment of the symptoms”**, today seem prophetic. A century has passed and we are still focussed on symptoms and are very far from the target 2025. Targeted drugs that address the cause and not only the symptoms alone are needed for personalized care of this complex disease

Research on diabetes took place at an intense pace in 90’s, scientists foresaw looming threat of an epidemic of diabetes. Exhaustive primary medical research including at molecular level led to significant progress in identifying the risk factors for developing T2DM, understanding its patho-physiology and revealing various metabolic pathways implicated in the disease process. This culminated in implementation of robust prevention programmes and development of effective pharmacological agents. Despite these advances, the incidence and prevalence of T2DM continue to rise.

Pointedly, the industry still lacks a curative agent. Currently no pharmacological treatment can stop or reverse disease progression. **Research approaches to cure & reverse diabetes are need of the hour. Focus needs to shift to beta cell protection and regeneration approaches to cure and reverse diabetes.** New treatment strategies including Islet cell transplants and novel Beta cell replacement for Type 1 diabetics definitely need to be further developed.

Study published in Nature in 2021 from the Technical University of Munich & German Center for Diabetes Research identified an inhibitor of insulin receptor (INSR) and IGF1 receptor (IGF1R) signalling termed inceptor found to increase the functional beta cell mass. It is a promising target to treat the root cause of diabetes, the loss and dysfunction of beta cells.

*A significant milestone for diabetes research has ultimately been reached as we celebrate 100 years of insulin and 50 years of insulin receptor discovery. Such research is needed to combat diabetes.*

**Prof. (Dr). Sabhiya Majid**

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Nodal Officer Multidisciplinary Research Unit (MRU) GMC Sgr.

Principal College of Nursing & Paramedical Sciences GMC Sgr(Additional Charge )

Chairperson Scientific Research Committee GMC Sgr. Member Scrutinizing Committee GMC Sgr.

Member Institutional Verification Board GMC Sgr, HME Department

Member, Institutional Ethical Committee, GMC Sgr.

Recipient of JRF, All India Eligibility Test CSIR UGC, (NET)

Recipient of Scholarship from PGIMER, INDIA

Recipient of Young Scientist Award in Medical Sciences (DST)

Recipient of American Biographical Institute (ABI) Women's Achiever Award.

More than 150 national and international publications in indexed Journals of repute

Research interests: Collaborative research on biochemical & molecular basis of diseases – Focus on cancers, Diabetes & Metabolic syndrome. Laboratory Medicine



## 004-DIABETIC NEUROPATHY

Dr Maqsood Ahmad Dar  
Lecturer/Consultant Neurologist  
Department of Medicine, GMC-Srinagar.

Diabetes mellitus is one of the most common non-communicable pandemic diseases which involves almost whole of the world with India heading towards becoming the diabetic capital of the world. Diabetes is a systematic disorder which particularly involves the eyes, kidneys and nerves besides leading to other macro vascular complications like MI, cerebrovascular disease, peripheral vascular disease and diabetic foot. About 40 to 50 % of diabetes mellitus patients develop diabetic neuropathy during life time. About 8% of IDDM have neuropathy at the time of diagnosis which can increase to 41 % at 10 years. The salient features of my topic are overview of diabetic neuropathy, risk factors, Diagnosis and evaluation, mechanisms involved and the treatment.

### **Dr Maqsood Ahmad Dar**

MD (SKIMS), DNB Neurology  
(Max Super speciality Institute New Delhi  
Member: American academy Of Neurology.  
About 20 National and international Publications.  
Consultant Neurologist and Lecturer Medicine  
GMC Srinagar

## 005-Diabetes Current Scenario.

**Dr. Mohammad Hayat Bhat**

**MD(SKIMS), DM(Endo)PGIMER CHD**

**Fellow American College of Endocrinology**

**Fellow Royal College of Physicians Edinburgh**

**Fellow Research Society for Diabetes in India**

**Diabetes India 2021and RSSDI 2021 awardee**

**Recipient of Islamic development Bank scholarship**

**About 100 national and international papers with more than 705 citations**

**Life member of various endocrine societies**

**Assistant Professor of Endocrinology at GMC SSH SGR**

**Main interests in Diabetes and Thyroid**



## 006-EPIGENETICS, AUTOPHAGY AND LIPOTOXICITY IN NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)

Dr. Nissar Ul Ashraf, PhD,  
Assistant Professor  
Department of Biochemistry  
Government Degree College, Sopore

