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International Journal of Diabetes in Developing Countries targets a readership consisting of clinicians, research workers, paramedical personnel, nutritionists and health care personnel working in the field of diabetes. Original research work and reviews of interest to the above group of readers is considered for publication in the journal.

The journal has a goal of serving as an important resource material in diabetes for its readers, mainly in the developing world.

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Subscription Information

International Journal of Diabetes in Developing Countries is published 4 times a year. Volume 44 (4 issues) of will be published in 2024.

ISSN 0973-3930 print version
ISSN 1998-3832 electronic version

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International Journal of Diabetes in Developing Countries

Volume 44 · Supplement 2 · October– December 2024

Abstracts of The 52nd Annual Conference of Research Society for the Study of Diabetes in India

ABSTRACT

Further articles can be found at www.springerlink.com

Abstracted/Indexed in *Baidu, CAB Abstracts, CLOCKSS, CNKI, CNPIEC, Chemical Abstracts Service (CAS), Dimensions, EBSCO, EMBASE, EMCare, Google Scholar, IFIS Publishing, Japanese Science and Technology Agency (JST), Naver, OCLC WorldCat, Discovery Service, Portico, ProQuest, SCImago, SCOPUS, Science Citation Index Expanded (SCIE), Semantic Scholar, TD Net Discovery Service, UGC-CARE List (India), Wanfang*

Instructions for Authors for *Int J Diabetes Dev Ctries* are available at www.springer.com/13410.

International Journal of Diabetes in Developing Countries (October–December 2024) 44 (Suppl 2):S83–S172
https://doi.org/10.1007/s13410-024-01421-6

ABSTRACTS

Abstracts of The 52nd Annual Conference of Research Society for the Study of Diabetes in India

Published online: 1 November 2024

BB TRIPATHY SYMPOSIUM

BBT01

Prevention of Gestational Diabetes Mellitus by treating Early Gestational Glucose Intolerance(EGGI) in the first trimester

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Keywords
• Oral therapies: metformin, sensitizers and other non- secretagogues • Health care delivery • Pregnancy

Background and Aims
To evaluate if intervention in the form of MNT with Metformin will prevent development of GDM in womenwith 2hour PPBS 110mg/dl to 120mg/dl at 8 weeks of gestation

Materials and methods
The study was conducted at Lady Hardinge Medical College, Delhi. Total 232 pregnant women with period of gestation < 8 weeks having 2hour PPBS 110mg/dl to 120mg/dl were included in the study and were randomly divided into 2 groups. Group A- intervention group (MNT with tablet Metformin 250mg BD was given) and group B- non intervention (only MNT was given).All the patients underwent GDM screening by DIPSI at 14-16 weeks,24-28weeks,and 32-34weeks. Among these group, total number of women who developed GDM and fetomaternal outcomes were compared. These outcomes were subjected to statistical analysis by using computer software SPSS version 23. Percentages were calculated for dichotomous variables and range; mean and standard deviation was calculated for continuous data. Chisquare and t-test were applied to compare the two groups. P value less than 0.05 was considered as significant.

Results
Significantly higher number of women in intervention group(group A) in comparison to non intervention group(group B) had not developed GDM in all three trimesters. Only 2.59% pts developed GDM in intervention group in comparison to 87.07% pts who developed GDM in non-intervention group($p<0.05$).Moreover, significantly in the intervention group(group A)had reduced number of hypertensive disorders, preterm deliveries and ceserean section as mode of delivery in comparison to non-intervention group. The fetal outcomes in intervention group(group A) were more favourable with lower number of macrosomia and FGR babies and reduced NICU admissions and respiratory distress syndrome.

Conclusion
This study concludes that detection of early gestational glucose intolerance by 2hour PPBS between110mg/dl to 120mg/dl at 8weeks of gestation and treating these patients with Metformin 250mg twice daily along with medical nutritional therapy in the first trimester will help to maintain maternal PPBS less than 110and further prevents development of gestational diabetes mellitus by preventing irreversible fetal programming. Besides this administration of Metformin possibly decreases the occurrence of hypertensive disorders and prevents adverse fetal outcomes.

BBT02

Effect of low- calorie sweetener - sucralose on cardiometabolic risk factors among Asian Indian adults with overweight and obesity - a randomized trial

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Keywords
• Weight regulation and obesity • Nutrition and diet

Background and Aims
High intake of added sugar is associated with overweight/obesity-linked chronic diseases. Low calorie sweeteners (LCS) may reduce calorie intake and improve metabolic outcomes when substituted for added sugar. This free living, randomized, parallel arm trial evaluated the effect of replacing added sugar with LCS-sucralose (in daily beverages) on bodyweight and other metabolic factors. (CTRI/2021/04/032809).

Materials and methods
Males and females aged 25-50 years with BMI >22.9 kg/m2, were randomized into intervention (added sugar in coffee/ tea replaced with sucralose) and control (continued sugar intake) groups. Changes

in body weight, body mass index (BMI), waist circumference, adiposity indices, triglyceride-glucose (TyG) index {abiomarker for insulin resistance calculated as : Ln [fasting triglycerides (mg/dL) × fasting plasma glucose(mg/dL)/2]}, fasting blood glucose, HbA1c, insulin resistance and lipid profile were analysed at baseline and end of 12 weeks, within and between groups (using paired *t* test and generalized linear model respectively).

Results

Significant changes were observed in the intervention group (n=97) at the end of 12 weeks, in body weight(p=0.03), BMI (p=0.04), waist circumference (p<0.001), fasting blood glucose (p=0.02), HOMA-IR(p=0.03), HbA1c (p =0.01), triglycerides (p=0.04), and TC/HDL ratio (p=0.03) (compared to the control group (n=101). Besides, within the intervention group we observed a significant increase in HDL cholesterol(p=0.03) and decrease in TyG Index (p=0.03) .

Conclusion

Replacement of added sugar with LCS – sucralose in the daily diet can help in improving anthropometric andadiposity indices, and various metabolic parameters in Asian Indian adults with overweight/obesity

BBT03

Effect of Almond Intake On Pro And Anti- Inflammatory Markers: A Randomized Control Trial In Asian Indian Adults

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Keywords

• Inflammation in obesity • Nutrition and diet

Background and Aims

There is increasing evidence that consumption of nuts lowers inflammation. Considering that Asian Indians have a unique phenotype and increased predisposition to diabetes, the present study aimed to assess the effect of almond intake on anti and inflammatory markers such as adiponectin, monocyte chemo-attractant protein-1 (MCP 1) and tumor necrosis factor α (TNF alpha) in overweight/ obese Asian Indian adults.

Materials and methods

A parallel-arm, open labelled, randomized controlled trial among 400 overweight and obese adults aged 26–65 years, with body mass index ≥ 23 kg/m2, was conducted in Chennai. The intervention group received43grams of almonds per day for 12 weeks while the control group followed their habitual diet avoiding any nut intake. The anti and pro inflammatory markers in all participants were assessed using ELISA at baseline and at the end of 12 weeks. Anthropometric, clinical, and dietary data of all participants were collected periodically. Statistical analysis was performed using SAS software and differences between groups were tested using generalized linear models and p<0.05 was considered to be significant.

Results

Differences in body weight changes between intervention groups were not significant. After 12 weeks of intervention, adiponectin level increased significantly only in the intervention group from 4.9 to 5.4 ng/ml(p=0.01), while it declined in the control group (p=0.01). Similarly, TNF alpha significantly declined only inthe intervention group from 45 to 41pg/ml (p =0.03) in the intervention group, compared to the control group(p=0.01). Changes in MCP levels were not significantly different between groups.

Conclusion

Almond consumption beneficially modulates peripheral inflammatory markers (adiponectin and TNF-alpha)in this 12-week trial in Asian Indian adults. The observed increase in adiponectin and decrease in TNF-alpha concentrations associated with almond intake indicates that almonds may help reduce cardiometabolic risk in overweight and obese Asian Indian adults.

BBT04

ESTIMATION OF SERUM GROWTH DIFFERENTIATION FACTOR 15CONCENTRATION IN PATIENTS WITH DIABETES MELLITUS: A STEPAHEAD OR BACK

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Keywords

Genetics of type 2 diabetes

Background and Aims

Diabetes mellitus is a significant public health issue, with increasing cases and complications associated with long-term disease. Growth differentiation factor-15 (GDF-15) has emerged as a promising biomarker for various metabolic conditions, including diabetes. GDF-15 is associated with insulin resistance, inflammation, and cardiovascular risks, making it a potential marker for disease severity and prognosis in diabetic patients but its role as potential marker is yet to be established. This study aims to estimate serum GDF-15concentration in patients with diabetes mellitus, assessing its potential as a novel biomarker for identifying complications in different clinical setups, including Type 2 diabetes (T2DM), impaired glucose tolerance(IGT), and gestational diabetes mellitus (GDM).

Materials and methods

A total of 90 subjects were enrolled, comprising four groups: 20 T2DM patients without complications, 20T2DM patients with complications, 20 prediabetic patients (IGT), and 20 patients with GDM, along with 10healthy age-matched controls. Serum GDF-15 levels were measured using ELISA. Demographic, clinical, and biochemical parameters were collected, and the results were analyzed using appropriate statistical methods.

Results

Serum GDF-15 levels were significantly higher in T2DM patients with higher BMI and history of MI but there was no significant difference

in all 5 different groups. GDF-15 levels were also elevated in GDM patients, indicating its potential role in identifying metabolic stress during pregnancy. In contrast to previous studies GDF 15 showed no significant relation with HbA1c, complications of diabetes and other markers of metabolic dysfunction. GDF 15 levels decrease with metformin, DPP-4 inhibitors, and SGLT-2 inhibitors, indicating reduced pancreatic stress and improved glucose metabolism, while they increase with sulfonylureas and insulin therapy.

Conclusion

GDF-15 has earlier shown potential as a biomarker for assessing disease severity in diabetic patients but thisstudy presents before us a different perspective and needs to ponder upon its utility as noval marker for early identification of complications. Further studies are warranted to explore its clinical utility in routine diabetes care.

BBT05

Impact of High Fibre Diet in Type 2 Diabetes Patients on Hypertension and Cardiovascular Risk markers in Indian Population.

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Keywords

• Nutrition and diet

Background and Aims

Dietary factors are associated with severity of coronary artery disease. Low intake of protein, fiber, vitamins, minerals and high intake of carbohydrate and fat was associated with higher probability of having severe CAD. Increase consumption of dietary fiber is widely recommended to improve health, but knowledge of relation between high fiber diet and cardiovascular disease risk factors in limited. Comprehensive evaluationof etiologic effects of dietary factors on cardiometabolic outcomes, their quantitative effects, and and corresponding optimal intakes are not well-established.

Aim-To investigate whether diet changes in diabetes patients can control hypertension and associated cardiovascular risk factors over a span of 2 years.

Materials and methods

Known hypertensives with T2DM (n=200) with BMI > 26kg/m2. Mean age was 49.8 ±12.1 years. Patients with diabetic retinopathy, diabetic nephropathy, CAD are excluded. The planned intervention was the low fat and high fiber diet. All participants received behavioral and nutritional education, including recommendations for increasing the consumption of high fiber vegetables, fruits, cereals and legumes. baPWV measured along with lipid profile, FBS. A1c, Lipid profile, ba PWV, BMI, waist-hip ratio(WHR) monitored at start, after 3monthly

Results

High fiber and low- Glycemic Index diet intake were associated with significant improvement of baPWV,($p<0.0001$) and hypertension, with both SBP ($p=0.0068$), DBP ($p<0.0001$). SC($p<0.0001$), LDL-C($p<0.0001$), WHR ($p<0.0001$) which are strong cardiovascular risk markers, also improved significantly. All diabetic demonstrated improvement in A1c ($p=0.0001$) and FBS($p=0.0017$).High fiber diet is inversely related with several cardiovascular factors in the study cardiovascular factors its protective role against cardiovascular disease and recommends for its increase consumption

Conclusion

High fiber diet has strong positive corroboration for the cardiovascular risk reduction in patients with hypertension and Type 2 diabetes.

MMS AHUJA SYMPOSIUM

MMS01

Association of biomarkers of vascular calcification with diabetes related atherosclerotic vascular disease

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Keywords

• Cardiac complications

Background and Aims

Cardiovascular disease(CVD) remains a leading cause of mortality among patients with T2DM, in which a high prevalence of vascular calcification is a significant contributing risk factor. Different factors involved in vascular calcification process can serve as potential early biomarkers for vascular calcification.

Materials and methods

We prospectively enrolled Type 2 diabetes mellitus patients, aged 40-65 years , without clinical features of coronary artery disease and estimated biomarkers of vascular calcification viz. S. bone specific Alkalinephosphatase , Asprosin, Prolactin and FGF23, along with calculation of ASCVD risk scores. We also measured biochemical parameters related to glycemic and metabolic profiles, and screened all patients for diabetes-related microvascular complications. Coronary artery calcium score was measured according to Agaston with a 64 slice multidetector CT system for all patients. Spearman's correlation coefficients were calculated between CAC score and levels of biomarkers of vascular calcification.

Results

We found that FGF 23 levels were elevated in over 90% of cases who had coronary artery calcification, while other vascular biomarkers were in the normal range in most of patients .Those patients with highest quartiles of FGF 23 also had significantly higher CAC score categories (p value= 0.025) while other biomarkers asprosin ,bone specific alkaline phosphatase and prolactin didn't show such association .

Conclusion

FGF23 is significantly associated with CAC score in patients with Type 2 Diabetes mellitus and can serve as a simple and reliable biomarker of sub clinical atherosclerosis in Type 2 Diabetes mellitus patients.

MMS02

Chromogranin A : a new frontier in diabetes mellitus

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Keywords
• Clinical immunology • Nephropathy • Other complications

Background and Aims
Diabetes mellitus is a complex metabolic disorder affecting millions worldwide. Chromogranin A (CgA), aprotein co-released with insulin from pancreatic beta cells, has emerged as a potential biomarker for various diabetic complications. This study aims to estimate serum CgA concentrations in patients with diabetes mellitus and evaluate its role as a biomarker for diabetes and its complications.
The primary objective was to assess the diagnostic and prognostic potential of CgA in diabetes, especially in Type 2 Diabetes Mellitus (T2DM) and Gestational Diabetes Mellitus (GDM), while exploring its association with complications like diabetic nephropathy.
Materials and methods
This study included 90 participants divided into five groups: T2DM without complications, T2DM with complications, pre-diabetes, GDM, and healthy controls. Serum CgA levels were measured using enzyme-linked immunosorbent assay (ELISA). The participants clinical parameters, including HbA1c, kidney function (eGFR), and lipid profile, were evaluated. Statistical analysis, including one-way ANOVA and t-tests, was conducted to identify significant differences across groups and associations between CgA and diabetic complications.
Results
CgA levels were significantly higher in patients with diabetic complications ($p<0.001$) and negatively correlated with eGFR ($R^2=0.3955$), suggesting its role in predicting diabetic kidney disease. There was a direct relationship between proteinuria severity and Chromogranin A levels.
Conclusion
CgA shows potential as a biomarker for early detection and monitoring of diabetic complications. Its correlation with kidney function warrants further investigation to confirm its utility in clinical practice.

MMS03

Predictors of Diabetic Foot Ulcer (DFU)

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Keywords
• Diabetic foot and skin disorders

Background and Aims
Objective-To study the predictive factors and findings of diabetic foot ulcers.
Study Design- Retrospective study.
Place of study- Lumding Divisional Railway Hospital
Duration- February 2019-February 2020
Materials and methods
The record of patients who attended for DFU during the study period was analyzed. The demography, involvement of the areas of foot, complications like neuropathy, nephropathy, retinopathy, peripheral vascularischemia,HbA1c level and their association with DFU/amputation were studied The demographic data included their age, gender and BMI. History of hypertension, cardiac disease, smoking, alcohol intake and recent foot trauma were noted. Local examination of both lower limbs were done with special attention to palpation of the pulses and signs of inflammation around the ulcer. The location of the ulcer(s) was recorded at the areas of both feet as individual toes, forefoot and the heel.
Results
Total patients-83, 43 males and 40 females. Age: 28 to 72 years. The mean BMI was 31.51±3.9 (Kg/m2). 69non-smokers. No alcohol consumption. The most common age groups were between 40-49 yrs(40patients) and 50-59yrs(30 patients). ABPI ranges from 0.6 to 1.0. Patients who had amputations had lower ABPI. 26 had more than one area involved with ulcer in the foot. Right big toe 27, plantar surface of right forefoot 15, left big toe 9, left 2nd toe 11 and plantar surface of left forefoot 14 were the most frequent areasinvolved.43 patients had wet, 38 dry and 2 mixed type of ulcers. 48 ulcers were infected with variable microorganisms including Staphy.aureus in 31, E coli in 6, Pseudomonas aeruginosa in 4, mixed infection in4. 65 pts were taking OHA, 10 insulin and 8 taking both OHA and insulin. The HBA1c values were between6 – 12%. 54 patients had some procedure of amputation. The period from the diagnosis of DM to the amputation ranged from 1 to 66 months. 40 patients were suffering from DM- neuropathy, 22 retinopathy, 9nephropathy, and 1 cataract. The relation between HbA1c and DM-associated complications and amputation were found significant ($p = 0.01$).
Conclusion
DFU most commonly affects big toes and planter surface of forefeet. Role of limb ischemia as shown by ABPI and continuous monitoring and control of DM play a pivotal role in prevention of DFU. Staphylococcus aureus is the most common infecting microorganism.

MMS04

Urinary Proteome Signature in Biopsy Proven Diabetic Kidney Disease: A Mass Spectrometry Based Approach.

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Keywords
• Nephropathy

Background and Aims
Renal involvement in type 2 diabetes mellitus (T2DM) can be due to diabetes per se Diabetic Kidney Disease (DKD) and other than diabetes Non-Diabetic Kidney Disease(NDKD). Currently available clinical, biochemical, and radiological parameters fail to differentiate DKD from NDKD, making renal biopsy the gold standard for diagnosis. Animal/ cell model studies have suggested unique urinary proteome profile in DKD, Human data is sparse, we wish to explore whether the same holds true for humans.
To determine differential expression of urinary proteins in biopsy proven kidney disease in subjects with T2DM.
Materials and methods
We recruited patients with renal involvement (estimated Glomerular Filtration Rate30-60 ml/min/m² and/or Urine Albumin Creatinine Ratio >300 mg/g or proteinuria >500mg/24 hr) and subjected to renal biopsy, classifying them as DKD and NDKD based on Renal Pathology Society/International Society of Nephrology (RPS/ISN) criteria. T2DM without kidney disease were recruited as control. We collected 5 ml of second-pass morning urine samples for protein isolation. Proteins were processed for Liquid Chromatography- Tandem Mass Spectroscopy and

analysed in proteome discoverer and searched against Uniprot database to identify the proteins. Differential peptide counts were considered for analysis. Fold changes were calculated to find difference between the groups.

Results

Total 32 subjects with T2DM with kidney disease were recruited amongst whom 24subjects had DKD and 8 subjects had NDKD. 8 subjects with T2DM without renal involvement were recruited. We identified 48 proteins common in T2DM and kidney diseases, 13 of them were showing significant differences in kidney disease with T2DMcompared to T2DM. After excluding the proteins associated with NDKD, we found 3proteins were significantly upregulated ($p < 0.05$) and 2 proteins were significantly downregulated ($p < 0.05$) in DKD compared to NDKD and T2DM.

Conclusion

Biopsy proven DKD has unique urinary proteome profile which needs to be tested in future prospective studies for clinical implementation.

MMS05

Audit of hypertension in Type 2 Diabetes Mellitus patients

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Keywords

• Hypertension • Cardiac complications

Background and Aims

Patients with T2DM have higher prevalence of hypertension (HTN) & experience a more aggressive disease course. The presence of HTN increases cardiovascular morbidity & raises the risk of microvascular complications such as diabetic nephropathy & neuropathy. Managing & controlling HTN in T2DM patients requires extra effort and attention compared to the non-diabetic population. HTN in T2DM patients necessitates detailed analysis of clinical parameters, ABPM studies, renal profiles, &cardiac evaluation. Most T2DM patients are monitored through clinic-based blood pressure (BP) measurements, which do not account for daily BP variability. Studies have shown that office BP measurement is not ideal for representing24-hour BP compared to ambulatory blood pressure monitoring (ABPM). Aims To study the profile of HTN as a comorbidity associated with Type 2 DM. To analyze HTN-related parameters (ABPM, renal parameters, cardio metabolic, and fundus examination) in the T2DM.

Materials and methods

This prospective observational study was conducted over 1 year, during which 93 patients were recruited. Patients with type 2 DM and HTN aged 18-65 years were included. HTN parameters reviewed in our study include ABPM, fundus examination, renal (urine albumin creatinine ratio [UACR], serum creatinine), and metabolic parameters (fasting blood glucose, postprandial blood glucose, HbA1C, and lipid profile).

Results

In our study, the mean age was 56.53 ± 8.79 years, with a male-to-female ratio of 41:52, the mean BMI was29.62 ± 5.48 kg/m², & the mean duration of diabetes was 10.2 ± 8.1 years. Most of the patients (72%) had uncontrolled hypertension, with 32% having Grade 1 HTN, 65% having Grade II HTN, & 3 patients having Grade III HTN. Diabetic retinopathy was present in 7.5% of participants (mild NPDR: 4.3%, moderate NPDR: 2.2%, and PDR: 1.1%). Urine microalbuminuria >30 mg/gm of creatinine was found in 29 patients, & eGFR <60ml/min/1.73 m² was observed in 17 patients. Among all patients, 15 had a previous history of CAD, and 76 were on statin therapy. The mean ASCVD Optimal Risk Score was 3.86 ± 3.34, & the mean 10-year ASCVD Risk Score was 13.17± 9.95.For the 10-Year ASCVD Risk Score, 22 patients (40.7%) were at intermediate risk, and 12 patients (22.2%)were at high risk. On ECG, left ventricular hypertrophy (LVH) was present in 11 participants. On 2D ECHO, 22 (38.6%) participants had no diastolic dysfunction, 30 (52.6%) had Grade 1 diastolic dysfunction, & 5 (8.8%) had Grade 2 diastolic dysfunction. A detailed analysis of ABPM parameters is shown in Table 1.High mean BP (uncontrolled HTN) was seen in 53.8% of patients, with a higher prevalence of nocturnal hypertension (67.7%) compared to daytime hypertension (37.6%) among the study participants.

Most participants were non-dippers (58.1%), and normal dipping was observed in only 20% of participants. An exaggerated morning surge was seen in 8 participants.

Conclusion

Overall, audit of HTN in T2DM patients reveals preponderance of obesity, clinically high ASCVD optimal risk score, uncontrolled moderate to severe hypertension in most patients. ABPM parameters reveal high BP variability, elevated nocturnal BP, & non-dipping suggesting high-risk hypertension in most patients.

ORAL Presentations

O01

Role of Biomarkers in Diabetic Neuropathy

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Keywords

• Inflammation in type 2 diabetes • Neuropathy: autonomic, incl. erectile dysfunction • Pathogenicmechanisms / complications

Background and Aims

Diabetic neuropathy (DN) is a prevalent complication of diabetes mellitus characterized by nerve disorders such as pain and numbness. This condition is largely driven by chronic hyperglycemia and oxidative stress. Key biomarkers include Dipeptidyl peptidase-4 (DPP4), which can exacerbate neuroinflammation, and Sirtuin 1 (SIRT1), linked to metabolic regulation. Other critical markers, such as ceruloplasmin and Hemeoxygenase-1 (HO-1), are associated with oxidative stress and neuroprotection. Understanding these biomarkers is essential for early detection and effective management of diabetic neuropathy and its progression.

Materials and methods

This review synthesizes findings from peer-reviewed studies sourced from databases such as PubMed and Web of Science following the PRISMA format for structured reporting.

Results

Current insights into the pathophysiology of diabetic neuropathy and the role of its biomarkers highlight gaps in effective causative treatments. While improving glucose levels, blood pressure, and pain management can help slow diabetic neuropathy progression, greater emphasis on addressing potential risk factors and biomarkers is essential to prevent further disease advancement.

Conclusion

Numerous biomarkers linked to inflammation and oxidative stress, including MCP-1, NOX 1 & 4, SIRT1,and various miRNAs, are pivotal in the pathogenesis of diabetic neuropathy. Understanding these biomarkers is crucial for developing targeted therapies and management strategies. Moreover, diabetic neuropathy affects the autonomic nervous system, leading to complications like bladder dysfunction and

gastrointestinal issues, highlighting the need for ongoing research to improve treatment outcomes and enhance the quality of life for affected individuals.