Non-alcoholic fatty liver disease (NAFLD) is one of the most common causes of liver dysfunction worldwide. The subtype of NAFLD which can be characterised as non-alcoholic steatohepatitis (NASH) is a progressive liver disease and is rapidly becoming the leading cause of liver-related mortalities, affecting both adults and children. NAFLD and NASH carry a huge economic burden and create poor health-related quality of life globally. Despite its huge economic burden, we are only beginning to understand the cellular and molecular mechanisms of lipotoxicity in NAFLD and the contribution of environmental and genetic factors that risk the development of progressive course of disease. During the last two decades epigenetic mechanisms and autophagy have emerged as two independent phenomena that control the cellular and molecular machinery in health and disease. Furthermore, various epigenetic events and autophagy defects have been linked with NAFLD and NASH pathogenesis in cellular models, mice models and human subjects. However, a connection between epigenetics and autophagy regulation in Lipotoxicity in NAFLD has not been understood properly. Herein, we identified the epigenetic factors and the epigenetic process that regulate autophagy in *In vitro* models of Lipotoxicity. These epigenetic factors may provide attractive entry points to explore pharmacological avenues for the therapeutic induction of autophagy in Lipotoxic states such as NAFLD and Obesity

### **Dr. Nissar Ul Ashraf**

Postdoctoral Fellow

Group on Molecular and Cell Biology of Lipids

Department of Cell Biology

Faculty of Dentistry and Medicine

University of Alberta, Edmonton, Canada

Recipient of National Postdoctoral Fellowship from DST-SERB, Govt. of India

Recipient of D. S. Kothari Fellowship from University Grants Commission

Member Society of Toxicology, India

Member Indian science Congress

15 Publications with more than 600 citations

Research Interest: Mechanism of Lipotoxicity in NAFLD



## 007-DIABETIC RETINOPATHY

Dr. Asif Amin Vakil

Associate Professor, Department of Ophthalmology  
GMC-Srinagar

Diabetes mellitus affects 537 million people worldwide and around 65 million people in India. Globally prevalence of diabetic retinopathy among all diabetic patients is 34.6% and prevalence of Proliferative diabetic retinopathy is 7.2%. Diabetic retinopathy is among the most frequent microvascular complications of diabetes. After 20 years of disease 60% of patients with type 2 and virtually every patient with type 1 diabetes mellitus show signs suggestive of diabetic retinopathy. Diabetic retinopathy has become the leading cause of severe visual impairment and blindness in working age adults. Early detection and timely intervention are the keys to avoiding blindness due to diabetic retinopathy. At diagnosis 10.2 % patients have signs of diabetic retinopathy and 2% patients have clinically significant macular edema. Diagnosis and grading is done straight forward on fundus evaluation on slit lamp bio microscopy and ancillary tests like Optical coherence tomography, Fundus Fluorescein Angiography and B Scan Ultrasonography is required only to decide course of further action. With the advent of Anti VEGF agents' treatment of CSME has been revolutionized. Pan retinal laser Photocoagulation remains the gold standard treatment for Proliferative diabetic retinopathy. Vitrectomy with MIVS System has improved the visual outcome in advanced Proliferative diabetic retinopathy with vitreous haemorrhage and Tractional retinal detachment. The presentation discusses in detail the aforementioned considerations and draws a comprehensive picture of current scenario of diabetic retinopathy to sensitize the audience to this important condition.

### **Dr. Asif Amin Vakil**

M.S Ophthalmology, Institute of Ophthalmology AMU

Phaco Fellow VEI New Delhi

Phaco Fellow I Care Noida

Ex Consultant Rotary International

Ex Consultant JK health Services

Life Member All India Ophthalmological Society

Life Member of Delhi Ophthalmological Society

**008-DEPRESSION AND DIABETES: AN EXPERIENCE FROM KASHMIR****Arshad Hussain, Iqra Rasheed Shah**

Departments of Psychiatry

GMC, Srinagar, Jammu and Kashmir, India

**Background:** Diabetes mellitus is a common chronic metabolic disorder characterized by hyperglycemia. In the year 2000, India topped the list with the highest number of diabetics (31.7 million) in the world which rose to 62.4 million in 2011 and is expected to reach 69.9 million by 2025. . Minimal attention has been paid toward the relationship between diabetes and depression in developing countries such as India, despite a number of studies in developed countries exploring causal pathway between the two highly prevalent conditions. The aim of this study was to estimate the prevalence and severity of depression among patients of diabetes attending the endocrinology department of a tertiary care hospital of Kashmir.