O02

Grading of fatty liver and its relationship with anthropometric and biochemical parameters among people with type 2 diabetes

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Keywords
• Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) is the new term for Non-Alcoholic Fatty Liver Disease (NAFLD) which is a common liver disorder characterised by excessive accumulation offat in the liver, inflammation and fibrosis, which may eventually lead to even cirrhosis. The strong association between MASLD and the risk factors influencing the people with diabetes are unclear. The aim ofthis study was to assess the grading of fatty liver and to evaluate its relationship with anthropometric and biochemical parameters among people with type 2 diabetes.
Materials and methods
A total of 1022 participants were screened from June 2023 to August 2024 at a tertiary centre for diabetes, Chennai who had undergone ultrasound abdomen for the assessment of fatty liver. Those with the habit of alcohol consumption, and with liver cirrhosis or hepatocellular carcinoma were excluded. The remaining 286participants' (M:F=139:147) data was included for analysis. Participants were divided into two groups: Group 1 (n=201) with MASLD and Group 2 (n=86) without MASLD. Participants in Group 1 were sub-divided into 3 categories: Grade 1, Grade 2 and Grade 3 based on . Demographic, anthropometric, hemodynamic, biochemical details and other diabetic complications of all the participants were recorded.
Results
70.2% of the participants had the presence of MASLD. 66.7% of males and 33.3 % of females had MASLD which indicates the high prevalence of MASLD among men. The mean age and duration of diabetes among people with MASLD was 55 and 11 years respectively. Among the sub groups, the proportion of participants with grades 1,2 and 3 were 23%, 60% and 17% respectively. The mean BMI [(29.5 vs 27.6); p=0.006], mean total cholesterol [(170 vs 133);p =0.001], mean SGPT[(36 vs 25); p=0.01]were significantly higher in group1 when compared to group 2. Among the sub-groups, the mean BMI (27.6 vs 29.6 vs 31.1), mean LDL (38vs 84 vs 93) and mean total cholesterol (135 vs167 vs 185);p<0.001for all], mean SGPT (24.8 vs 35.8 vs40.2);p=0.02 are significantly higher with the increasing grades of fatty liver. The mean BMI [(31 vs27.6);p=0.01], mean SGOT [(30 vs 23); p=0.003],mean total cholesterol [(185 vs 135); p=0.001] and mean triglycerides [(230 vs 163; p=0.04] increased significantly in grade 3 as compared to grade 1 fatty liver. Around 90 % of them were obese in grade 3 fatty liver. The mean HbA1c (8.7 vs 8.9 vs 9.1) and SGOT (23.1vs 28.7 vs 29.5) and mean triglycerides (162 vs 204 vs 230) also increased with advancing grades of fatty liver but there was no statistically significant difference between the groups.
Conclusion
Our study findings highlight that a large proportion of people with type 2 diabetes had MASLD with male predominance. Those with grade 3 fatty liver were obese and also had elevated liver enzymes, abnormal lipid levels and poor glycemic control. Early screening for the presence of fatty liver may help to prevent complications.

O03

Efficacy and Safety of Triple Hormone Receptor Agonist Retatrutide for the Management of Obesity: A Systematic Review and Meta-Analysis

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Keywords
Prevention of type 2 diabetes • Weight regulation and obesity • Incretin based therapies 43 Novel agents
Background and Aims
Retatrutide is a novel triple hormone receptor agonist which has shown great promise in tackling obesity in preliminary trials. We did this systematic review and meta-analysis to pool the results of all available trials and ascertain its safety and efficacy in the treatment of obesity.
Materials and methods
A literature search was conducted in Pubmed, Cochrane Central and Embase using appropriate searchterms and trials were identified which reported the safety and efficacy of Retatrutide. Data was pooled using mean differences for continuous variables and risk ratios for the safety profile in RStudio. The study protocol is registered with PROSPERO under registration number CRD42024566153.
Results
After the initial search four randomized control trials were included in the analysis which comparedthe safety and efficacy of Retatrutide versus placebo. Retatrutide showed a dose dependent relationship with the 12 mg dose causing the maximum reductions across all the outcomes considered. The safety profile of Retatrutide was found to be comparable to the control group.
Conclusion
In conclusion our analysis found Retatrutide to be clinically and statistically better than placebo in the various studies outcomes. We eagerly await the conduction of further trials for more robust and substantial results.

O04

Efficacy of Triple FDC of Dapagliflozin, Sitagliptin & Metformin in Newly Diagnosed Type 2 Diabetes

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Keywords
• SGLT inhibitors

Background and Aims
The management of type 2 diabetes mellitus (T2DM) often necessitates the use of combination therapies to achieve optimal glycemic

control. This study focuses on the glycemic and extra glycemic benefits of a fixed-dose combination (FDC) of Sitagliptin (SITA), Dapagliflozin (DAPA), and Metformin (MET) in newly diagnosed patients with T2DM inadequately controlled with life style modification. The objective was to see the changes in glycemic control and extra glycemic benefits compared to baseline measurements.

Materials and methods

Adults with T2DM (M/F: 104/ 84) with a baseline HbA1c of 8% to 10% and diagnosed within one year participated in this 16 week study. They were randomly assigned to receive FDC of SItaDapaMet OD (n=98) or placebo (n=90) OD. The primary endpoint was change in HbA1c from baseline. The secondary endpoints were changes in FPG, PPG, body weight and QoL (Assessed using the EQ-5D scale).

Results

At enrollment, parameters in both groups were comparable and non-significant. The triple FDC of SitaDapaMet significantly improved glycemic control as evidenced by substantial reductions in HbA1c, FPG, and PPG levels from baseline. Additionally, extra glycemic benefits were observed with weight loss and improved quality of life metrics, indicating that this combination therapy is effective for managing newly diagnosed individuals with T2DM. The change in HbA1c (-1.8 vs -0.4%), FPG (-60mg/dl vs -12mg/dl), PPG(-116mg/dl vs -39mg/dl) and body weight (-3.9kg vs -0.4kg) were numerically higher and statistically significant in SitaDapaMet group compared to the placebo. QoL improvement score had a better outcome with FDC than placebo group (+15 vs +5).

Conclusion

The triple fixed-dose combination therapy of SitaDapaMet demonstrates significant glycemic and extra glycemic benefits for newly diagnosed T2DM patients, making it a promising option for managing this condition effectively. As the FDC improves the cardiovascular risk factors like glucose load and weight, this can be helpful in reducing morbidity and mortality in persons with T2DM. The quality of life improvement suggests that the patients experienced a better overall well-being during treatment with SitaDapaMet FDC.

O05

MicroRNA Profiling in T2D-Associated Kidney Disease: A Sequencing-Based Approach

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Keywords

• Nephropathy

Background and Aims

To identify deregulated miRNAs in urinary cells amongst healthy, T2DM without kidney disease, and T2DMwith kidney disease.

Materials and methods

We recruited T2DM subjects with renal involvement (Estimated glomerular filtration rate 30-60ml/min/m2and/or urine albumin creatinine ratio >300mg/g) classified as DKD or NDKD based on biopsy by the guideline of International Society of Nephrology/Renal Pathology Society (ISN/RPS) classification. Patients with T2DM without kidney disease (T2DM control) and patients without diabetes and kidney disease(Healthy control) were recruited. The second morning urine sample in a fasting state was collected. Small RNA was isolated from urine and small RNA sequencing was performed by NGS (Next generation sequencing) method.

Results

59 subjects with T2DM & kidney disease were recruited amongst whom 40 subjects had DKD, 19 subjects had NDKD and we have recruited 30 T2DM and 20 Healthy individuals. RPS III was the commonest histopathological classification among DKD patients. Immunoglobulin A nephropathy (IgA) was predominant amongst NDKD. 9 small RNAs were significantly downregulated between DKD and T2DM,and among them only 1 miRNA was significantly downregulated ($p<0.0001$)in DKD from control group.

Conclusion

Some miRNAs are differentially expressed in DKD, which needs validation in future studies, to determine its utility to distinguish DKD from NDKD.

O06

Impact of Type 2 Diabetes Mellitus on Outcomes in Patients with Carbapenem Resistant Gram Negative Bacteremia: A Retrospective Study

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Keywords

• Other complications

Background and Aims

Background: Carbapenem Resistant Gram-Negative Infections pose significant mortality rates and serious health threats. Patients with Type 2 Diabetes Mellitus(T2DM) are often assumed to have poorer outcomes due to immune dysfunction. This study seeks to explore the correlation between Type 2 Diabetes Mellitus and clinical outcomes in patients with Carbapenem Resistant Gram-Negative Bacteremia (CR-GNB).

Aim: To assess the association between T2DM and clinical outcomes (discharge, DAMA, death) in patients diagnosed with carbapenem resistant gram negative bacteremia

Materials and methods

This retrospective study was conducted on 80 patients (wards and ICU) diagnosed with CR-GNB. Of the patients 36 (45%) had T2DM and 44 (55%) did not. Clinical outcomes (discharge, DAMA, death) were compared between diabetic and non-diabetic patients. A chi-square test was used to evaluate statistical significance.

Results

1.Among T2DM patients, 44.4 % were discharged, 25 % left against medical advice (DAMA) and 30.6 %died.

2.Among non-diabetic patients, 27.3 % were discharged, 11.4 % left against medical advice and 61.4 % died.

3. The chi-square test revealed a statistically significant association between T2DM and outcomes ($p=0.021$),with non-diabetic patients experiencing significant higher mortality

Conclusion

Contrary to common assumptions, non-diabetic patients exhibited a higher mortality rate than diabetic patients in cases of carbapenem resistant gram negative bacteremia. These findings suggest that further research is needed to understand the underlying mechanisms influencing these outcomes and to explore whether different clinical management strategies for diabetic patients may play a role.

O07

Assessment of dementia using mini-cog cognitive screening tool among peoplewith type 2 diabetes - a study from South India

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Keywords
• Psychological aspects • Other complications

Background and Aims
Background and Aim: Dementia is a neurocognitive disorder that is characterized by a decline in the brain's functions associated with physiological changes in an individual's brain. Clinical psychologists identify the various symptoms, test the cognitive performance of an individual through formal testing methods and symptoms and provide equivalent clinical evaluations of the same. However, diabetes increases the risk of dementia. There are limited studies available in this context from India. Therefore, the aim of this study was to assess the prevalence of dementia using the mincog cognitive screening tool among individuals with type 2diabetes and to evaluate the gender differences as well.
Materials and methods
Materials and Methods: A total of 204 participants (males 106, females 98) with type 2 diabetes were selected according to inclusion and exclusion criteria from a tertiary care centre for diabetes in Chennai between January to March 2024. The Mini-cog screening tool was administered to all the participants. A score of 0-2 indicates severe cognitive impairment while a score of 3-5 indicates mild to moderate impairment. Anthropometric, clinical and biochemical details were recorded.
Results
Results: It was noted that 22.5% had mild impairment and 20.6% had severe impairment with no significant gender differences noted in mild impairment. However, women had severe cognitive impairment with 63.4%as compared to men with 36.6 %(P = 0.04). The age, blood pressure, duration of diabetes and treatment regimens were similar in both genders. Educational status revealed that 34.9% of men completed graduation while it was 16.3% in women (p=0.002). The mean BMI was significantly higher in women than men (28.7 ±5.3 vs. 26.7 ± 3.9; p=0.003). Around 60% of them were obese in both genders. The glycemic control (HbA1c> 10%) was poor among those with severe cognitive impairment as compared to normal. (19% vs. 7.8%) (P =0.04).The presence of co-morbid conditions such as hypertension and dyslipidemia were significantly higher in individuals with severe cognitive impairment than normal (61.9 vs. 38.8; p=0.009). As expected, cognitive impairment was severe among those aged 70 years and above. Obese participants had higher impairment both mild and severe as compared to normal (76% vs. 62.9%) but it was not statistically significant. The psychological wellbeing of women was lower compared to men.
Conclusion
Conclusion: The study findings highlight that 43% of individuals with type 2 diabetes have some form of cognitive impairment. An earlier diagnosis or intervention might help them be more aware of the various treatment options available for them.

O08

Consensus on the Clinical Use of Insulin Aspart in Hospital Settings: Insights from the INSU-Q Survey on Rapid-Acting Insulin Preferences

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Keywords
• Insulin therapy

Background and Aims
The INSU-Q Survey explored the use of rapid-acting insulin analogs, particularly Insulin As part, versus regular human insulin (RHI) in ICU and non-ICU settings. It aimed to establish a consensus on insulin management, focusing on onset, and patient outcomes.
Materials and methods
A virtual meeting (n=12) and an in-person survey (n=89) with leading diabetes specialists in India were conducted. Participants rated 18 statements on a 5-point Likert scale. Statistical analysis was done using GraphPad 10.3.0, with consensus defined as a weighted score above 100.
Results
The results indicate strong support for the effectiveness and convenience of Insulin As part. 78% strongly agreed IV insulin is preferred for hyperglycemia due to faster onset and better control (Score: 120.4). 88.6%strongly agreed Insulin As part has a faster onset than RHI (Score: 121.1). 76.3% strongly agreed its quicker onset influences prescription in acute care (Score: 120.7). 65.7% strongly agreed As part is more effective than RHI for consistent glucose control (Score: 118.2). 76.1% strongly agreed As part's faster onset and shorter duration improve mealtime flexibility (Score: 119.3). 61.6% strongly agreed IV As part is as safe as RHI post-surgery, with advantages during transitions (Score: 115.3). 59.6% strongly agreed As part facilitates smooth IV to SC transition, reducing wastage and ensuring consistency (Score: 111.7). 69.7% strongly agreed rapid-acting insulins like As part are effective for quick glucose lowering (Score: 114.0). 63.7%strongly agreed As part is more convenient and effective than RHI in hospitals (Score: 112.2). The mean response scores were: Agree: 36±7.3 (95% CI 32 to 40), Strongly agree: 47±29 (95% CI 32 to 61), p<0.0001.
Conclusion
The INSU-Q Survey findings highlight a strong preference for Insulin As part over regular human insulin in both ICU and non-ICU settings due to its faster onset, improved glycemic control, and greater flexibility inpatient management. Insulin As part is favored for better clinical outcomes and enhanced patient care.

O09

Machine Learning for Predicting Nocturnal Hypoglycemia Using Continuous Glucose Monitoring Data

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Keywords

Background and Aims
Continuous Glucose Monitoring (CGM) systems generate extensive data that can potentially improve diabetes management through predictive analytics. Nocturnal hypoglycemia remains a significant concern for people with diabetes, often going undetected and untreated.
To develop and validate a machine learning model for predicting nocturnal hypoglycemia events in patients with diabetes using CGM data.
Materials and methods
We analyzed 1,072 patient-days of CGM data from 134 patients with type 1 and type 2 diabetes. The dataset included nighttime glucose trends, variability metrics, and preceding daytime patterns. We developed a hybrid model combining gradient boosting and recurrent neural networks to predict nocturnal hypoglycemia 2-4 hours in advance. The model was trained on 80% of the data and validated on the remaining 20%.
Results
Our model achieved a prediction accuracy of 87% (95% CI: 84.2-89.8%) for nocturnal hypoglycemia events. Sensitivity and specificity were 83% and 89%, respectively. The algorithm demonstrated superior performance in identifying high-risk patterns among patients with elevated glucose variability (coefficient of variation >36%). The area under the receiver operating characteristic curve was 0.91 (95% CI: 0.88-0.94).
Conclusion
This novel machine learning approach shows promise in predicting nocturnal hypoglycemia events with high accuracy. Implementation of this predictive tool could significantly enhance nocturnal hypoglycemia prevention strategies, potentially reducing adverse events and improving quality of life for people with diabetes. Future studies should focus on real-time application and integration with insulin delivery systems

O10

Relationship of hormonal correlates of adolescent obesity with glycemic profile, insulin resistance, and other cardiometabolic risk factors

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Keywords
Prediction of type 2 diabetes • Insulin sensitivity and resistance

Background and Aims
Obesity is a major risk factor for cardiovascular diseases and metabolic disorders. This cross-sectional study explored the relationship between specific hormones, and body composition measures with cardiometabolic (CM) risk factors.
Materials and methods
Two groups were examined: prepubertal obese children aged 6 to 11 years and post-pubertal obese adolescents aged 15 to 18 years, as defined by the Indian Academy of Pediatrics. We assessed the correlations between various hormones—including prolactin, cortisol, estradiol, testosterone, insulin-like growth factor-1(IGF-1), and leptin with fasting plasma glucose (FPG), HbA1c, uric acid, lipid profile, and blood pressure(BP) and insulin resistance (IR) markers, including Homeostatic Model Assessment for insulin resistance(HOMA-IR) and adiponectin. Additionally, we explored the relationships between anthropometric measures (BMI, skinfold thickness [SFT], and waist circumference [WC]) and body composition parameters(percentage body fat, fat-free mass index, visceral fat level, and truncal fat percentage) with CM risk factors and IR markers.
Results
In post-pubertal obese adolescents, testosterone was negatively correlated with HOMA-IR ($r = -0.382$, $p = 0.031$) and adiponectin ($r = -0.405$, $p = 0.022$), while leptin was positively associated with HbA1c ($r = 0.360$, $p = 0.043$) and HOMA-IR ($r = 0.519$, $p = 0.002$). Prolactin and estradiol were positively associated with other cardiometabolic (CM) risk factors, while testosterone and IGF-1 exhibited negative correlations. Among prepubertal obese children, prolactin correlated positively with HOMA-IR ($r = 0.394$, $p = 0.026$), cortisol with fasting plasma glucose ($r = 0.473$, $p = 0.006$), and leptin with HOMA-IR ($r = 0.397$, $p = 0.024$), though other hormone correlations with CM risk factors were limited. Across both groups, BMI, WC, and SFT were positively correlated with glycemic profile, IR markers, and CM risk factors. However, older adolescents demonstrated stronger and more consistent positive correlations (r values ranging from 0.386 to 0.775, $p<0.05$), while prepubertal obese children displayed fewer and weaker associations (maximum $r= 0.391$, $p=0.027$). Furthermore, post-pubertal obese adolescents displayed significant correlations between body fat measures and metabolic markers (r values ranging from 0.380 to 0.711, $p< 0.05$), whereas such correlations were less prominent in prepubertal obese children (r values ranging from 0.382 to 0.419, $p< 0.05$).
Conclusion
These findings highlight the significant association of hormonal and body composition factors on glycemic profile, insulin resistance, and other cardiometabolic risk factors in obese youth.

O11

Association of serm magnesium levels with glycemic status and complications of type 2 diabetes mellitus

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Keywords
Environmental factors (viruses, nutrients, toxins) • Retinopathy • Other complications

Background and Aims
Magnesium ions play an integral role in glucose and insulin physiology. Magnesium is a cofactor for glucose transport in cell membranes and enzymes involved in carbohydrate oxidation. It modulates insulin action through tyrosine receptors. Their deficiency has been associated with poor glycemic control and complications in the diabetic population. In present study our aim is to find association of serum magnesium levels with glycemic status and complications of type 2 diabetes mellitus.
Materials and methods
Cross sectional study conducted in vardhaman mahavir medical college and safdarjung hospital over one andhalf year on 88 type 2 diabetic patients with duration of diabetes more than 5 years.
Results
Among the patients, 56 (63.6)%were men and 32 (36.4)%were women. Mean age was 53.75 years and the mean duration of diabetes was 10.27 ± 3.39 years. Patients were divided into two subgroups: those with controlled diabetes (HbA1c < 7%) and those with uncontrolled diabetes (HbA1c > 7%), and their respective mean serum magnesium

levels were compared.25% of participants had HbA1c < 7% (mean magnesium 1.77mg/dL), and 75% had HbA1c ≥ 7% (mean 1.63 mg/dL), with a significant difference ($p = 0.001$, $r = 0.36$).
For albuminuria: 63.6% had UACR < 30 mg/g (mean magnesium 1.68 mg/dL), 18.2% had UACR 30-300mg/g (mean 1.65 mg/dL), and 18.2% had UACR > 300 mg/g (mean 1.65 mg/dL), with no significant difference ($p = 0.713$, $\tau = 0.04$).
For retinopathy: the present group had a mean magnesium of 1.61 mg/dL, and the absent group had 1.70mg/dL, showing a significant difference ($p = 0.019$, $r = 0.26$).
For peripheral neuropathy: the present group had a mean magnesium of 1.57 mg/dL, and the absent group had 1.69 mg/dL, also showing a significant difference ($p = 0.016$, $r = 0.3$).
Conclusion
Hypomagnesemia patients are having poor glycemic control and a higher occurrence of retinopathy, and neuropathy. A robust negative correlation exists between serum magnesium and HbA1C levels. The association between serum magnesium and retinopathy and neuropathy is moderate, whereas nephropathy shows little/no level of association.

O12

Assessment of Coronary Artery Calcium Scores in Asymptomatic patients with Type 2 Diabetes Mellitus and its association with ASCVD risk scores

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Keywords
• Cardiac complications

Background and Aims
People with Type 2 diabetes mellitus (T2 DM) show an increased risk of cardiovascular events. Type 2 DMsets off a cascade of metabolic derangements, making individuals more susceptible not only to subclinical atherosclerosis but also to atherosclerotic cardiovascular disease (ASCVD). In addition, Indians have a higher risk of ASCVD and a higher mortality rate from ischemic heart disease as compared with other racial or ethnic groups. There are very few Indian studies which have evaluated Coronary artery Calcium (CAC)scores in Indian patients with type 2 DM. CAC score measured by multi-detector computerized tomography reflects the cumulative exposure to cardiovascular risk factors over the lifetime, particularly in patients withT2 DM.
Materials and methods
We prospectively enrolled Type 2 diabetes mellitus Indian patients , aged 40-65 years , without clinical features of coronary artery disease. Coronary artery calcium score was measured according to Agaston with a64 slice multi detector CT system for all patients. We also measured biochemical parameters related to glycemic and metabolic profiles, and screened all patients for diabetes-related microvascular complications along with calculation of ASCVD risk scores.
Results
Approximately 40 percentage of the study cohort demonstrated positive CAC scores, indicating a significant burden of subclinical atherosclerosis in this high-risk population. Mean CAC score was 50.85, mean10 year ASCVD risk score of study population was 11.76 and 33.3 percentage of patients who had borderline or intermediate scores could be reclassified as high risk. Older age (p value =0.006), longer diabetes duration (p value=0.018) and lower fasting C-peptide levels (p value=0.001) were notably associated with positive CAC scores, suggesting that these factors may contribute to an increased risk of vascular calcification.
Conclusion
A substantial proportion of asymptomatic Indian patients with Type 2 diabetes mellitus exhibit positive CAC scores. Positive CAC scores can identify individuals at greater cardiovascular risk among those with borderline and intermediate ASCVD risk.

O13

Correlation between Liver stiffness measurement and biochemical scoring systems like FIB-4 and APRI for assessment of liver fibrosis in Indian patients with MASLD

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Keywords
• Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
BACKGROUND: Easy access to calorie-rich food and a sedentary lifestyle together with the modern epidemics of T2DM and obesity have turned Metabolic dysfunction associated steatotic liver disease(MASLD) into a notable public health problem in India. Liver disease is frequently asymptomatic, making diagnosis challenging. While liver biopsy is the gold standard for diagnosis, liver elastography is being used increasingly to measure liver stiffness as an indicator of fibrosis, still, it is underutilized due to the costs and the lack of availability. Biochemical systems offer a convenient and readily available means to assess fibrosis severity in MASLD, Potentially reducing the reliance on invasive liver biopsies.
This study aimed to determine the correlation of the FIB-4 and the APRI indexes with the liver elastographic findings in Patients with MASLD
Materials and methods
The study was a cross sectional study, conducted over 6 months in Max Hospital, Patparganj in a sample of50 patients with MASLD. Every patient was studied for age, anthropometric variables, laboratory and clinical parameters, and fibroscan. The FIB-4 AND APRI scores were calculated. All the data collected was entered in Microsoft Excel 2010 and analyzed using statistical software r. Two-sided p-values were considered statistically significant at a p-value<0.05. A Chi-square test was done to compare noninvasive fibrosis scoring with liver elastography. Additionally regression analysis and ANOVA were done.
Results
The analysis included samples from 50 patients, 16 (32%) had at least some degree of fibrosis and 34 (68%)had no fibrosis. the correlation between liver stiffness measurement and FIB-4 and APRI were calculatedusing regression analysis and chi-square tests, and both were found to be statistically significant, with pvalues of 0.003 and 0.02 respectively. In ANOVA analysis, FIB-4 explained 38% of the variation in the LSM whereas, APRI explained 1.8%.
Conclusion
Biochemical testing can be used for the early identification of patients at high risk of advanced liver fibrosis and their referral to specialized care.