**Methodology:** A total of 527 patients having diabetes of  $\geq 6$  months with age ranging from 18 years to 60 years were screened for major depressive disorder (MDD) using Diagnostic and Statistical Manual IV-based criteria. Severity of depression was assessed by the Montgomery–Asberg Depression Rating Scale.

**Results:** Depression was present in 39.65% of patients. Depression was more prevalent in the age group of 29–38 years, in females as compared to males, among literates and government employees. Prevalence of depression among Type 1 diabetic patients was 60%, while as in case of Type 2, it was 37.75%. Depressed patients had higher fasting blood glucose levels as compared to non-depressed diabetic patients.

**Conclusion:** There is a bi-directional relationship between depression and diabetes and shared biological and behavioural factors are proposed to underlie this association. MDD is inordinately high among adult diabetic patients, and majority of the depressive patients have moderate intensity of MDD.

**Prof (Dr.) Arshad Hussain**

Professor Institute of Mental Health and Neurosciences Kashmir (Associated Hospital GMC Srinagar)

Expertise and interest; Trauma, Bipolar Affective disorder, Metabolic syndrome, Neurocognitive

Recognition; Japanese Society of Psychiatry &amp; Neurology Fellowship

World Association of Society Psychiatry Fellowship, Fogarty Fellowship

Guest editor Covid Special Issue- Journal of Medical Sciences

Affiliations &amp; Memberships; Convenor Disaster Sub Committee, Indian Association of Private

Psychiatrists, Convenor, PG Psychiatry Education- Sub Committee, Indian Psychiatry Society (IPS),

Chairperson Award Committee Member, IPS-North Zone.

Indian Association of Social Psychiatry

Publications: 96

RG score: 26.39

<https://www.researchgate.net/profile/Arshad-Hussain-20>

## 009-ROLE OF CYTOKINES IN TYPE 2 DIABETES MELLITUS

Dr. Haamid Bashir

Technologist/ Researcher

Department of Biochemistry, Govt Medical College Srinagar.

Type 2 diabetes mellitus (T2DM) is a non-communicable disease, consists of array of dysfunction characterized by hyperglycemia and insulin resistance. T2DM is a multifactorial disease and leading cause of morbidity and mortality in the world. Inflammatory cytokines are implicated in the vigilant defence against dysregulation due to low grade inflammation. Low grade inflammation causes production of cytokines which are capable of inactivating the insulin receptor signalling in the multiple cell types like liver and muscle cells. Imbalance flux of pro and anti-inflammatory cytokines leads to pathogenesis of T2DM. So, detection of expression of cytokines at serum and mRNA level is relevant to determine the extent and direction of immune responses. The case control study was designed to study, the low-grade inflammation and gene expression of pro and anti-inflammatory markers in T2DM. For elucidation of serum (CRP, TNF- $\alpha$ , IL-6 and IL-10) in cases and controls, total of 340 subjects were selected in this study, among them 160 were T2DM cases and 180 were healthy controls. For mRNA expression of TNF- $\alpha$ , IL-6 and IL-10, 80 T2DM cases and 80 controls were taken. An increased concentration of serum pro-inflammatory markers (CRP, TNF- $\alpha$ , IL-6) was observed in T2DM cases as compared to controls ( $P < 0.0001$ ). In addition, decreased concentration of IL-10 levels was found in T2DM cases as compared to healthy controls ( $p < 0.0001$ ). The relative mRNA expression of target genes (TNF- $\alpha$ , IL-6 and IL-10) was analysed in T2DM cases and controls. A significant three-fold increase in TNF- $\alpha$ , IL-6 mRNA expression was observed (3.7 and 3.6,  $p < 0.0001$ ) in T2DM cases as compared to controls. Whereas, fold change in mRNA expression of IL-10 gene was 0.26 in T2DM cases as compared to controls ( $p < 0.0001$ ). Low grade inflammation and up regulation of inflammatory mediators has been purported to play a significant role in pathogenesis of T2DM. Our data suggests that serum pro-inflammatory cytokines and anti-inflammatory cytokine levels are altered in the T2DM patients with respect to healthy controls.