O14

Regular hospital visits helps to maintain good glycemic control and lipid profile in people with Type 2 Diabetes

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Keywords
• Dyslipidaemia, lipoproteins

Background and Aims
Regular follow-up visits are essential to achieve glycemic control and maintain good lipid profile among people with Type 2 diabetes (T2D). Limited data is available on the relationship between the regularity of hospital follow up and maintenance of glycemic control in people with T2D. The aim of this study was to assess the relationship between regularity of follow up visits and their glycemic outcomes among people withT2D.
Materials and methods
A total of 487 (M:F- 326:161) participants data who visited a tertiary care center for diabetes, Chennai from January 2023 to June 2024 was extracted for this analysis. Participants aged between 25 and 80 years were included and those with missing data were excluded. Participants were divided into two groups based on their hospital visits: Group 1 (n=222) who visited the hospital regularly (3 or more visits) and Group 2 (n=265) participants who visited the hospital irregularly (1 or 2 visits) since 1.5 years. Demographic and biochemical details were recorded for all the participants at baseline and each follow up visit. The average of fasting, postprandial glucose and HbA1c was taken for all the follow-up visits.
Results
The mean age of the participants in group 1 and 2 at baseline were similar [(54±10.9) vs (53±11.6) years] and the mean duration of diabetes in both the groups were also similar [(10±7.3) vs (9±7.5) years]. During follow up in group 1, there was a significant reduction in fasting (181 vs 128), post prandial (281 vs 165) glucose and HbA1c (8.9 vs 7.5); p<0.001 for all. The lipid profile of participants in group 1 showed significant reduction in total cholesterol (169 vs145) and LDL (90 vs 80); p=0.04 for both. The proportion of participants with uncontrolled diabetes (HbA1c ≥ 8%) at baseline in group 1 was 62.2%. It reduced to 41%, 36.5%, 18.5% and 6.3% respectively in the follow up visits. In group 2, there was a reduction in fasting (189 vs 154), post prandial (283 vs 230) glucose and HbA1c (8.7 vs 8.5) with no statistically significant difference.
Conclusion
Our study findings showed that both glycemic control and an improvement in lipid profile was noted in people who came regularly to the hospital than those who were irregular. Thus, it is important to educate and motivate people with type 2 diabetes to visit the hospital regularly to achieve good glycemic control.

O15

A Study on Urinary Neutrophil Gelatinase Associated Lipocalin (NGAL) and Urinary Cystatin C as a predictor of Nephropathy in Adult Prediabetics

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Keywords
• Education • Nephropathy

Background and Aims
Prediabetes is characterized by plasma glucose levels higher than normal, but not enough to be called diabetes which is associated with higher risk for the development of diabetes in the future. Microvascular changes like nephropathy, previously thought to occur after long period of diabetes are now being observed early in the prediabetes stage.
Microalbuminuria, which is the earliest noninvasive marker of Diabetic Nephropathy is not very sensitive and specific marker because remission may occur in 40% of the diabetic subjects.
In our study after measuring Urinary Ngal and Cystatin C in Adult Prediabetics withNormoalbuminuria and Microalbuminuria, we aim to identify if Urinary Ngal and Cystatin Ccan be used as a early marker of Nephropath
Materials and methods
Inpatients and outpatients diagnosed with Prediabetes in the Department of General Medicine KIMS will be taken up for the study after considering the inclusion and exclusion criteria
INCLUSION Criteria
Age >30 years
Pre-Diabetics (ADA Criteria 2022)
EXCLUSION Criteria
Age <30 years
Type 2 Diabetes Mellitus
UTI, Hypertension, Pregnancy, Menstruation and genital infections
Any systemic or local infections
Thyroid, Cerebrovascular or Cardio Vascular Disease.
Intake of ACE inhibitors/ ARBs/ steroids/statin/ nephrotoxicmedications
eGFR < 60ml/min/1.73m2
Present or past history of hemodialysis/peritoneal dialysis
History of Renal Transplant
Routine Investigations as part of workup of Prediabetics and additionally, Urine Albumin Creatinine Ratio(UACR), Urinary NGAL and Urinary Cystatin C were done.
Results
Study is ongoing and interim analysis is already showing significant results.
Normoalbuminuria group
Average: ***AGE*** was 49 years (37-65) ***FBS*** was 110 mg/dl ***OGTT*** was 157 mg/dl ***HbA1c*** was 5.85,***UACR*** being 15.18 mcg/mg Creat (4.65 to 26.82) ***Urinary Cystatin C*** being <0.26mg/ml ***Urinary NGAL***being 48.3ng/ml (1.1 to 84.8)
MICROalbuminuria group
Average: ***AGE*** was 52 years (from 33-75) ***FBS*** was 114 mg/dl ***OGTT*** was 172 mg/dl ***HbA1c*** was6.06 ***UACR*** being 108 mcg/mg Creat (35 to 295) ***Urinary Cystatin C*** being 9.66mg/ml (<0.26 to20.9) ***Urinary NGAL*** being 345.53ng/ml (3.4 to >1500)
Conclusion
Urinary NGAL and Cystatin Care novel biomarkers that may provide an indication of acute renal injury that can be detected before the rise in serum creatinine concentration, which, in future, can turn out to be

better predictors of Nephropathy compared to our conventional Albuminuria. High levels of Urinary NGAL and Cystatin C may suggest a rapid decline of Kidney functions in the near future which also suggests that they need not necessarily be only simple surrogate indexes, but important predictive markers on their own, predicting nephropathy progression beyond the information provided by serum creatinine and other conventional risk factors.

O16

Effect of a 12-week therapeutic yoga module on glycemic control, body composition, and anthropometric measures in individuals with impaired fasting glucose.

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Keywords
Prevention of type 2 diabetes • Weight regulation and obesity • Nutrition and diet • Health care delivery

Background and Aims
Impaired Fasting Glucose (IFG) and elevated glycated hemoglobin (HbA1c) are precursors to type 2 diabetes mellitus (T2DM), accompanied by metabolic irregularities and changes in body composition, such as increased body fat and decreased lean body mass. These factors elevate the risk of diabetes and cardiovascular complications. The Therapeutic Yoga Module (TYM) was designed as a feasible intervention to improve glycemic control, body composition, and anthropometric measures in today's fast-paced lifestyles.
Materials and methods
The TYM incorporated asanas, pranayama, relaxation, and dhyana. Initially validated with a content validity index (CVI) of 0.75, a feasibility study was conducted on 12 individuals, followed by an assessment of 29participants with IFG (intervention group=14, control group=15). Both groups followed standard diet instructions, which included a low-carb, sugar-free diet rich in green vegetables. Body composition markers, including body mass index (BMI), waist-to-hip ratio (WHR), body fat percentage, extracellular water(ECW), and dry lean weight percentage (DLW%), were measured using the Bodystat 1500 model. Additionally, anthropometric measures such as weight, waist circumference (WC), and hip circumference(HC) were recorded. Fasting blood glucose (FBG) and HbA1c levels were monitored over 12 weeks. Non-parametric tests were used for statistical analysis.
Results
The TYM achieved high participant acceptance, with an average attendance of 84.9%. In the intervention group, significant reductions in FBG (from 108.79 mg/dL to 91.00 mg/dL, $p < 0.001$) and HbA1c (from6.00% to 5.73%, $p < 0.001$) were observed. There were also significant improvements in anthropometric measures, including reductions in weight ($p = 0.002$), WC ($p = 0.002$), and HC ($p = 0.005$). Additionally, body composition markers improved, with significant reductions in BMI ($p < 0.001$), WHR ($p = 0.005$), body fat percentage ($p = 0.002$), and ECW ($p = 0.002$), alongside an increase in DLW% ($p = 0.017$). In contrast, the control group showed smaller improvements in FBG and HbA1c levels, with minimal changes in anthropometric and body composition markers. ANCOVA analysis confirmed that these changes were primarily attributable to the TYM.
Conclusion
The 12-week Therapeutic Yoga Module significantly improved glycemic control, body composition, and anthropometric measures in individuals with IFG, even when both groups followed standard diet instructions. These findings highlight the potential of TYM as a complementary treatment for managing prediabetes and preventing the progression to T2DM.

O17

Assessment of Anxiety, Depression, Diabetes Distress and General Wellbeing in Adolescents living with Type 1 Diabetes

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Keywords
• Psychological aspects

Background and Aims
Adolescence aged 13 to 19 years is a phase of life which is characterized by acceleration of growth bringing a huge transformation from childhood to adulthood and thus leading to psychological and behavioural changes. Less evidence is available on the mental health status in this group from India. Hence, our aim was to assess anxiety, depression, diabetes distress and general well-being of adolescents with T1DM.
Materials and methods
In this cross sectional study, 40 adolescents (M:F,16:24) with T1DM who visited a tertiary care centre for diabetes during Jun - Sep 2024 were enrolled. A semi-structured questionnaire was used to collect their demographic, anthropometric and biochemical parameters. The anxiety and depression was measured using11-item Revised Children Anxiety and Depression Scale (RCADS) and the presence of symptoms of anxiety and depression was indicated if the score was ≥9 for boys and ≥14 for girls. Symptoms of anxiety was indicated if the score was ≥5 for boys and ≥9 for girls and symptoms of depression was indicated if the score was ≥8 for boys and ≥9 for girls respectively. Diabetes distress was measured using 20- item Problem Areas in Diabetes scale (PAID) and the cut off value ≥ 40 was considered as severe diabetes distress. Wellbeing was assessed using Stirling Children well-being score (15 item) with the score of ≥39 indicates positive outlook and well-being. The data was analyzed using SPSS version 29.0.
Results
Around 25% of the study participants had symptoms of anxiety and 5% had symptoms of depression. HbA1cwas positively correlated with scores of anxiety (r= .347, p= 0.028) and depression (r=.399, p=0.011) while fasting blood glucose correlated with depression score (r=.417, p=0.008). The adolescents aged > 15yearshad high median anxiety score 5(0,10) compared to adolescents ≤15 years

4(0,14); p<0.001. 23.1% of the participants with duration of diabetes <5 years had severe diabetes distress compared to those with >5 years(p=0.02). The participants with severe diabetes distress had median HbA1c of 11.9% (9.4, 12.8) compared to those without severe diabetes distress [9.2% (6.8,12.5), p=0.089]. The RCADS score was negatively correlated with well-being score (r= -.592, P<0.01). The RCADS and PAID score were found to be positively correlated (r= .430, P=0.01). The participants who belong to lower income group had less wellbeing score compared to high income group, but the difference between the groups was not statistically significant(45.5% vs. 15.4%, p = 0.106).

Conclusion

Our findings suggest that around 23.1% of adolescents with T1DM with ≤ 5years duration of diabetes had severe diabetes distress. Anxiety, depression and diabetes distress directly had an impact on their glycemic control and reduced their general wellbeing. Routine psychological assessment will help them to overcome diabetes distress and bring positive state towards life.

O18

Outcomes of Simultaneous Pancreas and Kidney transplant patients operated over the last 10 years in a tertiary care centre

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Keywords
• Pancreas and islet transplantation

Background and Aims

Simultaneous Pancreas Kidney Transplant (SPKT) is a physiological replacement of pancreas and kidney function in patients with end stage renal disease (ESRD) with Diabetes Mellitus (DM) after which the patients can be free from dialysis and insulin therapy. The aim of our study was to report the experience with SPKT at a tertiary care centre in India.

Materials and methods

Outcomes were calculated by a retrospective review of data of patients who underwent SPKT at our centre from January 2014 to July 2024. Two separate cohorts were made comparing the outcomes of SPK:

1. Group A: operated in the first 5 years (2014 to 2019)
2. Group B: operated in the next 5 years (2020 to 2024)

Results

46 patients underwent SPKT during the study period. The median age of recipients was 28 years. 8 patients had type 1 DM and 1 patient had type 2 DM. The median age of donors was 32 years. The median serum creatinine in the recipients was 3.3 mg/dL. Kidneys were placed in the left iliac fossa and the pancreas in the right iliac fossa. The median cold ischemia time was 650 minutes for the pancreas and 350 minutes for the kidneys. The median graft weight of the kidneys was 138 grams. Pancreatic drainage was enteric in all cases.19 patients were grouped under Group A; and 27 under Group B.

In group A, 9 patients needed relaparotomy, 4 patients needed graft pancreatectomy due to duodenal necrosis and SMA & SMV/PV complications, and 4 patients had graft failure (insulin dependency). Out of 19cases, there were 3 deaths. One year graft survival was 100% for kidneys and 78% for pancreas.

27 patients were grouped under group B. In group B, 7 patients needed relaparotomy, 2 patients needed graft pancreatectomy due to duodenal necrosis and SMA & SMV/PV complications, and 4 patients had graft failure(insulin dependency). Out of 27 cases, there were 2 deaths. One-year graft survival was 100% for thekidneys and 85% for the pancreas. The median serum creatinine at the end of one year was 1.01 mg/dL. All patients were independent of dialysis and insulin at the end of one year.

Overall, out of 46 cases, there were 5 deaths within 3 months post SPK including one covid death.

Conclusion

The graft and patient survival in SPK patients was favourable. SPKT is an effective treatment for type 1 DM with ESRD. Though SPKT patients had early complications, timely diagnosis and intervention can prevent graft loss and increase graft and patient survival. Outcomes improved over a period of time with a lesser number of complications and more successful graft outcomes

O19

Real-world Study to Identify Patient Characteristics Influencing the Choice of Statin Dose for Primary CVD Prevention (REFLECT): Rationale & Study Design

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Keywords
• Dyslipidaemia, lipoproteins

Background and Aims

High low-density lipoprotein cholesterol (LDL-C) level is a major cardiovascular disease (CVD) risk factor, that contributes to 28.1% of all deaths in India. Statins are recommended as the first-line therapy for the management of high LDL-C levels and high CV risk. For primary prevention, statin dose is chosen, basis the calculated CV risk and/or presence of certain other risk factors. There is limited published evidence on the practice of identifying CV risk in Indian clinical settings. The aim of the REFLECT study is to identify the characteristics of primary CVD prevention patients who have been prescribed various doses of statin(rosuvastatin/atorvastatin) or are eligible for dose modification.

Materials and methods

REFLECT is an observational, cross-sectional study that aims to enroll 15000 patients from 750 centres across India. Enrolment would include primary CVD prevention patients of age ≥18 years, initiated on astatin (rosuvastatin/atorvastatin) within the last 6 months or who need a statin dose modification in the current visit.

Results

The primary endpoint would be to identify the characteristics observed with each statin dose (rosuvastatin5mg/10mg/20mg/40mg, atorvastatin 10mg/20mg/40mg/80mg). The major patient characteristics captured would be demographics, history of comorbidities, history of concomitant medications, history of smoking/tobacco use, and clinical parameters like lipid profile, blood pressure, body mass index, glucose profile (in diabetes patients). The secondary endpoints would be to identify association between LDL-C levels and dose of statin (rosuvastatin/atorvastatin); in patients eligible for a statin (rosuvastatin/atorvastatin)

dose modification, to identify the risk factor(s) responsible for the dose modification, and to compare statin dose recommended as per American College of Cardiology CV risk calculator with that observed in practice. Appropriate statistical methods would be used to analyse this large dataset.

Conclusion

REFLECT study findings shall provide the real-world statin usage patterns and first instance of factors associated with choosing a certain statin dose in Indian primary CVD prevention patients.

O20

Novel Diabetes Classification Based on Glucose Variability Patterns from CGM Data

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Keywords

Monogenic forms of diabetes • Health care delivery

Background and Aims

Current diabetes classification relies primarily on etiology and treatment modalities. Continuous glucose monitoring (CGM) technology offers an opportunity to refine this classification based on glucose variability patterns, potentially enabling more personalized management approaches. To develop a novel diabetes classification system based on glucose variability patterns derived from CGM data and evaluate its potential for personalized treatment strategies.

Materials and methods

We analyzed CGM data from 527 patients with various types of diabetes over a 14-day period. Glucose variability metrics, including coefficient of variation, mean amplitude of glycemic excursions, and time in range, were calculated. Unsupervised machine learning techniques, including k-means clustering and hierarchical clustering, were applied to identify distinct glucose variability signatures.

Results

Five novel subgroups were identified, each characterized by specific variability patterns: "stable hyperglycemia" (31% of patients), "brittle hypoglycemia-prone" (18%), "postprandial spike" (22%),"dawn phenomenon dominant" (16%), and "erratic fluctuator" (13%). Each subgroup showed differential responses to various treatment strategies ($p<0.001$). For example, the "postprandial spike" group showed a 32% greater reduction in glucose excursions with GLP-1 receptor agonists compared to other groups (95% CI: 25-39%, $p<0.001$). Table 1 summarizes the characteristics of each subgroup.

Conclusion

This novel classification system based on glucose variability patterns provides a more nuanced understanding of diabetes phenotypes. It offers the potential for more targeted interventions and improved glycemic outcomes by tailoring treatment regimens to specific glucose variability profiles.

O21

Influence of Hypertension Duration on Clinical and Baseline Demographic Characteristics Among Indian Patients with Hypertension Receiving Telmisartan and Amlodipine FDC.

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Keywords

• Hypertension

Background and Aims

Hypertension (HTN) is a significant public health issue in India, marked by rising prevalence and linked morbidity and mortality rates. Investigating the baseline clinical characteristics of patients with new-onset HTN compared to those with longstanding HTN is essential for refining treatment approaches and enhancing patient care. This study aimed to understand the impact of the duration of HTN in managing patients with HTN

Materials and methods

TACT-India is an ongoing prospective, observational study conducted amongst Indian HTN patients. Participants aged >18 years, newly diagnosed with HTN (SBP/DBP ≥ 140/90 mmHg) or inadequately controlled on monotherapy (SBP/DBP ≥ 140/90 mmHg) who met the criteria for the FDC were included.

Results

A total of 6,232 patients were included. The mean age (SD) was comparatively higher in the patients with longstanding HTN compared to those with new-onset HTN (58.2 [11.67] years vs. 54.88 [12.61] years). The proportion of men and women was comparable between both groups. The mean [SD] BMI kg/m2 was 28.7[3.88] and 29.04 [4.1] in patients with new-onset HTN and longstanding HTN, respectively. The mean [SD] waist circumference was comparatively higher in patients with longstanding HTN compared to new-onset HTN (84.1 [14.37] inches vs. 80.04 [11.82] inches). The mean pulse rate and respiratory rate were comparable between both groups. A history of smoking was reported in 43.46% of patients with new-onset HTN and 44.55% of patients with longstanding HTN. T2DM as the most common comorbidity seen inT2DM was the most common comorbid condition observed in patients with new-onset HTN and longstanding HTN (87.87% vs. 86.51%, respectively).

Conclusion

This sub-analysis of the TACT-India study underscores the importance of considering individual patient characteristics, such as age and waist circumference in tailoring HTN management strategies.

O22

Mesenchymal Stem Cell Therapy along with BCG Vaccination in Indian Type 1 Diiabetes patients

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Keywords
• Stem cells and beta cell generation

Background and Aims
Islet Cells can be differentiated from MSCs extracted from bone marrow and differentiated cells can be injected into patients directly, we focused regarding use of BCG vaccine in T1DM patients along with stem cells.
Aim-To analyze the use of BCG vaccine along with stem cells in Type I DM patients.
Materials and methods
To investigate the effect of SC,SC along with BCG vaccine in patients with T1DM.The study of 3 groups with 32 patients group III and 16 patients in each group I and group II,age group 08−27 years. All Groups with BB regimen, Group I was for only stem cell where, Bone marrow enriched MSCs injected and Group II for SC along with BCG vaccination and Group III was control group.The patients followed up 9 months post transplant parameters taken at 3 monthly intervals and compared.
Results
No adverse events. FBS decreased from 332.72 to 162.84 in control group, from 282.44 to 132.94 in group II and 269.50 to 132.25 in group I, similarly PPBS for group III were decreased from 402.34 to 200.78 in control group, from 391.69 to 180.44 in group II and 387.63 to 177.31 in group I,C peptide increased from0.5 - 0.7 in control group, from 0.6 -0.8 in group II and 0.60 to 0.69 in group I.HbA1C decreased from 11.47to 8.25 in control group, from 11.63 to 7.43 in group II and 11.36 to 7.95 in group I. The insulin doses decreased from 71.38 to 55.06 control group, from 64.06 to 33.31 group II and 61.00 to 34.63 group I. Incomparison of all three groups, we found significant results in group II and group I compared to group III. All assessments were statistically significant with P value <0.001 in group II as compared to group I and III. There was reduction in Insulin doses, HbA1C, FBS, PPBS in group III and II, however, C Peptide didn't show significant change in all 3 groups.
Conclusion
Results suggested that BCG vaccine can work with stem cells in altering the immune mechanisms which cause the damage of beta cells.it can be concluded that combination therapy is useful in patients and helpful in reducing auto immunity effects related to Type I DM.

O23

Clinical and Demographic Characteristics Across Different Body Mass Index Categories in Indian Patients with Hypertension Receiving Telmisartan and Amlodipine FDC

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Keywords
• Hypertension

Background and Aims
Analysing the baseline demographic and clinical characteristics, including Body Mass Index (BMI), among hypertension (HTN) patients can inform personalized treatment strategies and improve outcomes. This study aimed to assess the difference in baseline demographic and clinical characteristics among different BMI categories (<25 kg/m2, 25-30 kg/m2 and >30 kg/m2) in Indian patients with HTN who are receiving a fixed-dose combination (FDC) of telmisartan and amlodipine.
Materials and methods
The TACT-India is an ongoing prospective, observational real-world study to assess the effectiveness and safety of telmisartan and amlodipine FDC in Indian HTN patients from multiple sites across India. Patients aged ≥18 years newly diagnosed with HTN or those uncontrolled on monotherapy and eligible for initiation of the telmisartan and amlodipine FDC were included in this study.
Results
A total of 6,232 patients were included in this study. The mean (SD) age was increased with increasing BMI categories (<25 kg/m2: 55.29 [11.46] years vs. 25-30 kg/m2 vs. 56.80 [12.20] years vs. >30 kg/m2: 58.24[12.14] years). The proportion of women was highest in BMI group >30 kg/m2 compared to the other BMI(25-30 kg/m2 and <25 kg/m2) categories (53.15% vs. 39.86% vs. 39.25%, respectively). The majority of the patients with BMI <25 kg/m2 were physically active (92.95%), whereas the prevalence of a sedentary lifestyle increased with higher BMI categories (7.05% vs. 17.75% vs. 83.73%). New onset HTN was reported in 29.68%, 38.35%, and 28.81% of patients with BMI <25 kg/m2, 25-30 kg/m2, and >30 kg/m2, respectively. The majority of patients with BMI >30 kg/m2 (71.19%) and BMI <25 kg/m2 (70.32%) followed by BMI 25-30 kg/m2 (61.65%) had a known history of HTN. The majority of patients across all BMI groups had T2DMas a comorbid condition and used metformin as concomitant medication (<25 kg/m2: 89.66% and 42.28% vs.25-30 kg/m2: 86.18% and 43.39% vs. >30 kg/m2: 86.58% and 45.5%, respectively).
Conclusion
This sub-analysis of the TACT-India study showed a higher BMI trend in older age, women and patients with sedentary lifestyles.

O24

Impact of an Advanced Hybrid Closed-Loop System on Glycemic Control in Type 1 Diabetes: Experience from a Comprehensive Diabetes Center in Kerala

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Keywords
• Devices

Background and Aims
This study examines the impact of an advanced hybrid closed-loop (AHCL) system in T1D at a comprehensive diabetes care center in Kerala. Study evaluates the clinical and demographic

characteristics of the population using the AHCL system and assess its effectiveness in improving glycemic outcomes, including Time in Range (TIR), Time in Tight Range (TITR), and Time Below Range (TBR).

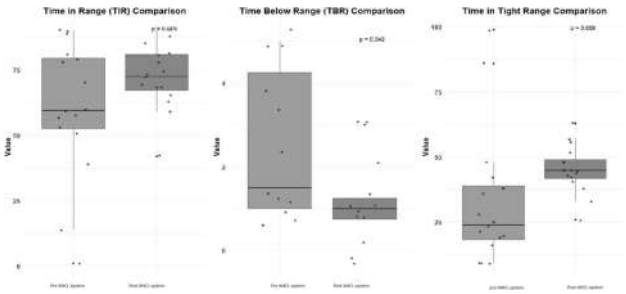
Materials and methods

The study involved 36 T1D with a mean age of 26.1±17.9 years, 75% of whom were male. The average duration of diabetes was 12±11.3 years, and the mean weight was 53.7±21.7 kg. All participants had prior experience with CGM, and 87.5% were insulin pump-naive, previously on a basal-bolus regimen.

Results

Following the initiation of the AHCL system, participants demonstrated improvements in glycemic control. The average sensor glucose level was 153.8±15.9 mg/dL. The average TIR for those using the 780G insulin pump was 75.6%, while the TBR was recorded at 1.06%. CV was ≤36% in 75% of participants. TIR improved from 60% to 75.6%, and TITR increased from 33% to 55%. A significant reduction in TBR was observed, decreasing from 4% to 1% ($p < 0.05$), indicating a substantial decrease in hypoglycemia. HbA1c levels showed a significant reduction of 1.01% after transitioning to the AHCL system.

Graph/Table :



Conclusion

The AHCL system significantly improved glycemic outcomes in individuals with T1D at this diabetes care center in Kerala. While increases in TIR and TITR were observed, the most significant impact was the reduction in TBR, demonstrating the system's efficacy in minimizing hypoglycemia.