### **Dr. Haamid Bashir**

Ph.D Biochemistry, GMC Srinagar

Research and Technical expertise:

Immunoassay, Immunofluorescence, Genotyping and Gene Expression analysis on diseases like Cancer, Thyroid, Diabetes Mellitus, SLE, Depression disorders and COVID-19 influenza virus.

Authored/co-authored 27 National/International Papers in Impact/Indexed Journals.

Author of the book, "Molecular Genotyping in Gastric Cancer".

Published Three Book Chapters.

Recipient of "**Rank and Bolt Award**" by "Air-India" for Scientific Knowledge concepts.



# **ABSTRACTS**

## **BY**

# **UG STUDENTS**

# LIST OF STUDENTS

1. *Avril Attri*
2. *Madiha Naseem*
3. *Aymaan Khan*
4. *Baiza Manzoor*
5. *Zainab Shamim*
6. *Abrar Majeed Bhat*
7. *Naveed Pandit*
8. *Madiha Manzoor*
9. *Annam Hussain*
10. *Fatima Yusuf*

## **UG-010-DIABESITY EPIDEMIC: CURRENT SCENARIO WORLDWIDE AND IN INDIA.**

AVRIL ATTRI

Diabesity is a modern epidemic, which indicates the coexistence of both diabetes and obesity. 70-80% of obese people will suffer from diabetes at some point in their life. The worldwide dual epidemic of obesity and type 2 diabetes is an important public health issue. Projections estimate a sixfold increase in the number of adults with obesity in 40 years and an increase in the number of individuals with diabetes to 642 million by 2040. Increased adiposity is the strongest risk factor for developing diabetes. The burden of diabetes on the world economy has been rising steadily in the last decade to reach \$376 billion in 2010 and is expected to reach \$490 billion in 2030. The health impact of diabesity is substantial to include long-term diabetic complications, reduction in health-related functioning, reduction of quality of life and reduced overall life expectancy. Sometimes it is referred to as obesity-dependent diabetes. The rapid increase worldwide during the last century, is mainly attributed to changes in human behaviour, especially sedentary lifestyle and dissemination of the western diet in addition to genetic susceptibility. Both diabetes and obesity are also integral components of metabolic syndrome. It is quite evident that diabesity has already become a worldwide epidemic with a significant health and economic burden affecting both developed and developing countries. Thus, promotion of a healthy diet, regular exercise, regular health check-ups is a must. It is thus urgent to take steps including screening, prevention and early management in an attempt to control this evolving epidemic of diabesity.



## UG-011-EDUCATION, AWARENESS AND PREVENTION OF DIABETES

MADIHA NASEEM

One thing I find common between my grandmother, my mother and a neighbour's kid is their constant struggle with an unwanted and uninvited guest. Diabetes Mellitus- a silent killer, 7th leading cause of death and the fastest growing epidemic in the world. A chronic non communicable, endocrine disorder resulting due faulty insulin secretion, action or both. An organ in your body called pancreas is responsible for secreting a hormone known as insulin which controls whatever enters your body, it either burns it or stores it. Basically, a lock and key mechanism takes place in your body, where insulin acts like a key to the locks present on the cell membrane opening it and allowing the glucose to enter the cell. In case of absence of keys or defective locks, the glucose remains in the blood and starts rising leading to a hyperglycaemic condition. The former known as DM-1 and the latter DM-2. A third type known as gestational diabetes occurs in cases of pregnancy. The sign and symptoms of diabetes include. Polydipsia, Polyuria, Polyphagia, Delayed healing of wounds and blurry vision. All these life-threatening conditions existing among us and still our carefree and unseriousness towards it doesn't seem to change. In such a situation raising awareness becomes more important than ever. Awareness basically means making people understand in simplest forms of messages and words the risk factors complications and preventive techniques of diabetes. You can contribute in creating awareness by participating in fund raisers, joining a diabetes support group or camps. Prevention is better than cure. Inculcation of a few life style changes help to reduce the risk of diabetes Eat healthy, manage stress and sleep, Exercise, quit smoking, cut down carbs and sugar follow the 80-20% rule. Sugar is not a treat, if our eating habits do not change in a few decades 1 in 3 people will be diagnosed with diabetes and it will likely be someone you know and love or it might be you. Diabetes is a constant around the clock, it doesn't stop. Your contribution is required in today's crazy world. Please do not forget to be kind to yourself and people around you suffering from diabetes.

## UG-012-GESTATIONAL DIABETES & AWARENESS

AYMAAN KHAN

Gestational diabetes is diagnosed in women without previously diagnosed diabetes who exhibit hyperglycaemia during 2nd or 3rd trimester due to insulin resistance. They have increased risk of developing type 2 diabetes later in life. Various hormones contribute to resistance like oestrogen, progesterone, cortisol etc that reach max at 24 weeks. The causes can be advanced maternal age, PCOS, obesity, family history, prediabetes. We care about it because of the maternal and foetal risks associated. A diabetic woman who went on to become pregnant is diagnosed with overt diabetes so we rule this out by HbA1c testing in the first trimester. In diagnostics -All pregnant women should be screened at the first visit itself. The screening tests include: a) TWO STEP process (In America) b) ONE STEP (By DIPSI) c) One step (By WHO). For treatment, initially we give Diet modification, Exercise, Carbohydrate restriction, but if these fail, we use insulin. In awareness we aim to empower, engage and educate youth and general public. Awareness includes Lifestyle changes that lower risk of pregestational diabetes and hence GDM – Being physically active, Eating healthy, Stress management, quality sleep. Educating people about diabetes, it's treatment and their side effects and more importantly Education and counselling to women about diabetes and by Increasing effectiveness of workers like ASHAs.

## **UG-013-ROLE OF BIOCHEMISTRY LABS IN DIAGNOSIS OF DIABETES**

BAIZA MANZOOR

Diabetes is a condition where blood glucose levels are high, we have 3 types of Diabetes: Type 1, Type 2 and Gestational Diabetes. Prediabetes is a serious condition where the blood glucose levels are high than normal but not high enough to be considered as diabetes. Well, the diagnosis of Diabetes becomes a system and very important factor for the enhancement of healthcare. Close to half of adults living with Diabetes are undetected that can lead to several complications. Now in diagnostics the tests performed are Blood Glucose levels under which we perform Fasting plasma glucose, Random blood glucose, Postprandial blood glucose, oral glucose tolerance test, Ivgtt: intra venous glucose tolerance test: measure glucose attached to haemoglobin • c peptide: the test for differentiation of type 1 and type 2 diabetes. A few others as urinary glucose, urinary protein and ketone bodies. Tests for complications are also done like Lipid profile, KFT, LFT and Ophthalmology check-ups. As clinicians are being asked about management and preventions, new approaches are needed to improve patient safety. These include Continuous Glucose Monitors which measure the interstitial levels of glucose and Islet Chips which are bioengineered chips to study how islets function in our body. They also help us study autoimmunity in type 1. Also, a few apps have been designed that help regulate blood glucose, maintain diet, and interact with people with Diabetes around the world



## **UG-014-TYPE 2 DIABETES MELLITUS IN CHILDREN AND ADOLESCENTS**

ZAINAB SHAMIM

This topic is very sensitive as numbers involves in Type 2 diabetes are increasing day by day. The statistics reveal it all. Obesity has been a key factor. The key locus for the integration of signals that decrease food intake is the hypothalamus. The circulating concentration of leptin produced by fat cells, increases as fat stores increase and declines as fat stores are depleted. Importantly, under conditions of caloric restriction, circulating leptin levels fall faster than the disappearance of fat. As people become obese, one of the first and most prominent biochemical abnormalities that develops is the need for increased circulating concentrations of insulin to maintain glucose homeostasis. The growth hormones that you make to grow rapidly in adolescence antagonises insulin. Because of heredity or lifestyle (eating too much and moving too little), cells can stop responding normally to insulin. That causes the pancreas to make more insulin to try to get cells to respond and take in blood sugar. As long as enough insulin is produced, blood sugar levels remain normal. This can go on for several years, but eventually the pancreas can't keep up. Blood sugar starts to rise. Now the stage is set for type 2 diabetes. Over time, having type 2 diabetes means an increased risk of kidney failure, heart disease, nerve damage, eye damage, and a host of other conditions. We need to take steps at a larger as well as individual level to help control the development of diabetes in children and adolescents as they are the ones who are begetters of future generation. We need to come out of our comfort zones and start off healthy routine to. Build a healthier society.