O25

Prevalence of youth-onset diabetes in a tertiary care diabetes centre

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Keywords

Epidemiology

Background and Aims

Over the past decade, there has been a notable increase in the prevalence of diabetes among young adults. This trend is largely linked to rising obesity levels and genetic predisposition to diabetes. According to the Registry of Youth Onset Diabetes in India (YDR), type 1 diabetes (T1D) remains the most common type among the youth, followed closely by type 2 diabetes (T2D). Nevertheless, youth-onset T2D is rapidly growing across various socioeconomic strata in India. Here we report on the trends in the prevalence of youth-onset diabetes as seen at a tertiary care diabetes centre in India.

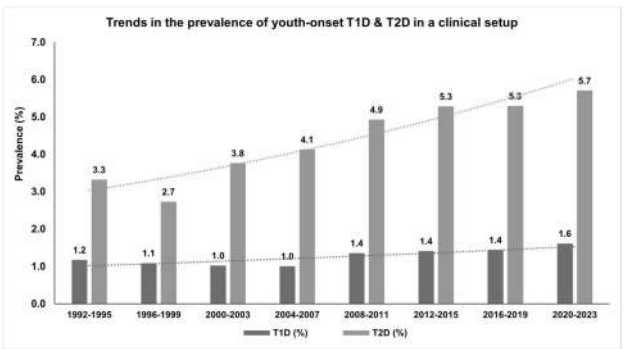
Materials and methods

This retrospective study, conducted in a clinical setting, focused on individuals diagnosed with diabetes ≤30 years of age who were seen between 1992 and 2023 at a diabetes centre in Chennai, Tamil Nadu, India. T1D was diagnosed if there was a history of ketoacidosis or fasting C-peptide <0.3 PMol/mL and stimulated C-peptide <0.6 PMol/mL or if insulin treatment was required from the time of diagnosis. T2D was diagnosed based on the absence of ketosis, or fasting, and stimulated C-peptide ≥0.6 PMol/mL, or response to oral hypoglycemic agents for more than 2 years. We extracted the first visit data from our Diabetes Electronic Medical Records database for calculating the prevalence of youth-onset T1D and T2D.

Results

The total number of registered diabetes individuals over the period 1992 to 2023 was 628,703. Among the total registered, 7.3% (n=45786 individuals) were young-onset diabetes, comprising 8402 (18.3%) T1D, 30144 (65.8%) T2D, and 7240 (15.8%) other types of young diabetes. In Figure 1, the trends regarding the prevalence of youth-onset T1D and T2D are given compared to the total number of registered patients at the centre. Over the years, there has been a significant upward trend in the prevalence of youth-onset T1D and T2D. The prevalence of T1D rose from 1.2% from 1992 to 1995 to 1.6% between 2020 and 2023. The prevalence of T2D increased from 3.3% in the first four years to 5.7% in the recent years.

Graph/Table :



Conclusion

The prevalence of youth-onset T1D and T2D has been increasing at our centre over the past three decades. Urgent measures are required to implement effective prevention and management strategies to curb the increasing burden of youth-onset diabetes in India, especially youth-onset T2D.

O26

Leveraging artificial intelligence (AI) to improve diabetic retinopathy screening: evaluating AI model performance in low resource settings in India

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Keywords
• Health care delivery • Retinopathy

Background and Aims
Diabetic retinopathy (DR) is a severe microvascular complication of diabetes mellitus, and one of the leading causes of vision loss worldwide. It has four severity grades (mild, moderate, severe and proliferative stage), out of which the last three require referral to an ophthalmologist for appropriate treatment initiation. DR screening is challenging in resource-limited areas due to a lack of ophthalmologists leading to delayed diagnosis, and poor follow-ups resulting in avoidable progression to blindness. This study evaluated MadhuNetrAI, an AI solution developed in India under the aegis of MoHFW, for detecting referable DR across three evaluations.
Materials and methods
We conducted the three evaluations from June 2023 to January 2024 using 1572 retina images from Messidor, 1078 images from AIIMS Delhi and EyePACS, and 559 images from the peripheral vision centres of AIIMS Delhi for the first, second, and third evaluations respectively. MadhuNetrAI interpreted retina images by identifying the presence, referability, and grades of DR. Expert ophthalmologists at AIIMS then evaluated the retinal images independently. In the first evaluation, one ophthalmologist provided gold standard (GS) annotations. In the second and third evaluations, two ophthalmologists independently annotated each image, with the third serving as an adjudicator for any disagreements.
Results
MadhuNetrAI demonstrated high accuracy across all evaluations for detecting referable DR. Table 1 outlines the accuracy, sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the AI solution's performance. Kappa scores ranged between 0.76 and 0.94 indicating substantial to near-perfect agreement in DR grading across the evaluations.
Graph/Table :

Evaluations	Evaluation 1	Evaluation 2	Evaluation 3
No. of images	1,572	1,078	559
Accuracy	84% (CI: 82% - 86%)	94% (CI: 92% - 95%)	97% (CI: 95%, 99%)
Sensitivity	100% (CI: 98% - 100%)	93% (CI: 89% - 96%)	96% (CI: 94%, 98%)
Specificity	82% (CI: 79% - 84%)	95% (CI: 94% - 97%)	97% (CI: 96%, 99%)
PPV	47% (CI: 42% - 51%)	86% (CI: 82% - 90%)	78% (CI: 75%, 81%)
NPV	100% (CI: 99% - 100%)	97% (CI: 96% - 98%)	100% (CI: 100%, 100%)
Kappa for DR grading	0.76	0.88	0.94

Table 1: Overview of performance metrics of AI solution across three evaluations

Conclusion
The evaluations on different types of datasets by highly experienced ophthalmologists of the premier healthcare institution of India, shows encouraging results for identifying patients with diabetes having referrable DR, addressing the critical shortage of trained eye care professionals. This evaluation marks a significant milestone in the use of AI to address timely detection of diabetic retinopathy, particularly in underserved areas where access to eye care remains limited.

O27

Assessment of risk factors, comorbidities, and treatment pattern in newly diagnosed patients of Diabetes in India (DIAB INDIA study)

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Keywords
Epidemiology

Background and Aims
Early identification of risk factors and comorbidities is essential for optimizing treatment strategies in diabetes. The DIAB INDIA study aims to evaluate risk factors, glycemic status, comorbidities, and initial management choices in newly diagnosed T2DM.
Materials and methods
A retrospective, observational, multicenter study was conducted with a large cohort of 19,230 patients pan India. Data was collected from patient health records and meticulously stored into a standard format. Demographic data (age, gender, weight, height, risk factors, and blood pressure), clinical presentation (family history, complications, glycemic indices, and comorbidities), and choice of management were recorded and used for analysis.
Results
Obesity and family history were most common risk factors for T2DM and were significantly correlated with its severity ($p<0.001$). The most common comorbidity was neuropathy (59.8%) followed by nephropathy (27%) and CV events (25%). Obese patients have higher mean hemoglobin A1c (HbA1c) of 8.4%, fasting blood glucose (FBG) (160 mg/dL), and postprandial blood glucose (PPBG) (233.6 mg/dL) compared to non-obese. Both single and combination therapies led to significant improvements in HbA1c (Single: pre- 7.47, post- 6.87; Combination: pre-8.26, post-7.13), FBG (Single: pre- 138.94, post- 118.89; Combination: pre-161.21, post-128.2), and PPBG (Single: pre- 200.88, post-163.83; Combination: pre-235.10, post-177.87) levels after treatment, with combination therapy showing greater reductions across all markers ($p<0.001$). The improvement in glycemic control was greater in patients who followed dietary advice ($p<0.001$).
Conclusion
Obesity and family history were the most common risk factors contributing to diabetes in the newly diagnosed Indian patients. The comorbidities usually associated with diabetes are identified as neuropathy and cardiovascular conditions. While dietary measures are not widely used, significant improvement in glycemic status is reported using pharmacotherapy (monotherapy or combination). The choice of pharmacological and non-pharmacological treatments should be tailored to patient preferences, demographics, comorbidities, age, and other factors.

O28

Diabetes Village Adoption: A Path to Better Health

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Keywords
• Education

Background and Aims
Background: Diabetes mellitus is a global health challenge, particularly impacting rural populations with limited healthcare access and education. The "Diabetes Village Adoption" initiative aims to enhance diabetes management and prevention through community-based interventions.

Materials and methods

Methods: A mixed-methods study design was employed, including a quasi-experimental pre-post intervention with control villages. Quantitative data included baseline and follow-up surveys (485 participants in the intervention group and 492 in the control group), medical records review, and screening results for parameters such as mean fasting glucose, HbA1c levels, and lipid profiles. Qualitative data comprised focus group discussions and in-depth interviews to explore community perceptions and program implementation.

Results

Results: The intervention significantly improved health outcomes in the intervention group compared to controls, including reductions in mean fasting glucose (168.4 ± 38.2 mg/dL to 142.6 ± 30.5 mg/dL, $p < 0.001$), HbA1c levels (8.2 ± 1.5% to 7.1 ± 1.2%, $p < 0.001$), and blood pressure. Qualitative insights indicated increased diabetes awareness, adoption of healthier lifestyles, improved healthcare access, and enhanced quality of life.

Conclusion

Conclusion: The Diabetes Village Adoption program effectively addresses diabetes management and prevention in rural communities by engaging stakeholders, integrating traditional and modern healthcare practices, and emphasizing education and prevention. Challenges include study design limitations and sustainability concerns, suggesting the need for ongoing evaluation and adaptation to ensure long-term success

O29

Acarbose-Metformin Fixed Dose Combination effectively reduces HbA1c in newly diagnosed Type 2 Diabetes patients in India: START AM Study.

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Keywords

• Oral therapies: metformin, sensitizers and other non- secretagogues

Background and Aims

Newly diagnosed Indian patients with type 2 diabetes mellitus (T2DM) are observed to have high HbA1c levels. Guidelines recommend the target HbA1c as less than 7%. Majority of patients require combination of drugs with complimentary actions to achieve A1c target. Timely initiation of therapy helps in early achievement of HbA1c target levels. Aim of the study was to assess the effectiveness of acarbosemetformin fixed dose combination (FDC) in reducing HbA1c from baseline in newly diagnosed T2DM patients who are eligible for dual therapy under real-life treatment condition.

Materials and methods

This was a prospective, multi-center, observational, real-world study in newly diagnosed T2DM patients who were eligible for dual therapy (HbA1c ≥7.5% - 9.0%) and were prescribed acarbose-metformin FDC as an initial therapy by the physician in their routine clinical practice. The decision to prescribe the FDC was solely at the discretion of the treating physician. The ethical committee approval and informed consent from all the screened subjects were obtained prior to enrollment. Primary endpoint was mean change in HbA1c from baseline at end of 24 weeks.

Results

1714 patients from 56 centers across India were included in the study. Mean age of study population was 49.6 ± 10.8 years. Based on available A1c data at baseline, 1601 patients were included in the analysis. Mean HbA1c reduction from baseline (HbA1c- 8.06 ± 0.46 %) till end of 24 weeks (HbA1c- 7.06 ± 0.65%) was 1% ($p<0.0001$). Significant mean reduction in HbA1c was observed from baseline at the end of 6 & 12 weeks (0.46% & 0.73% respectively, $p<0.0001$ each). Mean daily dose of prescribed acarbosemetformin FDC at 24 weeks was 72 ± 32.7 mg, with 50mg/500mg once daily being the most common prescribed dosage (33.4% of patients), followed by 50mg/500mg twice daily (31% of patients). At 24 weeks, 56.2% of the study participants achieved A1c target ≤ 7%. In these patients, mean A1c level at baseline & 24 weeks were 7.95 ± 0.40 % & 6.63 ± 0.39 % respectively (mean reduction – 1.32%, $p<0.0001$). Mean daily dose of acarbose in patients who achieved A1c ≤ 7% at 24 weeks was 70.3 ± 29.7mg. Among 1706 safety population, 0.94% experienced drug related treatment emergent adverse eventand 0.82% discontinued the treatment. FDC was well-tolerated.

Conclusion

This study concludes that acarbose-metformin FDC provides significant HbA1c reduction at the end of 6 months & remarkable glycemic control as early as 6 weeks and therefore, can be considered as the preferred combination for initiating therapy in newly diagnosed T2DM patients in India. During this period, FDC was well tolerated without any significant intolerability issues.

O30

Extended lipid profile and its correlation with angiographic score in statin-naïve acute coronary syndrome patients

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Keywords

• Lipid metabolism • Dyslipidaemia, lipoproteins

Background and Aims

Dyslipidemia is a well-known risk factor for coronary artery disease (CAD). Apolipoprotein B (Apo-B) is the major apolipoprotein in all atherogenic lipoproteins - LDL, IDL, VLDL and Lp(a). Similarly, apo-A1 is the major apolipoprotein in anti-atherogenic lipoprotein – HDL. Apo-B: Apo-A1 ratio represents the balance between atherogenic and anti-atherogenic lipoproteins. Apo B and Apo A1 are checked in the extended lipid profile. Gensini score is an angiographic scoring system based on the location of coronary artery stenosis and the percentage of narrowing. Studies have reported that an extended lipid profile correlates with the severity of CAD more than a conventional lipid profile.

Materials and methods

We recruited 81 newly diagnosed statin-naïve acute coronary syndrome patients. We measure their conventional and extended lipid parameters [Apo B, Apo A1 and lipoprotein (a)]. Coronary angiography was done for them, and the Gensini score was calculated to know the extent of coronary artery disease.

Results

The mean age of study participants was 51 ± 8.5 years, and 77% were men. 38% and 41% of patients were hypertensives and diabetes, respectively. 58% of patients had STEMI and 31% had NSTEMI. The mean LDL level was 116 ± 36 mg/dL. 30% of patients had LDL >130 mg/dL. The mean LDL / HDL ratio was 2.7 ± 0.7. Mean values of apo B, apo A1, apoB / apoA1 ratio and Lp(a) were 69.7 ±

23, 98±53, 0.79 ± 0.3, 102± 67 mg/dL, respectively. The median Gensini score of all patients was 25 (13.5- 44). Total cholesterol/HDL and LDL/HDL correlated positively and significantly with the Gensini score (r= 0.35, p<0.01 and r=0.31, p<0.01, respectively). apoB also positively correlated with the Gensini score (r=0.24, p=0.03). However, LDL and apoB/apoA1 did not correlate.

Conclusion

LDL/HDL ratio can predict the severity of atherosclerosis as good as apoB or apoB/apoA1 ratio. A conventional fasting lipid profile can provide sufficient clinical information for cardiovascular risk assessment and the treatment of dyslipidaemia. However, apoB positively correlated with coronary angiographic severity based on the Gensini score. Although previous studies showed that apoB/apoA1 is helpful in cardiovascular risk assessment, its role in predicting the severity of CAD remains limited

POSTERS

P01

Evaluation of Plantar Pressure Distribution and Foot Deformities in Type 2 Diabetes Patients Using Hybrid Pressure Analysis

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Keywords

• Diabetic foot and skin disorders

Background and Aims

Plantar pressure distribution measures the force applied to the sole of the foot, a critical factor in managing diabetic foot complications

Materials and methods

We assessed 100 consecutive patients with Type 2 Diabetes Mellitus (T2DM) using the Presscam hybrid pressure-posturology platform. Each patient had eight measurements (four per foot) for precise dynamic recording. Statistical analysis was conducted using GraphPad version 10.2.3

Results

Foot examinations frequently revealed corns (n=22), while combined conditions such as calluses and foot ulcers were uncommon. The most prevalent specific deformity identified was flattened medial/lateral arches (n=16), which was also the most noticeable visible deformity (n=18). The cohort had a mean age of 55 years (±12, 95% CI 52 to 57), a mean BMI of 27 kg/m² (±4.6, 95% CI 26 to 28), and an average diabetes duration of 11 years (±8.6, 95% CI 9.2 to 13). The mean HbA1c level was 8.3% (±82.1, 95% CI 7.9 to 8.7), and the mean serum creatinine level was 0.89 mg/dl (±0.57, 95% CI 0.77 to 1). Neuropathy assessment yielded similar results for both feet across the categories: normal (<15 mV), mild (15-20 mV), moderate (20-25 mV), and severe (>25 mV), with no significant difference (p=0.95). The plantar contact area was comparable between the left (16.75 cm² ±3.3, 95% CI 16.08 to 17.41) and right foot (17.3 cm² ±3, 95% CI 16.6 to 17.9), p=0.22. However, there was a significant difference in mean maximal pressure between the left (7.1 N/cm² ±1.2, 95% CI 6.8 to 7.3) and right foot (7.9 N/cm² ±1.3, 95% CI 7.6 to 8.2); p<0.0001. Similarly, a significant difference was observed in mean average pressure between the left (3.3 N/cm² ±0.48, 95% CI 3.3 to 3.4) and right foot (3.46 N/cm² ±0.48, 95% CI 3.3 to 3.5); p=0.03

Conclusion

Plantar pressure assessment showed significant differences in both maximal and average pressures between the left and right feet. Corns were commonly observed, and flattened medial/lateral arches were the most frequent deformity. These results highlight the importance of plantar pressure analysis in detecting foot abnormalities, which are vital for preventing and managing complications in diabetic patients

P02

Assessment of Glycemic Control in participants of health awareness camps in New Delhi

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Keywords

Epidemiology

Background and Aims

Diabetes awareness camps were organized in New Delhi over a period of 1-1/2 years and different colonies and organizations in which approx. 10,000 persons participated with the following objectives:

1. To Create Awareness about Diabetes
2. Assess the status of control of Diabetes
3. Assess Blood Pressure and BMI
4. Screen susceptible population for Diabetes
5. Provide medical advise
6. Counsel patients in Lifestyle modification and resolve their queries

Materials and methods

These were structured activities in which diabetes awareness camps were organized in CGHS colonies at different places in New Delhi during 2017-18. Data collected from 61 Camps between 11/11/2017 and 31/3/2018 was analysed in different subgroups to assess the condition of Diabetes control and the other associated parameters in the attending participants, Data from the rest of the camps is still being analysed. These were Free Walk-in Camps awareness about the venue and timings was disseminated by Fliers, Personal visit and invitation through WhatsApp Groups / SMS etc, a local RWA in each colony was always chosen as a co-organizer which greatly helped mobilize the population. Camps were conducted at an easily accessible central location like Park, Community Centre, Sports Hall or Religious place. Basic vital parameters like Height, Weight, Resting Blood Pressure (BP) were checked by trained technician and Nurses using authenticated equipment, Capillary Blood Glucose (CBG) was measured for all participants- due to the simplicity and reliability of capillary Glucose measuring as has been proven in major nation-wide studies, HbA1C test was conducted on advice of physician only for individuals with:

1) Self-reported Diabetes
2) High Fasting/Random Capillary Blood Glucose
3) Suspicion of Diabetes by presenting symptoms and correlating with other parameters like BMI, CBG, BP, Family History etc. BP was measured by automatic OMRON HEM 7120 and abnormal values were manually checked using a mercury sphygmomanometer, CBG was measured using Dr Morepen Gluco-One BG03, Mercury Sphygmomanometer, Glucometer- HbA1C test was conducted on High Pressure Liquid Chromatography at an NABL certified Lab on TOSOH G 8 only.

A total of 6798 registered with mean age of 44 yrs, an SD of 14.66 ages 1yr-99rs of which 60% (3922) were males and 40% (2876) were females, 93% (6379) being above 20 yrs .

Results

HbA1c levels distribution in known Diabetic participants

Distribution of HbA1c levels

HbA1C: Of the known Diabetics 989 diabetics only 910 agreed to give venous sample for HbA1c, mean HbA1c was 8.3% . Only 31% (283) being < 7 or good control.
Diabetes Control:
HbA1C levels stratified by sex
Only 31% of the subjects with known Diabetes were well controlled(HbA1c les than 7), 38 % were fairly controlled with HbA1c values between 7-9 whereas 29% were poorly controlled with HbA1C above 9%The level of HbA1C's and Diabetes control were almost similar in both the sexes with females having a slightly better control, this could also be confounded by a slightly higher participation of males 60% Males vs 40% Females (Table 1.1) .
Conclusion
Only 31% of the patients were relatively well controlled with HbA1C less than 7, the mean HbA1c was 8.3%
1. Prevalence of self-reported and newly diagnosed Diabetes was approx. 15%
2. Pre Diabetes with Impaired Fasting Glucose- approx. 6.7 % and 20 % using WHO(110-126) and ADA(100-126) Cuttoffs respectively

P03

INCIDENT , OUTCOMES AND RISK FACTORS OF AKI IN DIABETIC PATIENTS, A PROSPECTIVE OBSERVATIONAL STUDY

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Keywords

Background and Aims
Background: Diabetic patients are at an increased risk of developing Acute Kidney Injury (AKI) due to underlying microvascular damage and associated comorbidities. AKI in this population often leads to poor outcomes, including progression to Chronic Kidney Disease (CKD). This study aims to evaluate the incidence and outcomes of AKI in diabetic patients and to identify the factors associated with poor recovery or progression to CKD.
Objective: The primary objective of this study is to assess the incidence of AKI in hospitalized diabetic patients and determine the rate of recovery or progression to CKD. The secondary objective is to identify risk factors that contribute to adverse outcomes in diabetic patients with AKI.
Background: Diabetic patients are at an increased risk of developing Acute Kidney Injury (AKI) due to underlying microvascular damage and associated comorbidities. AKI in this population often leads to poor outcomes, including progression to Chronic Kidney Disease (CKD). This study aims to evaluate the incidence and outcomes of AKI in diabetic patients and to identify the factors associated with poor recovery or progression to CKD.
Objective: The primary objective of this study is to assess the incidence of AKI in hospitalized diabetic patients and determine the rate of recovery or progression to CKD. The secondary objective is to identify risk factors that contribute to adverse outcomes in diabetic patients with AKI.
Materials and methods
A prospective observational study was conducted in the General Medicine Department of Aditya Diagnostics and Hospital, Dibrugarh, Assam over a 6-month period. The study included 50 diabetic patients aged 18-80 years who developed AKI during hospitalization. Patients with pre-existing CKD or major organ failure were excluded. AKI was diagnosed based on KDIGO criteria using serum creatinine levels and urine output. Data on patient demographics, diabetes duration, comorbidities, and medications were collected. Kidney function was evaluated at baseline, discharge, and 1 month post-discharge to assess recovery or progression to CKD.
Results
Of the 50 patients, 70% (35 patients) developed severe AKI, and 30% (15 patients) had moderate AKI. The overall recovery rate was 60%, with 30 patients regaining normal kidney function. However, 40% (20 patients) had incomplete recovery, and 10% (5 patients) progressed to CKD. Risk factors associated with poor outcomes included advanced age, longer duration of diabetes, hypertension, and the use of nephrotoxic drugs. Severe AKI resulted in a 20% (7 patients) need for dialysis, and prolonged hospital stay was observed in these cases. Mortality was recorded in 5% (2 patients).
Conclusion
AKI in diabetic patients is associated with significant morbidity, including progression to CKD in a substantial proportion of cases. Key risk factors for poor outcomes include older age, hypertension, and the use of nephrotoxic medications. Early recognition and intervention are critical to improving outcomes and preventing the long-term complications of AKI in this high-risk population.

P04

A Comprehensive Assessment of Diabetic Patients: Insights into Knowledge, Compliance, Lifestyle, Barriers, and the Influence of Technology on Diabetes Management

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Keywords
• Exercise physiology • Health care delivery

Background and Aims
Effective management necessitates a multifaceted approach involving lifestyle modifications, regular blood glucose monitoring, adherence to medications and patient education. However, many patients face challenges in compliance due to limited understanding, socio-economic barriers, and inadequate access to healthcare resources. The aim of this study is to assess the knowledge of the patients regarding their disease, awareness about the complications, investigations and follow up, compliance to medicines and lifestyle, healthcare barriers and impact of technology on diabetes management
Materials and methods
This study employed a cross-sectional design to collect data from diabetic patients through an online survey platform. Participants were recruited from diabetes clinics and hospitals, with inclusion criteria set for adults aged 18 and above diagnosed with diabetes. Data collection encompassed demographics, treatment compliance, lifestyle habits, quality of life, and technology use with informed consent obtained prior to participation. Statistical analysis was conducted using SPSS and ethical approval was secured from an institutional review board, ensuring participant confidentiality.
Results
The study included 317 participants with females outnumbering males (53%). Diabetes duration of more than 5 years was seen in 58 percent. Barriers to effective diabetes management were identified in several areas. Problem with medication adherence due to complexity of multiple medications and dosages was reported by 42 percent. Cost remained

a major barrier (44%) for accessing healthcare and transportation being the second (23%). Majority (71%) were concerned about the potential complications of diabetes. Almost 60% agreed to the importance of lifestyle changes, but only 35% exercised regularly. Lack of time as a barrier to regular exercise was reported by 58 percent. Mental health issues related to diabetes were reported by 43% and 41% felt the need of psychological support. Telehealth services awareness was lacking in 73 percent. Forty one percent had never heard or used blood glucose monitors in their life. Forty six percent participants needed someone's help in filling the survey form. Only 25% cited comprehensive insurance coverage for diabetes.

Conclusion

The study revealed significant gaps in diabetes awareness and management. Despite a strong awareness of potential complications, and the recognition of lifestyle changes as important tool, behavioral modifications are not practiced by patients. Medication complexity and cost posed challenges for many, and knowledge of technological tools for diabetes management was low. Psychological issues related to diabetes were common, yet few sought mental health support. The results emphasize the need for better education, improved access to healthcare resources, and enhanced support for the use of technology.

P05

Continuous glycemic monitoring as a tool for predicting glycemic excursions during Ramadan fasting - A retrospective observational study

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Keywords

• Health care delivery

Background and Aims

Fasting during Ramadan is a religious obligation for Muslims worldwide. Managing diabetes during Ramadan requires a nuanced understanding of glycemic patterns and the ability to predict adverse events. Continuous Glucose Monitoring (CGM) provides a comprehensive view of glucose fluctuations, offering an opportunity for clinicians to optimize diabetes management during this challenging period.

This study aims to analyze CGM data to characterize glycemic patterns during Ramadan and predict hypoglycemic events using machine learning models.

Materials and methods

A retrospective observational study was conducted on ten Muslim patients between 40-60 years with Type 2 Diabetes, monitored using the FreeStyle Libre Pro CGM system over the first two weeks of Ramadan. The study included ten people with diabetes, stratified as low risk by IDF-DAR guidelines, who consented to wear the Abbot libre sensor during the first 14 days of the holy month of Ramadan 2023. All received structured Pre Ramadan education and Pre Ramadan adjustment of medications by the health care professional in congruence with IDF DAR guidelines. Data was analyzed from March 23 to April 21, 2023. CGM readings were collected at 15-minute intervals, categorized into three distinct time points and statistical analysis was done.

Results

1. Paired t-tests:
• Before Iftar vs. At Iftar: $t = 11.34$, $p < 0.001$ (significant drop).
• At Iftar vs. After Iftar: $t = -29.66$, $p < 0.001$ (significant rise).
2. Glycemic Variability:
• MAGE: Mean = 9.5 mg/dL, indicating minimal large excursions.
• CONGA: Mean = 12.5 mg/dL, suggesting higher short-term variability in Week 1 compared
to Week 2.
3. Subgroup Analysis:
• Gender: Males showed slightly higher MAGE values compared to females, but CONGA
values were similar.
• Age: Older patients (≥50 years) had higher MAGE and CONGA values, indicating increased glycemic instability.
• Diabetes Duration: Patients with a longer duration of diabetes (≥7 years) had higher MAGE and CONGA values.
4. Machine Learning Model Performance:
All models achieved 100% accuracy, indicating strong predictive power when demographic and CGM features were combined.

Conclusion

This study confirms that CGM provides valuable insights into glycaemic patterns during Ramadan fasting and highlights the importance of the monitoring of blood sugar levels 2 hours prior to iftar and two hours post iftar, the time when there is maximum glycemic variability shown by trough and crest pattern. Further, the CGM data reveals that the glycemic variability decreases from week one to week two, probably because of the body's adaptation to the altered meal plans. Future research should explore the integration of these predictive models into clinical practice, focusing on how they can be adapted to different patient populations and settings and provide tailor-made dietary and medication advice to the individual patient.

P06

Efficacy of Finerenone in Preserving Renal Function in Type 2 Diabetes with Chronic Kidney Disease

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Keywords

• Nephropathy • Other complications

Background and Aims

Finerenone, a selective nonsteroidal mineralocorticoid receptor antagonist (MRA), benefits patients with type 2 diabetes (T2D) and chronic kidney disease (CKD) by reducing kidney failure risk, slowing eGFR decline, and lowering albuminuria, indicating renal protection. This study aimed to evaluate the effects of Finerenone on renal function and albuminuria in patients with T2D at risk of CKD progression at a diabetes care center in Kerala.

Materials and methods

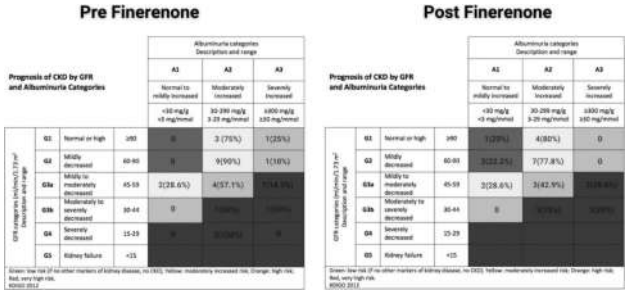
The study included 53 T2D, (average age: 70.1 ± 10.1 y, 24% female, duration of diabetes: 23 y (range 4–44 y). Baseline measures included an albumin-to-creatinine ratio (ACR) of 52.7 mg/g, eGFR of 58 mL/

min/1.73 m2, serum potassium of 4.5 mmol/L, serum creatinine of 1.25 mg/dL, hemoglobin of 13.2 g/dL, and HbA1c of 7.1%.

Results

We observed a decrease in the proportion of patients with ACR ≥300 mg/g from 8% to 6%. Additionally, the percentage of patients with stage 4 CKD (eGFR 15–29 mL/min/1.73 m2) decreased from 4% to 0%, indicating significant improvement in severe renal impairment. Post-Finerenone, the G4A2 category in the CKD heat map (Figure 1) showed complete resolution, reducing from 100% to 0%. In the G3bA3 category, severely increased albuminuria decreased from 50% to 25%. Furthermore, G1A3 and G2A3 categories showed reductions in severely increased albuminuria from 25% to 0% and 10% to 0%, respectively (Figure 1). Overall, a significant increase in serum potassium was observed (from 4.5 ± 0.5 to 4.6 ± 0.5 mmol/L, P = 0.016), leading to treatment discontinuation in 20% of patients due to hyperkalemia. After discontinuation, no significant changes were noted in other biomarkers, with serum potassium decreasing slightly (P = 0.414) and eGFR remaining stable (P = 0.813).

Graph/Table:



Conclusion

Finerenone shows promise as a valuable treatment option for preserving kidney function and managing albuminuria in T2D patients with CKD.

P07

A PROSPECTIVE COHORT STUDY OF FATTY LIVER INDEX AND TRIGLYCERIDE GLYCEMIC INDEX AS A MARKERS FOR IDENTIFYING NON ALCOHOLIC FATTY LIVER DISEASE IN TYPE 2 DIABETES PATIENTS

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Keywords

• Weight regulation and obesity • Socio-economic aspects • Non-alcoholic fatty liver disease (NAFLD)

Background and Aims

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disease which is characterized by combinations of insulin resistance and insulin deficiency.NAFLD is also strongly associated with insulin resistance (IR), metabolic syndrome (MS), and type 2 diabetes mellitus (T2DM).Triglyceride glycaemic index is newly developed marker for assessing insulin resistance and more.Fatty liver index (FLI) is a reliable and noninvasive predictor and it is calculated based on biochemical and anthropometric measurements such as serum triglycerides, body mass index (BMI), waist circumference, and gamma-glutamyl transferase (GGT).Due to lack of studies comparing triglyceride glycaemic index and fatty liver index in identifying non-alcoholic fatty liver disease in type 2 diabetes patients, this study will be useful to identify the better index and the accuracy of index in identifying non-alcoholic fatty liver disease in that patient. AMIS-1.To assess the role of triglyceride glycaemic index and fatty liver index in identifying non-alcoholic fatty liver disease in type 2 diabetes patients 2. To compare triglyceride glycaemic index and fatty liver index and identify better index of the two 3.To assess the accuracy of fatty liver index in identifying fatty liver disease by comparing with ultrasound findings

Materials and methods

Source of data: The study will be conducted in the department of Internal Medicine at RLJH – A tertiary care centre Tamaka , Kolar .

Study design: A Prospective cohort study

Study period: 18 months (may 2023 – October 2024)

Method of collection of data: All Adults presenting with Type 2 diabetes mellitus to the Department of General medicine to be included in the study.

Expenses Towards Investigations – To be paid by the primary investigator. (CBC,RFT,LFT,LIPID PROFILE,FBS,ULTRASOUNDS,HBA1C)

SAMPLE SIZE-84 subjects

Results

The cross-sectional study observed a strong and positive association between the TyG index and NAFLD risk after adjustment for potential confounders. An elevated TyG index were more remarkably associated with NAFLD in younger patients .The study showed that poor glycemic control was significantly associated with NAFLD as compared to those who had good glycemic control.In this study, the levels of HbA1c were positively correlated with the calculated FLI.The study is unable to identify the other forms of NAFLD like fibrosis and cirrhosis.

Conclusion

The study shows superior ability for identify NAFLD risk. This study concludes both TGI and FLI can be used as screening tools to identify at risk patients for NAFLD. This study also concluded that FLI is better indicator compared to TGI

P08

Non Invasive Score for assessment of MASLD and its association with Diabetes complications among people with Type-2-diabetes

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Keywords

• Non-alcoholic fatty liver disease (NAFLD)

Background and Aims

Metabolic Dysfunction Associated Steatotic Liver Disease (MASLD) is one of the prevalent complication among people with type 2 diabetes(T2DM). The Fibrosis-4 Index (FIB-4) and NAFLD fibrosis score (NFS) serves as a non-invasive method to assess the likelihood of advanced liver fibrosis in individuals with Type 2 DM. Individuals with MASLD along with its effect on the liver, a growing body of evidence showed that it is associated with an increased incidence of diabetic complications. The aim of this study was to evaluate the association between non invasive fibrosis scores (FIB-4 and NFS) with diabetic complications.

Materials and methods

A total of 856 participants with type 2 diabetes were screened from June 2023 to August 2024 at a tertiary care centre for diabetes, Chennai who had undergone ultrasound abdomen for the assessment of fatty liver. Those with the significant alcohol consumption, chronic

liver disease due to viral causes or hepatocellular carcinoma, were excluded . The remaining 229 cases with MASLD(M:F 159:70) were included and risk of advanced fibrosis and its association with diabetes complications were estimated using the Fibrosis-4 (FIB-4) score and the NAFLD Fibrosis Score (NFS).The proposed cut-offs were used to categorize patients into low, (<1.45 no fibrosis) intermediate (>1.45-3.25 advanced fibrosis) and high risk(>3.25 cirrhosis) for FIB-4 and NFS cutoff used were < -1.455 as low ,-1.455 to 0.675 as intermediate and >0.675 as cirrhosis.

Results

Among those with MASLD, 69% were males and 31% were females which indicates higher prevalence in men . The mean age and duration of diabetes among study participants was 53.7 and 13 years respectively. The prevalence of advanced fibrosis varied from 21% (FIB-4) to 44% (NFS). A higher prevalence of neuropathy (77% vs 48%) ($p<0.001$) and CKD (40% vs 25%) ($p<0.04$),was associated with FIB-4 in advancing fibrosis /intermediate group as compared to group with no fibrosis. There was no association observed with other complications like retinopathy and cardiovascular disease. When NFS was assessed for association with diabetes complications using different cut-offs it was noted that neuropathy (41% vs 29%) ($p<0.01$) and retinopathy(74% vs 38%) ($p<0.02$) were statistically significant when compared to group with no fibrosis.

Conclusion

FIB-4 and NSF may be useful as non-invasive scores to identify individuals at different stages of fibrosis and the scores also showed an association with microvascular complications in people with TYPE 2 Diabetes.

P09

Assessment of Pulmonary Function and its Association with Microvascular Complications among People with Type 2 Diabetes

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Keywords

• Other complications

Background and Aims

Diabetes Mellitus (DM) is a metabolic disorder associated with micro and macro vascular complications one among them and usually under looked is the diabetic lung or called as Diabetic Pneumopathy. DM has been found to cause microvascular complications and proliferation of extracellular connective tissues in the lungs leading to decline in the lung function in restrictive pattern. This study was aimed to look at the association of Pulmonary function in people living with diabetes and to understand the correlation with glycemic control and microvascular complications.

Materials and methods

A retrospective observational study was done in a tertiary care centre for diabetes in Chennai, among people with Type 2 DM between January to August 2024. The details of demographic, anthropometric, clinical and biochemical details were retrieved from electronic data base using unique identification number. A total of 500 participants who had undergone pulmonary function test (PFT) were screened and included 370 participants in this study. Participants with T1DM, LADA, GDM, known cases of pulmonary disease, failed to achieve PFT trial, those aged above 80 years were excluded. Based on the Predicted Forced Expiratory Volume in 1 second (FEV1) scores participants were divided into restrictive (group 1) and obstructive group (group 2) and included for the analysis. Association between FEV1 and other factors were analyzed by pearson's correlation method. Statistical analysis was performed using SPSS version 29.0.

Results

Among 370 study participants, 52.2% had restrictive pattern and 20.8% had obstructive pattern. The median age and BMI were similar between the groups (55 vs. 56) ($p=0.528$) and BMI (26.9 vs. 26.3) ($p=0.163$). The median HbA1c was higher in group 2 as compared to group 1 (9.3 vs. 8.7%) ($p=0.07$) but it did not reach statistical significance. Median duration of diabetes was 10 years in both the groups. FEV1 correlated with HbA1c and eGFR indicating an association of pulmonary function with glycemic control and kidney function (Table 1). Neuropathy was present in 69.4 %, Microalbuminuria in 42% and Retinopathy in 47.2% among those who had restrictive pattern of pulmonary function.

Graph/Table :

Table 1 - Correlation of FEV1 (restrictive pattern) with other parameters

Parameters (n=193)	r^2	P value
Age (in years)	-0.133	0.066
BMI (kg/m^2)	0.012	0.869
HbA1c (%)	**0.201****	**0.005**
Duration of diabetes (in years)	-0.103	0.152
eGFR (Ml/min/1/.73m^2)	**0.162***	**0.025**
SBP	-0.081	0.263
DBP	-0.103	0.152

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Conclusion

Nearly half of the participants with type2 diabetes had restrictive pattern of pulmonary function. FEV1 correlated with Glycemic control and kidney function. Further evaluation with larger sample size with imaging is needed.

P10

Effectiveness of single use of continuous glucose monitoring followed by self-monitoring of blood glucose for improved diabetes control.

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Keywords

• Devices

Background and Aims

BACKGROUND-Effective diabetes management is essential for preventing complications and improving quality of life. Traditional Self-Monitoring of Blood Glucose (SMBG) often lacks the comprehensive insights needed for optimal care. Continuous Glucose Monitoring (CGM) provides real-time data on glucose levels, empowering patients to make informed decisions.

AIM- To evaluate the effectiveness of initial Continuous Glucose Monitoring (CGM) followed by Self-Monitoring of Blood Glucose (SMBG) in improving glycemic control.

Materials and methods

Materials:

1. Continuous Glucose Monitoring (CGM) system: FreeStyle Libre Pro (Abbott Diabetes Care)
2. Self-Monitoring of Blood Glucose (SMBG) meter: Accu-Chek Aviva Connect (Roche Diabetes Care)
3. Glucometer strips: Accu-Chek Aviva Connect test strips
4. Participant logbooks for recording SMBG readings and hypoglycemic events
5. Electronic Case Report Form (eCRF) for data collection

Method-

An observational prospective study was conducted at the Diacare hormone clinic, Ahmedabad and involved adults diagnosed with type 2 diabetes with Hba1c >9, and participants with recurrent hypoglycaemia. After informed consent, participants were initially monitored with CGM for two weeks. Following this period, they were transitioned to 4 point SMBG for 4weeeks. Participants were called on for follow up at 1 month. Glycaemic control was evaluated by studying CGMS metrics, graphs and recording the frequency of hypoglycaemic events and comparing it with SMBG.

Results

In this study of 50 participants (30 males, 20 females; mean age 58.2 ± 10.1 years) with an average HbA1c of 10.2% ± 1.1%, the two-week continuous glucose monitoring (CGM) phase showed a mean glucose level of 220 ± 45 mg/dL, with 35.2% ± 12.4% of time in the target range and 21 hypoglycaemic events (mild: 15, moderate: 5, severe: 1) after 5 days of application of CGM. Following CGM data review after every 5 days for 2 weeks and modifying therapy according to CGM metrics and graphs, improvements in time in target range were noted. In the subsequent four-week self-monitoring of blood glucose (SMBG) phase, mean fasting glucose decreased to 110 ± 40 mg/dL, with 85.5% ± 10.2% of time in the target range and only 4 hypoglycaemic events (mild: 3, moderate: 1, severe: 0) as participants and had better understanding of Glucose patterns and therapy modification was done accordingly .CGMS demonstrated significantly lower mean glucose levels ($p < 0.01$) and fewer hypoglycaemic events compared to SMBG ($p = 0.02$). Both methods improved glycaemic control, with participants reporting enhanced understanding of glucose management with CGMS.

Conclusion

Overall, both monitoring strategies enhanced glycaemic control, but CGM was more effective in reducing hypoglycaemia and increasing time in the target range. Participants also reported improved understanding of glucose management and greater satisfaction with their diabetes care.

P11

Study of prevalence of sudomotor dysfunction in Indian patients with type 2 diabetes mellitus

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Keywords

• Neuropathy: autonomic, incl. erectile dysfunction

Background and Aims

Sudomotor dysfunction is a significant aspect of diabetic autonomic neuropathy (DAN), characterized by the impairment of peripheral autonomic nerves. This study aimed to assess the prevalence of sudomotor dysfunction in Indian patients with type 2 diabetes mellitus using the Sudoscan™ device.

Materials and methods

A cross-sectional study was conducted at a tertiary care hospital in North India, involving 827 patients with type 2 diabetes mellitus. Patients were recruited from the Endocrinology OPD, and data were collected on age, sex, duration of diabetes, blood pressure, BMI, HbA1c, lipid profile, urinary albumin creatinine ratio, and carotid intima-media thickness (CIMT). Sudomotor function was assessed using the Sudoscan™, and the Michigan Neuropathy Screening Instrument (MNSI) was used to evaluate clinical neuropathy. Statistical analyses included descriptive statistics, Fisher Exact test, multivariate linear regression, and Pearson correlation.

Results

The mean age of participants was 59.40 ± 10.7 years, with a mean diabetes duration of 13.8 ± 4.40 years. The prevalence of sudomotor dysfunction was 70.7%, with 44.4% having moderate dysfunction and 26.4% severe dysfunction. Clinical neuropathy was strongly associated with sudomotor dysfunction (OR 6.44, $p<0.0001$). Duration of diabetes and HbA1c were significant predictors of sudomotor dysfunction, explaining 51% and 13% of the variance, respectively. Sudomotor dysfunction correlated negatively with albuminuria (r=-0.68) and CIMT (r=-0.53).

Conclusion

Sudomotor dysfunction is highly prevalent among Indian patients with type 2 diabetes mellitus, with strong associations with clinical neuropathy, diabetes duration, and glycemic control. These findings underscore the importance of early detection and management of autonomic dysfunction in diabetic patients.

P12

Bridging the Gap: Enhancing Awareness of Diabetes, Heart Health, and Diabetic Cardiomyopathy

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Keywords

Diabetes epigenetics • Socio-economic aspects • Hypertension • Cardiac complications

Background and Aims

Background: Diabetes mellitus is a significant risk factor for cardiovascular diseases, particularly diabetic cardiomyopathy (DCM), which often goes unrecognized in the general population. Understanding public awareness and knowledge of diabetes and its cardiovascular implications is crucial for effective prevention and management strategies.

Objective: This study aims to evaluate the level of public awareness and knowledge regarding diabetes, cardiac performance, and the relationship between diabetes and diabetic cardiomyopathy.

Materials and methods

Methods: A cross-sectional descriptive study is conducted over a six-month period, from July to December 2023, involving a diverse sample of participants from various demographics. Data are collected through self-administered structured questionnaire (both in English and Tamil) assessing awareness of diabetes, its implications, particularly DCM, and general cardiac health. Statistical analysis is performed using GraphPad Prism software (version 6.0) to identify correlations between knowledge level and demographic factors.

Results

Results: A total of 495 participants are included in the study, comprising 246 males (52.6%) and 225 females. Among the respondents, 7.8% hold doctorates, while 72% are currently pursuing their education. Preliminary finding indicate varying levels of awareness regarding diabetes and its complications among participants. While general knowledge about diabetes is relatively high, specific awareness of DCM remains low. Notably, only 35% recognize the connection between diabetes and heart disease, and 34% are aware of diabetic cardiomyopathy. On average, 3% of the respondents refuse to participate in the awareness survey. Additionally, more than half of the respondents 280 (59%) have not heard of the condition "diabetic cardiomyopathy", emphasizing the need for better education and outreach. Approximately 4% remain unaware of diabetes, while about 47% report a family history of the disease, yet many remain unaware of its implications, including diabetes-mediated organ dysfunction (27% unaware), and general diabetic complications(over 50% do not recognize them). Only 10% of participants report having received counseling for diabetes management, which suggests a lack of adequate healthcare support and education.

Conclusion

Conclusion: The study highlights a critical gap in public knowledge about diabetic cardiomyopathy despite a general understanding of diabetes. The findings underscore the need for targeted educational interventions to enhance public awareness and promote better cardiovascular health among individuals with diabetes. Increased awareness could lead to improved prevention strategies and health outcomes in the vulnerable population.

P13

Suppresor of Cytokine Signalling mediates insulin signalling in patients with primary hypothyroidism

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Keywords

• Insulin action

Background and Aims

Thyroid hormones are intricately linked with various metabolic pathways. Conflicting reports exist on glucose homeostasis in patients of primary hypothyroidism, with some reporting incidences of hypoglycemia and others the presence of insulin resistance. SOCS are proteins involved in negative regulation of insulin signalling. An invitro study has documented induction of SOCS1 and SOCS3 by TSH. Could they be the key link to explain insulin resistance in hypothyroidism? Therefore, this in-vivo study was done to study the expression of *SOCS1* and *SOCS3* and levels of IR (via HOMA-IR) in patients with primary hypothyroidism and age matched healthy controls.

Materials and methods

Newly diagnosed, treatment naive patients of primary hypothyroidism (n=15) and age-sex matched healthy controls (n=15) were enrolled based on predefined inclusion/exclusion criteria. Serum fasting Insulin was estimated by commercially available ELISA kit. HOMA-IR was calculated via formula-based method. mRNA expression of *SOCS1* and *SOCS3* was measured by real time PCR using double delta Ct method.

Results

Mean fasting plasma glucose, fasting serum insulin and HOMA-IR were higher in patients of primary hypothyroidism compared to healthy controls. Expression of *SOCS1* and *SOCS3* were 1.2-fold and 2.4-fold higher respectively in patients of primary hypothyroidism compared to healthy controls.

Conclusion

High levels of TSH is associated with increased expression of both *SOCS1* and *SOCS3* in patients with PH similar to the invitro study. Our study hints at a possible link between IR and hypothyroidism via SOCS induction thereby broadening our insight into the molecular mechanism involved in the pathogenesis of IR in patients of PH.

P14

Beyond the Routine- Analysing Correlation between Glycaemic Control and Inflammation- HbaAc versus NL Ratio

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Keywords

• Inflammation in type 2 diabetes • Endothelium

Background and Aims

Glycated haemoglobin (HbA1c) is commonly used as a quantitative marker of glycaemic control in clinical practice. However, it doesn't reflect the ongoing inflammation and immune dysregulation taking place by virtue of diabetes mellitus being a pro-inflammatory state. Moreover, HbA1c values can be confounded in the presence of haemoglobinopathies, systemic disorders or malignancies. Neutrophil:Lymphocyte Ratio (NLR) demonstrates the balance between innate and adaptive immunity and is the subject of increased interest as a marker of inflammatory state. Increased NLR can indicate higher degree of inflammatory state and poorer prognosis even in cases of diabetes mellitus.

AIM: to look for any correlation between glycaemic control (HbA1c) and NLR

Materials and methods

Retrospective observational cross-sectional study on known Type II diabetic patients attending the Medicine OPD of our tertiary care hospital for routine follow up were included. Patients of Type I diabetes, chronic kidney disease stage IV/V, or having active malignancies or acute stress events like infection or trauma were excluded. The patient's data were collected and analysed to look for correlation between HbA1c and NLR. Based on HbA1c, cases were divided into two groups- good diabetic control (HbA1c<7%) and poor control (HbA1c >7%) and mean NLR for the two groups were calculated and analysed.

Results

Our study was indicative of positive correlation between glycaemic control and NLR, with mean NLR in poor glycaemic control group being higher (7.51) as compared to the group with good diabetic control (3.87). Also, higher the HbA1c level, higher was NLR.

Conclusion

NLR can be a good additional indicator of glycaemic control in diabetes patients. In addition, elevated NLR is indicative of poorer prognosis and higher chronic inflammation associated with diabetes mellitus.