## **UG-015-DIABETES: EPIDEMIOLOGY, AWARENESS AND PREVENTION**

ABRAR MAJEED BHAT

DIABETES comprises of several metabolic disorders all characterized by hyperglycaemia. There are various types of diabetes, T1DM, T2DM, GESTATIONAL etc. In T2DM there is insensitivity of glucose receptors and usually occurs at an old age. In T1DM there is absolute deficiency of Insulin. In the world, 537 million adults are living with diabetes. 1 in 2 people living in the world with diabetes are undiagnosed. In India, 77 million people are formally diagnosed with diabetes and 7lack people die in a year. In Kashmir, diabetes known to unknown ratio is 1:10. According to one estimate 9.8% of Srinagar population have diabetes. People should be made aware through TV, print media and radio. Schemes should be made to enrol people of poor socioeconomic background for subsidized drugs and glucometers. Diabetes related apps should be made and medical camps should be organized to increase the awareness about diabetes. Medical professionals can make his or her family aware about diabetes and its complications. Diabetes can be prevented by doing exercises, taking proper diet and healthy living. Those people who have diabetes should take medicine properly. According to ADA, people above the age of 45 years should be screened every three years. We should make people aware about the complications of diabetes.

## UG-016-RECENT DEVELOPMENTS & ADVANCES IN DIABETIC CARE

NAVEED PANDIT

As we live in an era of technology, the growth in science and technology has made patient care far superior & more reliable in most cases by providing new machines and medicines which improve the chances of recovery for many. We have a typical management program for Diabetes 1) Assessment of Lab parameters- Fasting blood glucose test and Oral Glucose Tolerance Test. 2) Regular monitoring for complications- Diabetes can lead to Retinopathy, Nephropathy, Stroke and Heart attack. 3) Dietary modification & Physical activity, 4) Diabetic medications. The technology plays an important role in treatment of diabetes. Remarkable advances were observed in recent years in the management of patients with type 2 (T2DM) or type 1 (T1DM) diabetes mellitus. Regarding T2DM, changes in treatment paradigms were observed, moving from a glucocentric approach to a multi-risk strategy. Regarding T1DM, continuous and flash glucose monitoring and improved insulin delivery systems with smart insulin pens and insulin pumps connected to glucose monitoring device, allowing better glucose control with less hypoglycaemia. Because of an increasing variety of therapeutic approaches, an individualized patient-centred strategy is recommended, ideally with the collaboration of a multidisciplinary team. As we approach nearly 100 years since the discovery of Insulin - it is an important reminder of how human ingenuity can lead to huge advances. We must keep striving to make life easier for those with diabetes, so they can live healthier & happier lives. Don't sit and wait when u can stand and act.



## UG-017-RECENT ADVANCEMENTS IN DIABETES CARE

MADIHA MANZOOR

Results from body weight regulation studies show that hormonal responses in obese children are normal following a meal, but responses within the brain are reduced. The lack of response within the brain may predispose them to overconsumption of food or difficulty with weight-loss. Development of a novel molecule that uses a different, non-enzymatic approach monitor glucose levels in the blood for the development of a fully automated artificial pancreas. Replacing insulin-producing beta-cells that have been lost in people with type 1 diabetes and eliminating the need of immunosuppressants is a promising strategy to develop an insulin free cure to treat diabetes. Ceramides play an essential role in driving insulin resistance in mice. Higher ceramide levels lead to development of insulin resistance and increase in risk of heart diseases. A new therapeutic strategy to continuously has been presented for lowering ceramides. On average, women have a lower risk of developing heart disease compared to men. However, research has shown that this protection is lost in women with type 1 diabetes. Menopause increases risk markers for heart disease in women with type 1 diabetes more than in women without diabetes. Effective clinical treatments for neuropathy are currently lacking. A study found that a molecule currently in clinical trials for the treatment of depression may be valuable for diabetic neuropathy, particularly the type affecting the brain.