P15

Correlation of serum magnesium, serum uric acid levels and microalbuminuria inpatients with type 2 Diabetes Mellitus

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Keywords

Background and Aims
The primary objectives of this study are to: (1) Determine the incidence of microalbuminuria in T2DM patients; (2) Assess the significance of hyperuricemia and hypomagnesemia in predicting microalbuminuria; and (3) Correlate microalbuminuria with HbA1c levels in diabetic patients.
Materials and methods
The study involved 100 T2DM patients attending the outpatient and inpatient departments at Mata Chanan Devi Hospital. Patients were diagnosed according to the American Diabetic Association (ADA) criteria. Exclusion criteria included patients with Type 1 diabetes, chronic alcohol intake, gout, acute myocardial infarction, or those on chemotherapeutic agents. The study utilized fasting and post-prandial blood sugar levels, HbA1c, serum magnesium, serum uric acid, and urine albumin-creatinine ratio to assess the participants. Microalbuminuria was defined as urinary albumin levels between 30-300 mg/g. Serum magnesium and uric acid levels were measured to determine their correlation with microalbuminuria.
Results
The study found that 75% of the participants exhibited microalbuminuria, indicating a high prevalence of early kidney damage among T2DM patients. The majority of participants were aged 51-60 years, with a gender distribution of 69% males and 31% females. The duration of diabetes among participants varied, with 68% having diabetes for 1-10 years. Serum magnesium levels were found to be low in 89% of the participants, indicating widespread hypomagnesemia in the study group. Serum uric acid levels were elevated in 67% of the participants, suggesting a high prevalence of hyperuricemia. The study also found a significant correlation between low serum magnesium levels and the presence of microalbuminuria, as well as a link between elevated uric acid levels and increased urinary albumin excretion.
Conclusion
The study concludes that both hypomagnesemia and hyperuricemia are strongly correlated with the development of microalbuminuria in T2DM patients. Regular monitoring of serum magnesium and uric acid levels, along with early intervention, can help prevent the progression of diabetic nephropathy and improve patient outcomes. Maintaining adequate magnesium levels through dietary intake or supplementation and controlling uric acid levels can mitigate the risk of kidney damage in diabetic patients.

P16

Evaluating Diabetes and Distress: A pan India study utilizing the diabetes distress scale (DDS-17) in People living with Diabetes mellitus

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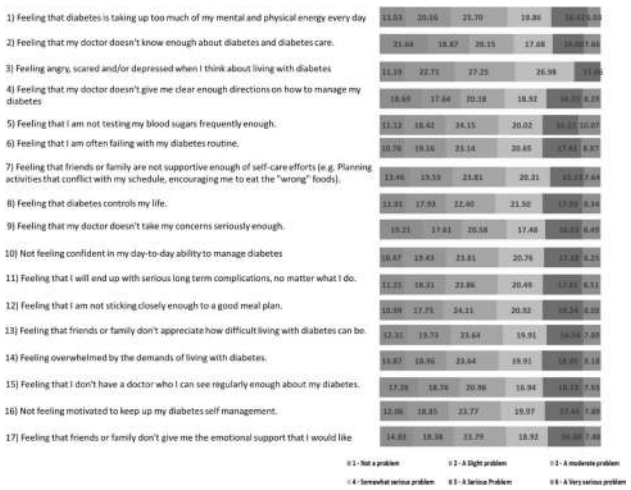
Keywords
Epidemiology

Background and Aims
Diabetes distress (DD) refers to the emotional and cognitive stress experienced by individuals as a result of managing diabetes on a daily basis. The Diabetes Distress Scale (DDS)-17, a 17-item tool commonly used to assess DD. This study aimed to assess DD in patients with diabetes mellitus (DM) using the DDS-17.

Materials and methods
This cross-sectional study assessed DD in patients with DM using the Online DDS-17 questionnaire. Participants were recruited from online forums, with eligible adults completing an electronic DDS-17 questionnaire. The 17-item DDSS, adapted from the DDS-17, evaluated four domains of DD such as emotional burden, physician-related distress, regimen-related distress, and interpersonal distress.
Responses were recorded on a 6-point Likert scale.
Results
A total of 4451 T2D patients with a mean age of 50.7 ± 10.3 years were included. The majority of participants were male (53.6%, n = 2386). The most serious concerns and related distress were associated with the following issues with 10.07% (n = 448) of participants felt that they were not testing blood sugars frequently enough. Additionally, 8.87% (n = 395) reported struggling with adherence to their diabetes routine. Furthermore, 8.49% (n = 378) expressed concerns that their doctor did not take their issues seriously, and 8.51% (n = 379) felt they would inevitably face serious long-term complications, regardless of their efforts (Figure 1).
Graph/Table :



Conclusion
This study reveals significant diabetes distress among patients, highlighting concerns about inadequate physician support and management adherence. It underscores the need for improved communication and collaborative care strategies to improve patient well-being.
Figure 1. Results of DDS-17 scores by patients for each question

P17

Real-world Study to Evaluate Effect of Hydroxychloroquine; The first Antiinflammatory Drug Approved in T2D, on lipid Parameters including Lp(a) in uncontrolled T2D

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Keywords
• Insulin sensitivity and resistance • Inflammation in type 2 diabetes • Dyslipidaemia, lipoproteins

Background and Aims
Lipoprotein (a) [Lp(a)] is an emerging cardiovascular risk factor and contributes independently to atherosclerotic cardiovascular disease. It is considered as a pro-atherosclerotic, pro-inflammatory, prothrombotic, and anti-fibrinolytic. Various studies indicate that the incidence of Lp(a) elevation is around 25% in the general population. Hydroxychloroquine (HCQ) is an anti-inflammatory drug with antithrombotic, anti-atherosclerotic, antiplatelet effects. It has been approved for management of uncontrolled Type 2 Diabetes (T2D) in India and has shown its effects not only in reducing glycemic parameters but also in lipid parameters. Therefore, we aimed to study the effect of HCQ on lipid parameters including Lp(a) in Uncontrolled T2D patients with dyslipidemia.
Materials and methods
This was an unicentric study conducted on uncontrolled T2D patients of either gender aged between 18 and 65 years who were having elevated Lp(a) levels more than 50 mg/dl. Out of 74 patients screened, 21 patients showed elevation in Lp(a) levels and were enrolled in the study. Seventeen patients completed the study and 4 patients were lost to follow up. Hydroxychloroquine 400 mg/day was prescribed to the patients as add on therapy to their antidiabetic regimen and the patients were followed up for a period of 12 weeks. Glycemic parameters and lipid parameters of the patients were evaluated at baseline and at the end of therapy.
Results
Lipid Parameters
At the end of 12 weeks, a significant reduction in total cholesterol, triglycerides and non-high density lipoproteins were observed -13.94 mg/dl, -52.88 mg/dl and -16.47 mg/dl respectively as compared to baseline ($p<0.05$). Although non-significant, low density lipoprotein was numerically reduced by -8.02 mg/dl while high density lipoprotein was increased by 2.53 mg/dl. There was no effect of HCQ on Lp(a).
Glycemic Parameters
Additionally, HbA1c was significantly reduced from 9.98±1.67% at baseline to 8.08±1.47% at the end of therapy ($p<0.0005$). Fasting and postprandial blood glucose levels were also significantly reduced from baseline ($p<0.01$) at the end of week 12.
Conclusion
Hydroxychloroquine has shown a significant effect on lipid lowering in addition to its glucose lowering effect in uncontrolled T2D patients. Thus its salutary effect can be used in reducing CV risk in this patient population.

P18

Efficacy of Saroglitazar in MASLD Patients: A Prospective, Real-World Assessment of Liver and Metabolic Health

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Keywords
• Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) is a significant health concern and commonly associated with conditions such as dyslipidemia, insulin resistance, and increased risk of cardiovascular disease. Saroglitazar, a dual PPARα/γ agonist, has shown potential in addressing liver steatosis, liver fibrosis and dyslipidemia.
Materials and methods
This prospective, single arm, multicentric study included 55 MASLD patients (mean age 51.82 ± 10.66 years). Patients received Saroglitazar magnesium 4mg alongside standard of care for a duration of six months. The primary objective was to assess changes in liver stiffness measurement (LSM) and controlled attenuation parameter (CAP), while secondary objectives included evaluating changes in metabolic parameters at baseline and end of study.
Results
A statistically significant improvement hepatic parameters including LSM and CAP scores was observed. With 16% of patients improving from liver fibrosis stages of F3/F4 to F0/F1/F2 fibrosis stages ($p<0.0001$), and reduction in percentage of patients with severe steatosis patients (S3) from 76% to 39% at end of study ($p<0.0001$). Improvements were observed in key metabolic parameters with statistically significant reduction in FBS from 141.25 ± 51.5 mg/dl to 115.66 ± 18.17 mg/dl ($p=0.004$), HbA1c from 7.46 ± 1.44% to 6.83 ± 1.08% ($p=0.0004$) and triglyceride levels from 238.67 ± 168.35 mg/dl to 167.9 ± 113.89 mg/dl ($p=0.0001$).
Conclusion
Significant improvements in transient elastography parameters along with key metabolic parameters in MASLD patients who were administered saroglitazar.

P19

Evaluation of Antidiabetic, Antioxidant and Anti Hyperlipidemic Potential of Yellow Dragon Fruit Extract in Streptozotocin induced Diabetes in Rats

MYP P

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Keywords
• Insulin sensitivity and resistance • Animal models of type 2 diabetes • Nutrition and diet • Cognitive dysfunction and Alzheimer Disease

Background and Aims
Background: Globally, Diabetes Mellitus is the most public cause of premature death after cardiovascular syndromes and tobacco eating. It is a mixed metabolic disorder categorised by the broken-down metabolism of carbohydrates, proteins and fats as a result of faults in insulin secretion or resistance. It was predictable that around 461 million of the adult people are suffering from diabetes mellitus, which may grow up to 710 million by 2041. *Hylocereus megalanthus*, is a cactus species in the genus *Selenicereus* that is native to northern South America, where it is known, along with its fruit, by the name of *pitahaya*. The species is grown commercially for its yellow fruit, but is also an impressive ornamental climbing vine with perhaps the largest flowers of all cacti. However, the hypoglycaemic activity of the plant is not scientifically validated.
Purpose: The current study aimed to evaluate the antioxidant, antidiabetic and anti-hyperlipidaemic activity of aqueous fruit extract of .*Hylocereus megalanthus* in streptozotocin (STZ) induced diabetic rats.
Materials and methods
Method: Experimentally, type II diabetes was induced in rats by an i.p. injection of STZ at a dose of 60 mg/kg. The effect of the fruit extract was evaluated at doses of 125, 250 and 500 mg/kg body weight in STZ-induced diabetic rats for 30 days.
Results
Result: The oral treatment of fruit extract caused a significant ($p < 0.05$) reduction in the blood glucose level with a more prominent effect at 500 mg/kg. The fruit extract showed dose-dependent α-amylase and α-glycosidase inhibitory activity. It reduced the serum cholesterol and triglyceride levels remarkably in diabetic rats compared to normal. The extract showed the reduced activity of endogenous antioxidants,

superoxide dismutase, glutathione and catalase in the liver of STZ diabetic rats.

Conclusion

Conclusion: The result confirmed that the fruit extract of *Hylocereus megalanthus* showed a dosedependent blood glucose lowering effect and significantly reduced elevated blood cholesterol and triglycerides. It prevented oxidative stress associated with type II diabetes in STZ rats.

P20

Estimating the heritability of blood glucose levels: A study on adults with familial diabetes history in West Bengal

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Keywords
Epidemiology

Background and Aims

Diabetes has long been considered a primary public health threat, especially in regions like India, where both genetic predispositions and environmental factors contribute significantly to its rising prevalence. Heritability of this trait can lend insight into genetic factors that influence the onset of the disease. This cross-sectional study will estimate the heritability of fasting blood glucose level in adults in West Bengal. The study focused on subjects with a family history of diabetes, which was defined by the report of a parent with diabetes.

Materials and methods

The participants were 1,243 adults, females were 603 and males 640, aged 21-60 years, selected from different districts of West Bengal, India. The research participants were categorized in relation to the family history of diabetes, specifically if one or both parents had diabetes. Fasting blood glucose levels were collected from all subjects. In addition, family history of diabetes (diabetes in father, mother or both) was recorded.

Results

The mean fasting blood glucose concentration across the participants was 104.7 mg/dL (SD=28.9); males recorded a mean of 106.5 mg/dL (SD=27.5), and which was also slightly higher than for females, at 102.8 mg/dL (SD=30.2). The group of individuals without diabetes in first-degree relatives exhibited a mean fasting glucose level of 98.3 mg/dL (SD=24.2); the group of participants with one diabetic parent was higher: 106.4 mg/dL (SD= 27.8) when the father was affected and 109.2 mg/dL (SD=29.1) when the mother was affected. Highest glucose levels were found in participants whose parents both suffered from diabetes, with a mean of 118.7 mg/dL (SD=31.4). Heritability estimates for fasting blood glucose concentration were 48% (h^2=0.48, 95% CI: 0.45–0.52, $p<0.001$), suggesting that nearly half of the total variation of glucose levels was explained by genetics. In relation to the percentage of variance in both age and gender, this explained 21% ($p<0.001$) and 7% ($p=0.032$), respectively. The effect of parental diabetes on increased blood glucose was greatest for females who showed higher heritability estimates than males.

Conclusion

The study results indicate that family history or the presence of parental diabetes played a very significant role in predicting fasting blood glucose values among adults of West Bengal. An estimated heritability suggests considerable genetic predisposition toward higher glucose levels, and such an individual with known familial risk deserves specific interventions.

P21

Human Factor in The Use of Diabetes Technology for prediabetics.

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Keywords
• Health care delivery

Background and Aims

The aim of exploring the human factor in diabetes technology use for prediabetics is to understand how individual attitudes, behaviors, and social contexts influence the adoption and effectiveness of these tools

Materials and methods

Method

1. Study Design

The study will be conducted in two phases:

• **Phase 1: Quantitative Survey**
• **Phase 2: Qualitative Interviews**

2. Participants

Participants will include adults diagnosed with prediabetes within the last two years, recruited through healthcare clinics, community health centers, and diabetes education programs. Inclusion criteria will involve individuals aged 18-65 who have access to diabetes technology, such as mobile health apps, glucose monitors, or wearable devices. A target sample size of 200 participants will be sought for the survey to ensure statistical significance, while approximately 20 participants will be selected for in-depth interviews based on survey responses.

3. Data Collection

Phase 1: Quantitative Survey The survey will be designed to capture demographic information, technology usage patterns, health literacy, and psychosocial factors. Key components will include:

• **Demographics:** Age, gender, socioeconomic status, and education level.
• **Technology Use:** Frequency of technology use, types of devices/apps used, and perceived ease of use.
• **Health Literacy:** Assessment of understanding of prediabetes and technology (using a validated health literacy scale).
• **Psychosocial Factors:** Motivation, confidence in managing health, and social support (using standardized scales like the Diabetes Empowerment Scale).

The survey will be distributed online through platforms like Qualtrics, and participants will be incentivized with gift cards to encourage participation.

Phase 2: Qualitative Interviews Semi-structured interviews will be conducted with a subset of survey respondents to gain deeper insights into their experiences with diabetes technology. The interviews will focus on:

Results

The study revealed that prediabetics' engagement with diabetes technology is significantly influenced by individual motivations, perceived usability, and social support. Quantitative data indicated that higher health literacy correlates with increased technology use

Conclusion

understanding the human factors influencing the use of diabetes technology among prediabetics is crucial for enhancing user engagement and health

outcomes. The study highlighted that individual motivations, health literacy, and social support significantly impact technology adoption and adherence.

P22

Correlation between Dyslipidemia and Left ventricular Diastolic dysfunction in newly diagnosed Asymptomatic Type 2 Diabetes Mellitus patients

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Keywords
• Insulin sensitivity and resistance • Lipid metabolism • Cardiac complications

Background and Aims
Left ventricular diastolic dysfunction (LVDD) is a frequent cardiovascular complication in patients with Type 2 diabetes mellitus (T2DM). In patients with diabetes, factors independent of coronary artery disease are involved in the development of heart failure , described as Diabetic Cardiomyopathy. Left ventricular diastolic dysfunction is considered as the first manifestation of cardiac remodelling in Diabetes Mellitus. This study aimed to explore the correlation between dyslipidemia and LVDD in newly diagnosed asymptomatic T2DM patients, with a focus on lipid profile and glycemic control, particularly HbA1c.

Materials and methods
A cross-sectional study was conducted on 67 newly diagnosed asymptomatic T2DM patients. Clinical parameters including age, height, weight, body mass index (BMI), and HbA1c levels were recorded. Echocardiography (ECHO) was performed to assess the presence of diastolic dysfunction, and lipid profiles (total cholesterol [TC], triglycerides [TG], high-density lipoprotein [HDL], and low-density lipoprotein [LDL]) were measured. Statistical analysis was carried out using Chi-square and Mann-Whitney U tests, with significance set at $p < 0.05$.

Results
LVDD was identified in 31.3% of patients, with no significant difference between males and females ($p = 0.415$). Patients with LVDD tended to have poorer glycemic control, with HbA1c levels higher in the LVDD group compared to those without LVDD (mean HbA1c 9.086% vs. 8.15% in the non-LVDD group; $p = 0.051$), approaching statistical significance. Lipid profiles, including TC, TG, HDL, and LDL levels, did not show significant differences between patients with and without LVDD. Specifically, the mean TC levels were 189.1 mg/dL in the LVDD group and 184.7 mg/dL in the non-LVDD group ($p = 0.829$), while TG levels were 211.1 mg/dL in the LVDD group versus 183.2 mg/dL in the non-LVDD group ($p = 0.185$). HDL and LDL levels were similarly not significantly different between the groups (HDL: 38.6 mg/dL vs. 36.9 mg/dL, $p = 0.887$; LDL: 121.8 mg/dL vs. 117.7 mg/dL, $p = 0.866$). Additionally, the TC/HDL ratio did not differ significantly between groups ($p = 0.194$). These findings suggest that while dyslipidemia was not significantly associated with LVDD, there may be a trend toward a relationship between poor glycemic control and the development of diastolic dysfunction in T2DM patients.

Graph/Table :

Table 2: Comparison of study variables with diastolic disfunction

					Percentiles			test statistic	p value
	ECHO	N	Mean	SD	25th	50th	75th		
AGE	Present	21	49.571	7.593	44	49	57		
	Absent	46	47.304	6.693	42.25	47.5	51	1.233	0.222
HEIGHT(in cm)	Present	21	156.69	9.155	153	158	162		
	Absent	46	163.859	9.881	158	167	170	-2.817	0.006*
WEIGHT	Present	21	61.338	11.274	56	61	68		
	Absent	46	72.231	12.742	64.625	72	80.75	-3.36	0.001*
BMI	Present	21	24.976	3.786	22.463	26.445	27.399		
	Absent	46	26.833	3.769	24.968	26.834	29.517	-1.869	0.066
HBA1C	Present	21	9.086	2.189	7.5	9.1	10.9		
	Absent	46	8.15	2.204	6.7	7.45	8.575	338	0.051
TC	Present	21	189.095	66.508	136	197	228		
	Absent	46	184.696	37.478	167.25	185	213.75	466.5	0.829
TG	Present	21	211.095	124.535	138	180	273		
	Absent	46	183.217	138.957	103.75	142	194.5	384.5	0.185
HDL	Present	21	38.571	19.709	28	37	46		
	Absent	46	36.935	13.675	29	35	44.75	472	0.887
LDL	Present	21	121.81	73.487	75	115	151		
	Absent	46	117.652	39.598	104.25	123	139.5	470	0.866
TC/HDL	Present	21	11.933	26.74	4.5	5.9	7.9		
	Absent	46	5.73	3.007	4.4	5.05	6.075	386.5	0.194

Statistical test used: #Independent sample t test; ## Mann Whitney U test ;
* p value <0.05 is statistically significant

Conclusion
This study suggests that dyslipidemia may not be a key factor associated with LVDD in newly diagnosed asymptomatic T2DM patients. However, glycemic control, as indicated by elevated HbA1c levels, may be a contributing factor. Further longitudinal studies are needed to clarify the role of glycemic control and lipid parameters in the pathogenesis of LVDD among diabetic patients.

P23

CORRELATION OF SERUM VITAMIN B12, FOLATE, AND MAGNESIUM LEVELS WITH SEVERITY OF FIBROSIS IN NON-ALCOHOLIC FATTY LIVER DISEASE

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Keywords
• Insulin sensitivity and resistance • Lipid metabolism • Nutrition and diet • Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
Non-alcoholic fatty Liver Disease (NAFLD) ranges from simple steatosis to severe stages like NASH and cirrhosis. Micronutrients like Vitamin B12, folate, and magnesium influence NAFLD pathogenesis involving lipid metabolism, oxidative stress, and inflammation. This study focussed on studying the correlation of serum vitamin B12, folate, and serum magnesium levels with the severity of fibrosis in NAFLD using NAFLD fibrosis score.

Materials and methods
A cross-sectional observational study was conducted at Dr. RML Hospital, New Delhi, from April 1, 2023, to June 30, 2024, and included 70 NAFLD patients above 18 years based on ultrasound and exclusion criteria. Secondary causes of fatty liver disease were excluded. Blood samples were analyzed for biomarkers such as Vitamin B12, folate, and

magnesium. Demographic characteristics and metabolic derangements were assessed. B12, folate, and magnesium levels were correlated with NAFLD Fibrosis Score.

Results

The mean age was 50.09 years, which consisted of 54.29% males and 45.71% females. Obesity was present in 70% of patients. Diabetes and hypertension were noted in 44.28% and 42.85% respectively. Dyslipidemia was common, with high cholesterol, and low HDL levels in 30% and 64% respectively. Vitamin B12 levels showed a mean of 503.17 pg/mL and were associated with less severe NAFLD fibrosis with a correlation coefficient (r = -0.34, p = 0.003). Mean folate levels were 2.52 ng/mL with the strongest negative correlation (r = -0.45, p= 0.0001) with fibrosis. Mean magnesium levels were 1.62 mg/dL and showed a moderate negative correlation (r = -0.31, p=0.008).

Conclusion

Serum levels of Vitamin B12, folate, and magnesium were significantly correlated with the severity of liver fibrosis in NAFLD patients with folate showing the most negative correlation. These findings highlight the importance of micronutrients in NAFLD progression and suggest their monitoring could be crucial for managing the disease.

P24

Study on Insulin Dose in People with Type 2 Diabetes and eGDR(wc) based Prediction of Total Daily Insulin Dose by using Multiple Regression Analysis

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Keywords

• Insulin therapy

Background and Aims

Optimizing insulin therapy in patients with Type 2 Diabetes Mellitus (T2DM) requires personalized treatment strategies based on various clinical parameters. This study aimed to develop a predictive model for total daily insulin dose (TDD) using multiple regression analysis, focusing on the significance of factors such as age, weight, HbA1c, body mass index (BMI), diabetes duration, and estimated Glucose Disposal Rate (eGDR). Additionally, the study explored whether categorizing patients based on eGDR could further refine insulin dosing strategies.

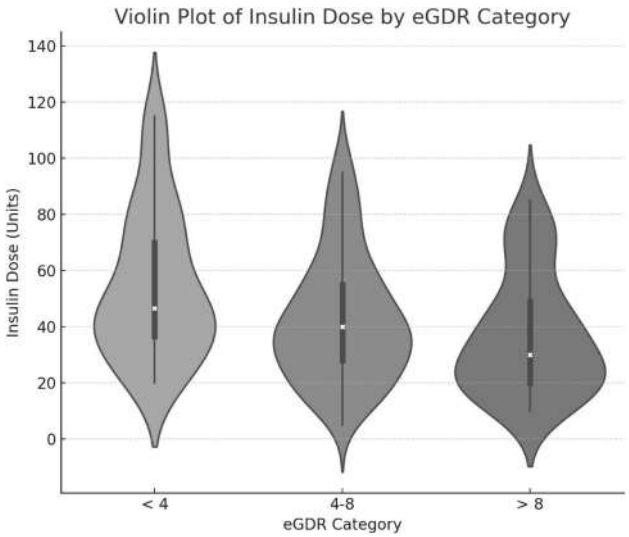
Materials and methods

A total of 250 T2DM patients on insulin therapy were analyzed. Clinical data included age, weight, HbA1c levels, BMI, diabetes duration, and eGDR. Patients were categorized into three eGDR groups: **eGDR < 4**, **eGDR 4-8**, and **eGDR > 8**, indicating varying levels of insulin sensitivity. Multiple regression analysis and stepwise selection were performed to identify significant predictors of TDD. Interaction terms (Weight × HbA1c and Age × Diabetes Duration) were introduced to explore combined effects. Model performance was assessed using R-squared and adjusted R-squared, and statistical significance was evaluated using p-values.

Results

The regression analysis identified **weight** and **HbA1c** as the most significant predictors of insulin dose ($p < 0.01$). The final model explained **15.9%** of the variability in insulin dose (R-squared = 0.159). Categorization by eGDR revealed that patients with **eGDR < 4** required higher insulin doses (mean = 54.48 units), compared to **eGDR 4-8** (mean = 42.85 units) and **eGDR > 8** (mean = 37.07 units). The interaction terms (Weight × HbA1c and Age × Diabetes Duration) were not statistically significant ($p > 0.05$), suggesting that individual predictors are sufficient to model insulin dose.

Graph/Table :



Conclusion

This study demonstrates that lower eGDR (indicating higher insulin resistance) is associated with higher insulin requirements. Weight and HbA1c are the most significant predictors of insulin dose in T2DM patients, while interaction effects between variables do not provide additional predictive value. These findings suggest that insulin sensitivity (eGDR), weight, and glycemic control should be key considerations in personalizing insulin therapy. Further research should focus on refining the model by incorporating non-linear approaches or additional patient-specific factors.

P25

Real-world study assessing Sitagliptin-Metformin combination in T2DM cases with CV risk factors (STEADY STUDY)

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Keywords

• Incretin based therapies 43 Novel agents

Background and Aims

Despite the availability of various glucose-lowering agents, HbA1c goal attainment is suboptimal in type 2 diabetes. Without treatment intensification, glycemic control maintenance is challenging. Various clinical guidelines recommend stepwise addition of other glucose-lowering therapies in order to maintain adequate glycaemic control.

Initial dual therapy is recommended for faster glycemic control, particularly in patients with high baseline HbA1c. For combination with metformin, dipeptidyl peptidase-4 (DPP-4) inhibitors are of particular interest, owing to their favourable efficacy and safety profiles.

Materials and methods

Post-approval observational study involving 11402 adult T2DM cases with CV risk traits taking Sitagliptin/Metformin FDC from 453 sites were analyzed. Study done after receiving local IEC approval in accordance with ICH-GCP & Helsinki Declaration. Descriptive & statistical analysis applied for study endpoints using SPSS Version 29.0.1.0(171).

Results

Per protocol analyses (n=11402) conducted with mean Age (51.2±12.0 y), Gender (M=7761, F=3641), weight (72.5±11.7 kg), height (163.9±10.2 cm). 6105 (53.54%) patients had family history of T2DM. 3751 (32.9%) were newly diagnosed; 6134 (53.8%) had diabetes for <10 years; 1517 (13.3%) had diabetes for ≥10 years. Common risk-factors were smoking (n=3867, 33.91%), sedentary lifestyle (n=3522, 30.9%), alcohol (n=3384, 29.7%), obesity (n=2162, 18.96%), others (n=120, 1.1%) & none (n=2813, 24.7%). Prevalent comorbidities were hypertension (n=7305, 64.07%), dyslipidaemia (n=3765, 33.02%), CAD (n=1721, 15.09%), CHF (n=1216, 10.66%), kidney disease (n=1081, 9.48%), stroke (n=537, 4.71%), PAD (n=213, 1.87%), others (n=210, 1.8%), none (n=2172, 19.05%). Previous medications included metformin (n=3993, 35.02%), sulphonylurea (n=3516, 30.84%), SGLT2 inhibitor (n=2198, 19.28%), pioglitazone (n=277, 2.43%) & none (n=2557, 22.43%). Sitagliptin/Metformin FDC initiated as 50+500 (n=7548, 66.2%); 50+1000 (n=2400, 21.05%); 100+1000 (n=1454, 12.75%). FDC was mostly prescribed OD (n=6978, 61.2%) to be taken in morning (n=8077, 70.84%). Glycemic parameters at FDC initiation were HbA1c (8.78±1.85 %), PPBG (250.3±68.3 mg/dL) & FBG (173.2±45.9 mg/dL). At 4 weeks follow-up, significant drop in glycemic parameters were note in PPBG & FBG of 69.2 mg/dL *(p<.0001)* & 41.1 mg/dL *(p<.0001)* respectively. Co-prescription involved antihypertensives (n=7091, 62.19%), Lipid lowering drugs (n=3589, 31.48%), antiplatelets (n=2251, 19.74%), Anti-obesity (n=1637, 14.36%), others (n=330, 2.89%).

Conclusion

Sitagliptin/Metformin was well-tolerated & effective for Indian T2DM patients' management with CV risk factors.

P26

Unlocking the Clinical Utility of C-Peptide in Precision Diabetes Management

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Keywords

Prediction and prevention of type 1 diabetes • Insulin secretion in vitro and exocytosis • Insulin secretion in vivo • Insulin therapy

Background and Aims

C-peptide measurement plays a crucial role in assessing insulin secretion in diabetes management. It helps differentiate Type 1 from Type 2 diabetes, guides treatment decisions, and predicts treatment response. Recent advancements in assays have made C-peptide testing more accessible and reliable, thus improving diabetes care.

Materials and methods

A comprehensive literature review was conducted using PubMed to explore the clinical utility of C-peptide in diabetes management. Studies focused on diagnostic performance, treatment guidance, and insulin secretion assessment. Data were analyzed from studies utilizing different C-peptide tests such as fasting, stimulated, and urine C-peptide: creatinine ratios.

Results

C-peptide measurement showed significant utility in classifying diabetes subtypes, especially in long-standing diabetes cases. In Type 1 diabetes, low C-peptide levels correlated with absolute insulin deficiency, confirming the need for insulin therapy. In Type 2 diabetes, preserved C-peptide indicated potential insulin independence. The study also highlighted the emerging role of post-meal urine C-peptide ratios in routine clinical practice.

Conclusion

C-peptide is an effective, non-invasive marker for assessing endogenous insulin secretion. Its use in diabetes management improves diagnostic accuracy, guides treatment decisions, and assists in predicting insulin dependence. With technological advancements, C-peptide measurement is poised to become more integrated into routine diabetes care.

P27

Diabetic Striatopathy: A case report

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Keywords

• Insulin therapy • Cognitive dysfunction and Alzheimer Disease

Background and Aims

Diabetic striatopathy is a rare syndrome which is characterised by a variety of hyperkinetic movement disorder, hyperglycemia, hyperosmolarity in the absence of ketoacidosis.Hemichorea hemiballismus (HCHB) is a spectrum of continuous, involuntary and non-patterned movements that involve one side of the body.

Materials and methods

A 45 -year-old female with Type II diabetes for two years presented with one month history of involuntary and unpatterned movements involving right side of the body. Her movements could not be stopped by voluntary control but it stopped while patient was asleep. They were not associated with urinary or fecal incontinence, tongue bite, eye ball uprolling, altered sensorium . There was no past history of cerebrovascular accidents or head trauma. There was no significant drug addiction or family history. Her dietary history revealed that she was taking carbohydrate rich diet, no physical exercise and was not taking antidiabetic drugs regularly. On examination she was conscious and oriented to time, place and person. Her higher mental functions were intact. All cranial nerves were found to be within normal limits, pupils bilaterally symmetrical normally reacting to light, sensory and motor examination were found to be within normal limits. There were no cerebellar signs or signs of meningial irritation. Her vitals were normal. Her random blood glucose was 410mg/dL. Serum potassium was 3.8 mEq/L, serum sodium was 146 mEq/L, HbA1c was 9.1%, Her lipid profile was abnormal and showed total cholesterol of 268mg/dL, LDL level of 179mg/dL, triglycerides level of 205mg/dL, and HDL level of 34mg/dL. Urinary ketones were negative. Chest X-ray and electrocardiogram were normal. On Slit lamp examination for Kayser-Fleischer rings was negative. MRI Brain demonstrated hyperintensity on T1 weighted image in left putamen and left globus pallidus. Blooming was also noted in left globus pallidus and left putamen on Gradient recalled echo (GRE) image. After admission to hospital her blood glucose was monitored and controlled with Human insulin. To control above mentioned chorieform movements oral administration of Haloperidol 0.5mg at night was started and by third day, her involuntary

movements were alleviated. She was discharged on seventh day after hospitalization on haloperidol 0.5mg at night, rosuvastatin 20mg at night and a strict insulin regimen. Her blood sugar was well undercontrolled as shown in ambulatory glucose monitoring graph.

Results

In this case diabetic striatopathy was diagnosed with help of typical clinical and radiological findings. In diabetic striatopathy MRI brain study shows T1 weighted hyperintensity in caudate nucleus, globus pallidus/striatum. Diffusion weighted study shows restricted diffusion. Blooming in caudate nucleus, globus pallidus and putamen is also seen on GRE image.

Conclusion

This case illustrates the importance of recognition of this rare clinico-radiological syndrome because involuntarymovements are easily improved once blood glucose level is controlled, hence carries good prognosis. When clinicians come across these involuntary movements, screening for hyperglycemia is essential even in the absence of past history of diabetes.

P28

MARCHIAFAVA BIGNAMI DISEASE - A RARE PRESENTATION IN AN ALCOHOLIC WITH DIABETIC MILIEU

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Keywords

• Other complications

Background and Aims

54 year male, a known case of type 2 diabetes mellitus since 3 years and a chronic alcohol consumer with daily intake of 15 U of alcohol (country liquor) was brought to casualty after a binge drinking episode of approx 2500 mL of country liquor in a duration of 24 hours with decreased consciousness and altered behaviour.

Materials and methods

He was drowsy, arousable with a GCS of E2V2M5, 9/15. He was found to be moving all limbs and no focal deficit was noted. Acute alcohol intoxication was considered and admitted to ward. Despite the conservative measures given with intravenous fluids, injectable thiamine of 100 mg BD, Insulin, antiemetic, proton pump inhibitor there had been no improvement of his GCS over next 3 days. Hence considering possibilty of Wernicke's encephalopathy, injectable thiamine of 500 mg TDS was started. NCCT Head done was normal.

Results

At the end of first week, since there was only marginal improvement with GCS improved to E3V4M5, MRI Brain was done. MRI was classical of Type B Marchiafava Bignami disease, with diffusion restriction seen over the splenium of corpus callosum. To rule out other causes of encephalopathy, CSF analysis was done which was normal, normal ammonia levels, normal RBC transketolase activity. There was also no documented hyponatremia or low serum osmolarity. Currently at the end of his 3rd week of admission he has shown improvement with GCS E4V5M6. But he has slurred speech and intermittent inappropriate behaviour, confusion and apathy. He was given high dose thiamine alongwith other vitamin supplementations in more than the usual dose.

Conclusion

Marchiafava Bignami disease is a neurological disorder characterized by myelin degeneration and tissue necrosis within the corpus callosum. Mostly noted in individuals with chronic alcohol abuse, however other contributing factors could be diabetes and malnutrition.

P29

A Real-World Study to Analyze Efficacy, Safety, and Practice Patterns of Vildagliptin 100 mg SR OD in Cardio Practice (REAL CARDIO VIL SR)

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Keywords

• Incretin based therapies 43 Novel agents • Cardiac complications

Background and Aims

This real-world study evaluates the treatment patterns, efficacy, safety, and practice patterns of Vildagliptin 100 mg SR once daily in managing Type 2 diabetes mellitus (T2DM) among primary care physicians, diabetologists, endocrinologists, and cardiologists in Indian clinical settings.

Materials and methods

This retrospective observational study analyzed data from medical records of 1,728 patients with T2DM prescribed Vildagliptin 100 mg SR OD. Eligible subjects were adults over 18 years who received Vildagliptin for T2DM management. Data on demographics, treatment duration, comorbidities, concomitant medications, adherence, and adverse events were collected and authenticated by treating physicians.

Results

The study cohort included 666 males (38.54%) and 1,062 females (61.46%), with a mean age of 55.4 ± 10.75 years. Hypertension was the most prevalent comorbidity (69.85%), with Telmisartan being the most common concomitant non-diabetic medication (52.91%). Biguanides (70.24%) and sulfonylureas (65.35%) were frequently co-administered with Jalra-OD. Most subjects (98.21%) adhered to the once-daily regimen of Jalra-OD. Glycemic control improved significantly, with HbA1c levels decreasing from 8.49 ± 0.89% at baseline to 6.99 ± 0.57% after three months. The mean changes in HbA1c were 0.59% in the first month, 1.08% in the second month, and 1.52% in the third month. Fasting plasma glucose (FPG) reduced from 186.0 ± 46.09 mg/dL pre-dose to 126.4 ± 22.11 mg/dL post-dose at three months. Similarly, postprandial plasma glucose (PPG) decreased from 257.7 ± 64.66 mg/dL pre-dose to 172.0 ± 31.90 mg/dL post-dose at three months. Adherence issues were reported by 26.22% of subjects, with 56.07% citing inadequate exercise and 48.57% irregular dietary adherence. Approximately 18.11% of subjects reported taking less than 80% of their prescribed medication. Reasons for noncompliance included busy schedules (46.96%), polypharmacy (35.14%), and forgetfulness (34.82%). Blood pressure remained unchanged in 67.77% of subjects, with 31.71% experiencing reductions.

Conclusion

Vildagliptin 100 mg SR OD demonstrates significant efficacy in glycemic control in a real-world Indian clinical setting, with a favorable safety profile. Despite some adherence challenges, most patients achieve substantial improvements in HbA1c, FPG, and PPG levels. Continued focus on patient education and support is essential to enhance compliance and optimize therapeutic outcomes.

P30

Study of serum magnesium level in diabetes mellitus and it's correlation with micro and macrovascular complications

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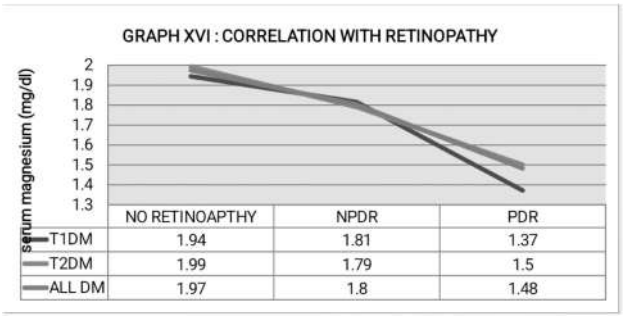
Keywords
Prevention of type 2 diabetes • Macrovascular disease

Background and Aims
Background
Multi-system effects of diabetes mellitus such as retinopathy, nephropathy, neuropathy and cardiovascular diseases are important public health concerns. A number of studies have reported the association between magnesium (Mg) and diabetes and its complications. However, the various conclusions were inconsistent. Diabetes was defined with standard ADA guidelines. Serum magnesium concentrations defined as follows: Normal - 1.7 to 2.4 mg/dl, Low <1.7mg/dl, High >2.4 mg/dl.
AIMS AND OBJECTIVES
Estimating serum magnesium concentrations in patients with diabetes mellitus (T1DM and T2DM). Correlating serum magnesium concentrations with complications of DM.
Materials and methods
MATERIALS AND METHODS
The present study was conducted in the Department of Medicine, S.P. Medical College & Associated Group of Hospitals, Bikaner over a period of 6 months. The study design was a cross section al study.
INCLUSION AND EXCLUSION CRITERIA
Inclusion Criteria 1.Age above 16 years. 2. Diagnosed patient of diabetes. Exclusion Criteria 1. Patients with chronic renal failure caused due to factors other than Diabetic nephropathy. 2. Acute myocardial infarction in last 6 months. 3. Patients on diuretics. 4. Patients with history of alcohol abuse. 5. Patients receiving magnesium supplements or magnesium containing antacids. 6. Malabsorption or chronic diarrhea.
Results
In this study 50.4% of the patients were males and 49.6% were females. Overall, mean age of the study population was 48± 18 years. The mean BMI of the study population was 26.43 + 5.11 kg/m2. In this study majority of the patients with hypomagnesemia Mg < 1.7mg/dl were having diabetic complication, mainly microvasclar complications. Patient with hypomagnesmia were showing significant association with nephropathy ($p < 0.001$, $r = -0.48$), neuropathy ($p < 0.009$), retinopathy ($p < 0.007$) and cardiovascular disease ($p < 0.001$). The study did not show significant correlation with hypertension and cerebrovascular events. Most significant association in our study was of Magnesium and Nephropathy.
Graph/Table :



	NO RETINOAPTHY	NPDR	PDR
T1DM	1.94	1.81	1.37
T2DM	1.99	1.79	1.5
ALL DM	1.97	1.8	1.48

Conclusion
Measurement of serum magnesium should be considered in patients whose blood sugar is not controlled with anti diabetic drugs or insulin, as hypomagnesemia may be a cause. Supplementation of magnesium is also cost effective and should be done if patient is found hypomagnesemic. Magnisium levels correlate with Micorovascular complications specially Nephropathy.

P31

Medication Adherence in Patients with Type 2 Diabetes Mellitus Treated at Outpatient Department in Government Tertiary Care Centre in North India

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Keywords
Epidemiology

Background and Aims
Diabetes mellitus is a chronic progressive disease characterized by numerous health complications. Medication adherence is an important determinant of therapeutic outcome. Oral hypoglycemic agents (OHAs) are the major treatment for people with type 2 diabetes mellitus (DM2). However, non-adherence to OHAs remains are one of the main reasons for poor glycemic control. Medication non adherence in patients with chronic diseases, particularly in type 2 diabetes mellitus (T2DM) with comorbidity, has continued to be the cause of treatment failure. The current study assessed the level of medication adherence in T2DM patients with and without Hypertension.
Materials and methods
A total of 350 patients were enrolled from the Department of Internal Medicine at King George's Medical University (KGMU), Lucknow according to the American Diabetes Association (ADA) guidelines. Both male and female patients of age between 35-75 years , on oral hypoglycemic agents (OHA) , excluding insulin , providing written consent were included in the study. An institutional-based descriptive cross sectional study was conducted among T2DM patients. The seven item Morisky Medication Adherence Scale questionnaire was used to assess the level of adherence. The questionnaire had 7 questions with 4 responses each and a 4 point Likert scale was used for each questions .The response "never" will be given a score of 4 , "sometimes" (one to four times per month) score of 3 , "often" (more than five times per month) score of 2 and "always" a score of 1. According to the scoring it was further divided into low, medium and high adherent. On each visit to the OPD the questionaire was provided to the patients
Results
A total of 60 patients were lost to follow-up, resulting in 290 patients having diabetes further completed the study. About 10.7% had a high adherence, 34.5% had a medium adherence, and 54.8% had a low adherence level respectively. Adherence score level was positively and significantly correlated with age ($P < 0.05$). Similarly significant correlation was found between adherence level with gender ($P < 0.05$). However adherence level was not significantly associated with duration of diabetes ($P > 0.05$) and number of hypoglycemic medications ($P > 0.05$). A logistic regression model was used to identify predictors of the level of medication adherence and glycemic control. $P < 0.05$ at 95% confidence interval (CI) was statistically significant.
Conclusion
The majority of patients having diabetes in this study had low adherence level. The three main factors which contributed to non-adherence to medication are non-adherence to regular follow-up visit in diabetes OPD, non-adherence to healthy diet, and non-adherence of instructions on taking medication. The current study concluded that medication adherence was low and significantly associated with poor glycemic control. Number of medical conditions and medications were found to be associated with medication adherence. Management interventions of T2DM patients with comorbidity should focus on the improvement of medication adherence.

P32

Comprehensive Geriatric Assessment Of Diabetic Patients . Demographic Insights From A Tirtiary Care Hospital In South India. Dr Mohamed Inaam

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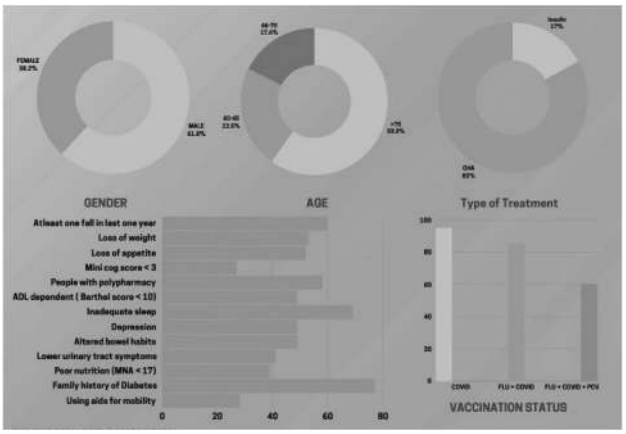
Keywords Epidemiology

Background and Aims
Use CGA and other objective assessment tools to describe the demographic profile of elderly diabetic patients
Materials and methods
POPULATION: 890 diabetic patients who presented to the Geriatric opd in Medical Trust Hospital, Cochin
TIME PERIOD: 12 months (1st July 2023 to 30th June 2024)
Results
Treatment Types :OHA (Oral Hypoglycemic Agents): 83%,Insulin: 17%. Age Distribution :>70 years: 59.9%,60-65 years: 22.5%,66-70 years: 17.6%.Gender Distribution :Male: 61.8%,Female: 38.2%.
At least one fall in the last year: 60 %,Loss of weight: 50%,Loss of appetite: 50%,Mini-cog score < 3: 25%,People with polypharmacy: 58%,ADL dependent (Barthel score < 10): 45 %,Inadequate sleep: 65%,Depression: 45%,Altered bowel habits: 44%,Lower urinary tract symptoms: 41%,Poor nutrition (MNA < 17): 40 %,Family history of diabetes: 77%,Using aids for mobility: 30 %
Graph/Table :



Conclusion
Identification of the geriatric syndromes and functional status using CGA tools can help in holistic and comprehensive management of older adults with diabetes
The use of CGA provided us with valuable insights into the health status of elderly cancer patients. By identifying factors such as physical frailty, cognitive impairment, and comorbidities, CGA allowed us to better assess which patients were at higher risk for developing diabetes related complications or poor treatment outcomes.

P33

Insulin resistance in Type 2 Diabetes with periodental disease and comparison of various surrogate markers HOMA IR, HOMA IR using C peptide and Triglyceride Glucose Index

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Keywords
Insulin sensitivity and resistance

Background and Aims

1. To assess insulin resistance in patients Type 2 Diabetes with various categories of periodontal disease and healthy volunteers in local population.
2. To study the correlation of surrogate markers like HOMA IR, HOMA using C- Peptide, and Triglyceride Glucose index(TGI)

Materials and methods
It is a cross sectional study and we screened for periodontal disease in Type 2 Diabetic patients attending Indra Diabetes centre, Tuticorin, Tamilnadu and enrolled 150 Type 2 Diabetes patients between 30 to 75 yrs. Also we screened for periodental disease and enrolled 150 healthy volunteers who were accompanying patients during clinic visit between 30 to 75 years. The periodontal disease was classified into 4 categories depending upon its severity by dentist. Demographic details like Age, Gender and Fasting blood samples for Blood sugar, Triglycerides, C- Peptide, Insulin, and HbA1C in both diabetes and non-diabetes groups were collected.
Insulin resistance(IR) was calculated using standard HOMA IR. Also IR measurements using HOMA IR using C peptide (HOMA IR c-pep), Triglyceride Glucose index (TGI) were done in the same samples. Statistical work was done using JASP software. IR between diabetes and non-diabetes group were compared. HOMA IR was also compared with HOMA IR c-pep, and TGI index of both groups. The subgroup analysis of insulin resistance was performed among 4 categories of periodontal disease and gender in both study groups.
Results
IR was noted in both diabetes and non-diabetes group when we apply cut off point of 1.23, as suggested by previous studies done in south India. But it was significantly higher in diabetes group. Sub group analysis of various categories of IR showed no difference in IR between categories in both diabetes and non- diabetes groups. There was no gender differenes in IR in both groups. IR with HOMA IR using c pep, and Fasting TGI index correlated very well with standard HOMA IR method.
Conclusion

1. Insulin resistance was found in both diabetes and non- diabetes group with periodontal disease. Insulin resistance is significantly higher in diabetes group than non-diabetes patients. There is no difference in insulin resistance between genders or 4 categories of periodontal disease in both groups. It appears that periodental disease may contribute to the increased insulin resistance among diabetes patients. Periodic Screening for periodental disease at Diabetes clinics and prompt treatment may reduce the insulin resistance thereby helping to achieve good glycemic control.
2. HOMA IR correlated well with HOMA IR c pep. As C peptide is more stable than insulin during sample handling and estimation, HOMA IR- C pep may be preferred in Indian setting where samples have to be carried to far away laboratories from collection points.
3. As lipid profile is done routinely in all diabetic patients annually, TGI may be easily calculated to identify insulin resistance among diabetic patients without HOMA IR. It is very simple, economical and results are readily available to the clinician in the same clinic visit to decide on the rational anti- diabetic therapy.