## UG-018-DIABETES EDUCATION, AWARENESS AND PREVENTION

ANNAM HUSSAIN

According to WHO diabetes is a chronic metabolic disease characterized by elevated blood glucose levels which leads overtime to serious damage to the heart, blood vessels, eyes kidneys and nerves. Glucose is a car traversing through a road that is our blood vessels. It needs to reach a destination the parking lot. The parking has four levels, brain, liver, muscle and adipose tissue. The brain is the VIP parking lot that has no regulation. Rest three have a regulator, police cop the insulin, what happens in diabetes, the police is no longer interested in its job or the insulin is unable to open the gates. le where we draw the difference between type 1 and type 2 DM. Type 1 is caused by an autoimmune reaction. Type 2 is caused by insulin resistance. Common sign and symptoms of diabetes include urinating often, being thirsty more than often, hungry more than often, wounds that wouldn't heal, numb and tingling hands and feet. A study conducted by ICMR in 2014, TN ranked the highest in most people who knew about DM and only 16 percent of people in rural Jharkhand knew about diabetes. T hats an alarming number which shows spreading awareness is important. Type 1 is an autoimmune disorder probably occurring due to a trigger that can be removed thru primary prevention. If you block the cascade midway it is secondary prevention. If you reverse the beta cell loss it is tertiary prevention. Type 2 DM can be prevented by improving lifestyle and that can be done by healthy diet, exercise intermittent fasting, eating roughage and proper screening. Social media, Ads on TVs, Newspapers, Govt policies, Fundraisers, AI are some of the ways of spreading awareness related to DM. ASHA workers and ANMS have done an incredible job in spreading awareness about gestational diabetes amongst pregnant women especially in rural areas.

## UG-019-GESTATIONAL DIABETES

FATIMA YUSUF

Gestational diabetes is a type of diabetes whose onset occurs for the first-time during pregnancy. Increased insulin resistance due to release of HPL (human placental lactogen) and other hormones like estrogen, cortisol. This leads to postprandial hyperglycemia. Fasting hypoglycemia is also seen. Increased insulin resistance leads to hyperinsulinemia and increased fat deposition. But body tries to produce more and more insulin in order to compensate and when this compensatory mechanism fails the mother lands into gestational diabetes. Screening is universal, at the first antenatal visit and DIPSI recommends OGTT in which 75 g oral glucose load is given to the female. Maternal complications are pre-eclampsia, postpartum haemorrhage, infections and c-section. Foetal complications are macrosomia, polyhydramnios shoulder dystocia, preterm birth, etc. Neonatal complications are neonatal hypoglycaemia, Polycythaemia, Cardiac myopathy, etc. GDM is not the end of the world. In MANAGEMENT first thing is to ensure that maternal blood glucose levels are kept under control and ensure foetal well-being. Treatment is diet modification and exercise and if this doesn't respond then we go for insulin therapy.



## BIOCONGMC - 2022 WORKSHOP/CME ON DIABETES - EDUCATION TO PROTECT TOMORROW



ORGANISED BY  
DEPARTMENT OF BIOCHEMISTRY  
GOVERNMENT MEDICAL COLLEGE SRINAGAR

14TH NOVEMBER (WORLD'S DIABETES DAY)  
VENUE: AUDITORIUM HALL, GOVERNMENT MEDICAL COLLEGE SRINAGAR

**THE CME IS ACCREDITED WITH J&K UT MEDICAL COUNCIL FOR 04 CREDIT POINTS**

### SPEAKERS

**Dr Rafiq Eachkoti**

Assistant Professor, Dept. of Biochemistry, GMC Sgr.

**Prof. (Dr) Imtiyaz Murtaza**

Professor cum Chief Scientist, Dept. of Biochemistry,  
SKUAST-K, Shalimar Campus.

**Prof. (Dr) Sabhiya Majid**

Professor & Head, Dept. of Biochemistry, GMC Sgr.

**Dr Maqsood Ahmad Dar**

Consultant Neurologist & Lecturer, Dept. of Medicine, GMC  
Sgr.

**Dr. Mohammad Hayat Bhat**

Head Dept. of Endocrinology, GMC Sgr & Associated Super  
Specialty Hospital.

**Dr Nissar ul Ashraf**

Assistant Professor, Dept. of Biochemistry, Govt. Degree  
College Sopore.

**Dr Asif Amin Vakil**

Associate Professor, P.G Dept. of Ophthalmology, GMC Sgr.

**Prof. (Dr) Arshad Hussain**

Professor, P.G Dept. of Psychiatry, IMHANS, GMC Sgr.

**Dr Haamid Bashir**

Senior Technologist, Dept. of Biochemistry, GMC Sgr.

**Dr Pankaj Kumar Lawaniya**

New Delhi



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