P34

A case of diabetic straitopathy masquerading as an atypical stroke:A diagnostic challenge

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Keywords
● Neuropathy: somatic

Background and Aims
Diabetic striatopathy is a rare and often under-recognized neurological manifestation of poorly controlled diabetes mellitus. It typically presents as hemichorea-hemiballismus, but its diagnostic complexity lies in its ability to mimic various neurological conditions, particularly stroke. The etiology of Diabetic striatopathy is related to metabolic dysfunction affecting the basal ganglia, particularly the striatum, in the context of severe hyperglycemia.
Materials and methods Clinical Presentation:
A 72-year-old right-handed female with a 25-year history of poorly controlled type 2 diabetes was brought to the emergency department with acute-onset left-sided involuntary movements. These movements were erratic, violent, and non-rhythmic, affecting her upper and lower limbs, suggestive of hemiballismus. The patient reported no preceding trauma, headache, or loss of consciousness. Her medical history was significant for hypertension, diabetic retinopathy, and chronic kidney disease, but there was no history of stroke or neurodegenerative disease. On physical examination, the patient was alert and oriented, but the left-sided hemiballismus was severe, preventing her from performing basic tasks. No other focal neurological deficits were noted. Initial blood glucose levels were 450 mg/dL, and her HbA1c was 13.8%, indicating chronic hyperglycemia. Stroke was initially suspected due to the abrupt onset of symptoms.
RBS: 450 mg/Dl,HbA1c: 13.8%,Electrolytes, kidney function tests, and liver enzymes were unremarkable.
CT Brain -Initial CT imaging revealed no acute infarction or hemorrhage. There was, however, slight asymmetry in the basal ganglia, raising suspicion for a subacute stroke.
MRI Brain:MRI of the brain revealed a T1-weighted hyperintense signal in the right caudate nucleus and putamen, without diffusion restriction on diffusion-weighted imaging (DWI), ruling out acute ischemia. No mass effect, contrast enhancement, or surrounding edema was noted, making a neoplastic process unlikely. The findings were suggestive of non-ketotic hyperglycemic hemichorea, a hallmark of diabetic striatopathy.
EEG- unremarkable
Doppler Ultrasound (Carotid and Vertebral): Normal
Results
Diabetic striatopathy is often underdiagnosed due to its ability to mimic other neurological conditions. In this patient, the acute onset of hemiballismus, coupled with her significant cardiovascular risk factors, led to initially consider ischemic stroke. However, the absence of infarction on neuroimaging, paired with hyperglycemia, shifted the diagnosis toward DS. The metabolic dysfunction in hyperglycemia likely impairs GABA synthesis in the basal ganglia, leading to excessive excitatory activity, which manifests as involuntary movements
Conclusion
This case highlights the diagnostic complexity of diabetic striatopathy, a rare but treatable manifestation of uncontrolled diabetes. The sudden onset of hemiballismus in diabetic patients should prompt clinicians to consider DS, particularly when imaging reveals basal ganglia hyperintensity. Misdiagnosis as stroke can lead to unnecessary interventions, making prompt recognition essential for effective management.

P35

TO STUDY MUSCULOSKELETAL MANIFESTATIONS AMONG TYPE 2 DIABETIC PATIENTS IN A TERTIARY CARE CENTRE

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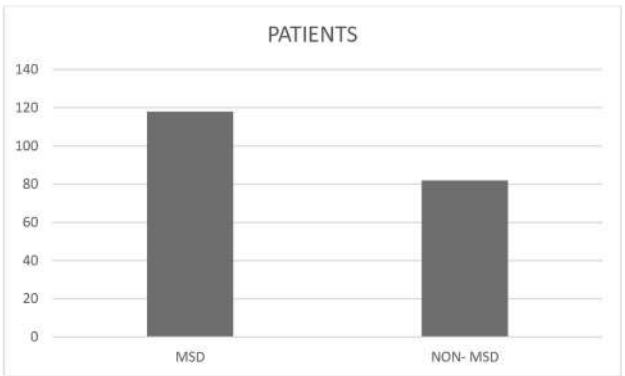
Keywords
Epidemiology ● Inflammation in type 2 diabetes ● Neuropathy: somatic ● Other complications

Background and Aims
Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycaemia. It is a major public health problem worldwide. The prevalence of DM is rising; therefore, the complications of DM are increasing significantly. The Musculoskeletal manifestations are generally ignored and poorly treated as compared to other complications. It includes frozen shoulder, hand syndrome, limited joint mobility, osteoarthritis, Dupuytren's contracture, carpel tunnel syndrome, neuropathic joint, flexor tenosynovitis, diffuse idiopathic skeletal hyperostosis. Musculoskeletal manifestations are associated with obesity, age of the patient, duration of diabetes, poor glycaemic control.
Objective- To estimate the prevalence of musculoskeletal manifestation among Type-2 Diabetic patients and its correlation to different variables like age, BMI, duration of diabetes, controlled or uncontrolled diabetes, HbA1c and vitamin-D level.
Materials and methods
A cross-sectional study was conducted in the Post Graduate Department of Medicine, SN Medical College, Agra. On the basis of inclusion and exclusion criteria, 200 randomly selected patients of type-2 diabetes mellitus were studied. We estimated and analysed the musculoskeletal manifestations among them.
Results
A total of 200 patients of type-2 diabetes mellitus were assessed clinically for various musculoskeletal manifestations. Among them, 113 patients were female and rest 87 were male. The age ranges from 20 to 90 years (mean age 50.72 +/-12.07 years). The duration of Diabetes was 1-5 years in 37% patients and 6-10 years in 61.5% patients. 118 (59%) patients had musculoskeletal manifestations.
Graph/Table :



Conclusion
On the basis of above observations, it was concluded that about 59% type 2 Diabetic patients were suffering from musculoskeletal manifestations among which Osteoarthritis (25%) and Limited joint mobility (12%) were more prevalent followed by frozen shoulder (11%). Duration of diabetes, uncontrolled diabetes and raised BMI were the major cause of increased prevalence of these musculoskeletal disorders.

P36

Impact of Smoking on Blood Sugar and Cholesterol Levels: A Comparative Study between Smokers and Non-Smokers

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Keywords Epidemiology

Background and Aims
The primary aim is to explore the differences in blood sugar and cholesterol levels between smokers and non-smokers, examining how smoking influences these health metrics and identifying high-risk individuals with elevated cardiovascular risks.
Materials and methods
Study Group: 200 individuals (Smokers and Non-Smokers).

- **Variables Analyzed:** Age, Fasting Blood Sugar (FBS), PLBS, T CHOL, HDL, LDL, and VLDL.
- **Statistical Analysis:** T-tests, Pearson correlation, and multiple regression models were used to examine relationships between blood sugar, cholesterol, and other variables.

Results

- **Descriptive Analysis:** Smokers had higher FBS, PLBS, T CHOL, and LDL compared to non- smokers.
- Smokers: FBS = 160.78 mg/dL, PLBS = 252.14 mg/dL, T CHOL = 228.00 mg/dL, LDL =144.00 mg/dL.
- Non-Smokers: FBS = 143.96 mg/dL, PLBS = 220.33 mg/dL, T CHOL = 188.32 mg/dL, LDL= 110.48 mg/dL.

T-Tests: Significant differences were found between smokers and non-smokers for FBS ($p < 0.05$), PLBS ($p < 0.01$), and T CHOL ($p < 0.01$).

- **Correlation Analysis:** A key finding was the difference in the relationship between PLBS and T CHOL. Smokers exhibited a weak negative correlation (-0.21), while non-smokers had a positive correlation (0.19).
- **Regression Analysis:** Smoking status was a strong predictor of T CHOL, with smokers showing an average increase of 38.93 mg/dL compared to non-smokers. PLBS had a more significant effect on cholesterol in smokers compared to non-smokers, confirming an interaction between PLBS and smoking status ($p < 0.01$).
- **Key Findings:**
- **Impact of Smoking on Cholesterol:** Smokers exhibited significantly higher cholesterol levels than non-smokers. Smoking also altered the relationship between blood sugar and cholesterol, particularly PLBS and T CHOL.
- **Non-Linear Relationships:** No significant non-linear effects were found between age, blood sugar, and cholesterol, indicating mostly linear relationships.
- **High-Risk Individuals:** Five smokers were identified as high-risk, exhibiting both high PLBS and T CHOL levels.

Conclusion
Smoking significantly impacts cholesterol and blood sugar levels, with smokers showing higher cardiovascular risks. The relationship between postprandial blood sugar and cholesterol is notably different in smokers compared to non-smokers, suggesting the need for targeted cardiovascular risk management in smokers.

P37

Type 1 Diabetes Mellitus Associated with Dermatomyositis: A Case Report

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Keywords
Genetics of type 1 diabetes

Background and Aims Background:
Type 1 diabetes mellitus (T1DM) is an autoimmune illness that targets specific organs and associated with other autoimmune conditions. Dermatomyositis is an idiopathic systemic autoimmune condition involving skeletal muscles and skin. Co-occurrence of both disorders is quite rare so far only two cases are reported till now. We diagnosed dermatomyositis in a young male with T1DM who presented with muscle weakness and cutaneous manifestations. There is an additional metabolic hurdle in T1DM, as high doses of glucocorticoids used in dermatomyositis management are related to glycemic instability which requires regular blood sugar monitoring and insulin dose titration accordingly. Considering the prognostic consequences, early diagnosis and management of dermatomyositis is essential.
Materials and methods
CASE PRESENTATION:
A 21 year old male patient with past medical history of type 1 Diabetes mellitus from 8 years presented to our department with chief complaint of nonpruritic, painless erythematous skin rashes three months before , first appeared on neck ,upper trunk and gradually progressed to involve his bilateral elbows, hands and knee .He also complained of bilaterally symmetrical, progressive, proximal muscle weakness of upper and lower extremities from one month Lab investigations revealed HbA1c 8, Anti GAD - 65 positive, elevated Lactate dehydrogenase 848.07 U/L, raised Creatine Kinase 5790 U/L, elevated CPK- MB 227.30, elevated liver enzymes AST 160.52 U/L ALT 144.57 U/L, Myositis Profile showed Anti Mi-2 auto antibodies strongly positive. dermatomyositis was diagnosed in a patient of type 1 diabetes mellitus on the basis of clinical features and lab parameters.
Conclusion
CONCLUSION
It is extremely uncommon for type 1 diabetes mellitus and dermatomyositis to be associated. Apart from associations between type 1 diabetes mellitus and other autoimmune disease, clinicians should always consider the possibility of a link between type 1 diabetes mellitus and dermatomyositis. Timely diagnosis and proper management results in better prognosis.

P38

Clinicians' perception and practice pattern of empagliflozin-linagliptin fixed- dose combination in type 2 diabetes management in India

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Keywords

- SGLT inhibitors • Cardiac complications

Background and Aims

Type 2 diabetes mellitus (T2DM) is a serious global health concern affecting millions worldwide. A fixed- dose combination (FDC) of sodium-glucose co-transporter 2 inhibitor empagliflozin and dipeptidyl peptidase-4 inhibitor linagliptin has been approved for T2DM treatment in India. We aimed to understand perception and practice pattern of clinicians regarding EMPA-LINA FDC use in T2DM management in India.

Materials and methods

A cross-sectional, opinion-based survey was conducted during webinars on EMPA-LINA FDC, from June to September 2024. Speakers' opinions were obtained via a Microsoft Form questionnaire covering glycemic control, impact on cardiovascular (CV) risk and progression of chronic kidney disease (CKD), and adverse events with EMPA-LINA FDC in clinical practice.

Results

The questionnaire was answered by 11 diabetologists and endocrinologists from pan-India. In total, 55% and 45% responders prescribed 25 mg EMPA/5 mg LINA and 10 mg EMPA/5 mg LINA as starting dose, respectively. Majority responders agreed that objectives for prescribing EMPA-LINA FDC were achieving target HbA1c, reducing adverse CV and kidney outcomes, promoting weight loss, and simplifying medication regimen.

Majority of the responders (73%) opined that EMPA-LINA FDC was associated with improvements in glycemic control within 1 month while 27% responders opined 3 months. Glycemic control obtained with the FDC was rated as "Excellent" and "Good" by 55% and 45% responders, respectively. FDC's effectiveness in lowering HbA1c levels was rated "Moderately effective (1-2% reduction)" and "Very effective (>2% reduction)" by 73% and 27% responders, respectively.

Most (73%) responders stated that they see a "Significant reduction (>30 mg/dl)" in fasting blood glucose levels with this FDC while 27% stated "Moderate reduction (15–30 mg/dl)". For post-prandial blood glucose levels, 55% responders reported "Significant reduction (>60 mg/dl)" and 45% "Moderate reduction (30–60 mg/dl)".

For reducing CV risk in T2DM patients, 82% responders opined that EMPA-LINA FDC was "Very effective" and 18% as "Moderately effective". Regarding improvement in renal function, 82% responders mentioned that the EMPA-LINA FDC "Significantly reduces progression of CKD" while 18% responded that it "Reduces progression of CKD but not significantly"While 55% responders found urinary tract infections to be "Uncommon (≥0.1 to <1%)" in patients on EMPA-LINA FDC, 36% responded "Common (≥1 to <10%)", and 9% responded "Very common (≥10%)". Genital infections were found to be "Common (≥1 to <10%)" in patients on EMPA-LINA FDC by 63% and "Uncommon (≥0.1 to <1%)" by 36% responders.

Conclusion

EMPA-LINA FDC is being utilized by Indian clinicians for achieving target HbA1c, reducing adverse CV and kidney outcomes, promoting weight loss, and simplifying medication regimen.

P39

Assessing Metabolic Risks and Health Indicators in established Uncontrolled T2DM

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Keywords Epidemiology

Background and Aims

Aim: The study explores the relationship between clinical parameters and health conditions, focusing on cardiovascular health, diabetes management, and lifestyle factors like smoking.

Materials and methods Objectives:

1. Assess the correlation between blood sugar control (FBS, PLBS, HBA1C) and cholesterol.
2. Analyze the impact of lifestyle factors (e.g., smoking, weight) on clinical markers such as blood pressure and cholesterol.
3. Study the prevalence of conditions (diabetes, hypertension) based on clinical and demographic factors.

Study Design: A retrospective cross-sectional analysis was conducted on patients (n=980) attending routine check-ups. Data were collected on fasting/postprandial blood sugar, glycated hemoglobin, cholesterol (total, HDL, LDL, VLDL, triglycerides), creatinine, blood pressure, smoking status, and other physiological markers.

Inclusion Criteria:

Patients aged 35-80 with complete clinical data (FBS, PLBS, HBA1C, lipid profile, BP) and electronic medical records.

Exclusion Criteria:

Patients with incomplete data, advanced CKD, acute illness, or pregnancy.

Results

Demographics and Key Results: Age: Average age was 58 years.
FBS: Mean level was 150.3 mg/dL, with a range of 112.0-180.0 mg/dL.

- **PLBS:** Mean level was 247.3 mg/dL, ranging from 160.0-340.0 mg/dL.
- **HBA1C:** Average was 9.2%, ranging from 5.2%-13.7%.
- **Cholesterol:** Total cholesterol averaged 217.7 mg/dL, with triglycerides at 254.7 mg/dL, HDL at 40.0 mg/dL, LDL at 126.7 mg/dL, and VLDL at 51.0 mg/dL.

Creatinine: Average was 0.9 mg/dL, ranging from 0.4 to 8.6 mg/dL.
Blood Pressure: Systolic averaged 126.7 mmHg, diastolic averaged 78.8 mmHg.

Correlations:

- **FBS and PLBS:** Weak correlation (r=0.02) suggests that fasting glucose is not a strong predictor of postprandial spikes.
- **HBA1C and PLBS:** Slight correlation (r=0.048) indicates some relationship between postprandial glucose and long-term glycemic control.
- **Cholesterol and Glucose:** No significant correlation, indicating dyslipidemia and hyperglycemia may occur independently.
- **Blood Pressure and Age:** No strong correlation, suggesting other factors (e.g., obesity, diet) are more influential in BP regulation.

Conclusion

The study highlights poor blood glucose control, elevated lipid levels, and a high prevalence of hypertension in the patient population. Despite weak correlations between glucose and cholesterol, comprehensive management is essential for reducing the risk of complications such as heart disease, stroke, and kidney damage.

P40

PROs in tirzepatide-treated adults with T2D in SURPASS-1 to -6 by age, gender, BMI and weight loss

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Keywords
Prevention of type 2 diabetes

Background and Aims
Tirzepatide treatment statistically and meaningfully reduced HbA1c, and substantially reduced weight, in adults with T2D in the Phase 3 SURPASS studies. PROs in adults treated with tirzepatide 5, 10, or 15 mg in SURPASS-1 to -6 were explored by age, gender, BMI, and weight loss.

Materials and methods
Data from all SURPASS-1 to -6 tirzepatide-treated adults were pooled, regardless of dose. Weight-related and health status PRO measures at baseline and endpoint – Ability to Perform Physical Activities of Daily Living (APPADL), Impact of Weight on Self-Perceptions (IW-SP), EQ VAS – were analyzed in participants grouped by age and BMI category at baseline, gender, and weight loss category achieved at endpoint. Analyses used ANCOVA models adjusted for baseline clinical characteristics; ceiling effects were explored in subgroup analyses.

Results
In main and subgroup analyses, lower vs. higher baseline age group was associated with larger improvements in APPADL and EQ VAS scores but smaller improvements in IW-SP score in tirzepatide- treated adults. Lower vs. higher baseline BMI group and greater vs. lesser weight loss group at endpoint were associated with larger improvements across all PRO measures. Improvement in IW-SP score was greater for males vs. females, with no significant difference for other PROs.

Graph/Table :

Table Adjusted analysis of PROs for 4905 adults with T2D treated with tirzepatide (any dose; in SURPASS-1 to -6 by age and BMI category at baseline, gender, and weight loss achieved category at endpoint (ANCOVA models, mITT population, efficacy analysis set)

	Change from baseline at endpoint, LS mean (95% Cl)**				
	APPADL total scoret		IW-SP total scoret		EQVAS
	Main analysis+	Subgroup analysis§	Main analysis+	Subgroup analysis§	Main analysis+
Age at baseline, years					
<55	n=1475 8.0 (6.3-9.7)	n=1324 9.0 (7.2-10.8)	n=1476 8.5 (6.4-10.7)	n=1159 14.8 (12.4-17.3)	n=1464 6.0 (4.7-7.3)
55 to <65	n=1530 5.8 (4.2-7.4)	n=1424 6.8 (5.1-8.5)	n=1531 9.9 (7.8-12.0)	n=1088 16.9 (14.5-19.4)	n=1521 5.4 (4.1-6.6)
65	n=1262 2.4 (0.7--4.1)	n=1197 3.3 (1.5-5.0)	n=1261 11.3 (9.1-13.4)	n=853 18.8 (16.2-21.3)	n=1255 4.4 (3.1-5.7)
BMI (kg/m^2) at baseline					
<30	n=1296 6.3 (4.6-8.0)	n=1121 7.1 (5.3-8.8)	n=1296 13.5 (11.3-15.6)	n=705 21.9 (19.3-24.5)	n=1290 6.3 (5.0-7.6)
30 to <35	n=1497 5.8 (4.1-7.4)	n=1402 6.8 (5.1-8.5)	n=1496 11.4 (9.3-13.5)	n=1102 18.9 (16.4-21.3)	n=1493 5.6 (4.3-6.9)
35	n=1474 4.8 (3.2--6.5)	n=1422 5.8 (4.1-7.6)	n=1476 5.2 (3.0-7.4)	n=1293 11.8 (9.4-14.3)	n=1457 4.2 (2.9-5.5)
Gender					
Female	n=2062 5.2 (3.6--6.8)	n=1965 6.1 (4.5-7.8)	n=2062 8.5 (6.4-10.5)	n=1662 15.1 (12.7-17.5)	n=2048 5.5 (4.2-6.7)
Male	n=2205 5.9 (4.4-7.5)	n=1980 6.8 (5.2-8.4)	n=2206 11.2 (9.2-13.2)	n=1438 18.1 (15.8-20.5)	n=2192 5.1 (3.9-6.3)
Achieved weight loss at endpoint					
o **to <5%**	n=820 2.8 (1.0--4.5)	n=747 3.5 (1.6-5.4)	n=819 5.1 (2.8-7.40)	n=583 10.0 (7.3-12.7)	n=814 3.6 (2.2-5.0)
5 to <10%	n=1114 4.5 (2.8--6.2)	n=1011 5.3 (3.5-7.1)	n=1115 7.4 (5.2-9.5)	n=781 13.6 (11.1-16.2)	n=1107 3.8 (2.5-5.2)
10to<15%	n=990 6.2 (4.5-7.9)	n=926 7.1 (5.3-8.9)	n=990 11.2 (9.0-13.4)	n=694 18.4 (15.9-21.0)	n=985 5.8 (4.5-7.2)
15%	n=1105 9.1 (7.4-10.8)	n=1042 10.1 (8.4-11.9)	n=1106 **16.1 (13.9-18.2)**	n=873 **24.5 (22.1-27.0)**	n=1099 7.9 **(6.5-9.2)**

'Tirzepatide 5, 10, or 15 mg was administered by subcutaneous injection once weekly; data from all dose groups were pooled.
..Study endpoint was Week 40 for SURPASS-1, -2, and -5, and Week 52 for SURPASS-3, -4, and -6. Endpoint for this analysis defined as last observation carried forward before treatment discontinuation or initiation of rescue therapy.
tPresented IW-SP and APPADL total scores were linearly transformed from raw scores to a scale of 0-100.
*Main analysis: LS means (95% Cl) from ANCOVA models including all pooled tirzepatide-treated adults regardless of baseline PRO score.
§Subgroup analysis to assess ceiling effects: LS means (95% Cl) from ANCOVA models when excluding patients with a PRO score of 100 at baseline.
All PROs were measured in all six SURPASS studies. Larger positive changes in PRO scores indicate better outcomes for all measures.
Age ANCOVA model: variable= baseline PRO score+ pooled country+ gender+ duration of diabetes + baseline HbA1c + baseline BMI + age category.
BMI ANCOVA model: variable = baseline PRO score+ pooled country+ age + gender+ duration of diabetes + baseline HbA1c + BMI category
Gender ANCOVA model: variable= baseline PRO score+ pooled country+ age+ duration of diabetes+ baseline HbA1c + baseline BMI + gender category.
Weight loss ANCOVA model: +variable= baseline PRO score+ pooled country+ age+ gender+ duration of diabetes+ baseline HbA1c + baseline BMI + weight loss category.
APPADL, Ability to Perform Physical Activities of Daily Living; ANCOVA, analysis of covariance; BMI, body mass index; Cl, confidence interval; IW-SP, Impact of Weight on Self-Perceptions; LS, least squares; mITT, modified intent-to-treat; PRO, patient reported outcome; T2D, type 2 diabetes; VAS, visual analog scale.

Conclusion
Age, BMI, weight loss, and, to a lesser extent, gender all impacted PROs in tirzepatide-treated adults with T2D in the Phase 3 SURPASS studies.

P41

Effectiveness of Triad Model Approach in Rural Diabetic Patients.

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Keywords
- Health care delivery

Background and Aims
to study the role of teamwork in achieving glycemic control in rural patients using a cost effective triad model.
Materials and methods
Of the 200 selected diabetic patients 60 subjects were eligible for the study. **Inclusion criteria:** 1) Age: men and women between age group 20 years to 70 years. 2) Type 2 Diabetes mellitus, 3) uncontrolled FBS and PPBS 4) HbA1c between 7 to 10 %. **Exclusion criteria:** Type 1diabetes mellitus, Pre-existing renal, hepatic or cardiac disease, Hba1c > 10 %. Tie up was made with the multipurpose health worker to visit the patients' home and educate the patients on importance of regular treatment and diet in addition to distribution and observation of medicine intake. A triad was established between our center, health worker, and diabetes educator.
Results
60 patients were randomly divided into two groups i.e. group A and B which comprised of 30 patients each. Patients were evaluated at the start of study with FBS, PPBS, HbA1c and lipid profile, Complete Blood picture, Complete Urinary Analysis, Liver function test, Serum Creatinine, BMI. Patients were followed up at 3 months with measurement of FBS, PPBS, and HbA1c and at 6 months with measurement of FBS, PPBS, HbA1c and lipid profile. Group A patients were also regularly monitored regularly during the study period. Data obtained was measured with SPSS version 17 software the difference in mean was compared in both groups using independent t test. P value less than 0.05 was considered as significant.
A triad was established between our center, health worker, and diabetes educator. These 30 patients of Group A were monitored on daily basis with the help of Health Worker for proper diet intake, regular intake of OHA without skipping of a single dose in entire 6 months duration whereas the Group B were monitored on Day 1 and these patient of Group B were explained the about the drug dosage, frequency of drug intake, with complete diet explanation and Life style modification, these both groups were followed on monthly basis in OPD clinic for review. In Group A there were 20 males (66.7%) and 10 females (33.3%) compared to Group B (males 17 (56.7 %) and females 13 (43.3%) P value = 0.426, chi square0.635.
In the present study it was observed that there was no statistically significant difference in the mean age, creatinine, BMI and gender p >0.05.
There was no statistically significant difference in the mean FBS, PPBS, HbA1c and lipid profile at the start of study.
On first follow up after 3 months it was observed that the mean FBS, PPBS were significantly low in the group of patients who had regular follow up p <0.05. HbA1c was lower in patients who had regular follow up but the decrease was not found to be statistically significant p >0.05.
At 6 months it was observed that mean FBS, PPBS, HbA1c, total cholesterol, TGL, and LDL was significantly low in the group of patients who had regular follow up p <0.05. There was no statistically significant difference in the mean HDL levels between groups.
Conclusion
Adherence to therapies is a primary factor that determines the success of therapy and decreases the negative consequences not only for the patient but also for the health care provider. A single contact with physician could not achieve good glycemic control as seen in group B when compared to a systematic approach and close monitoring that increased the adherence to medication and diet as demonstrated in group A.

P42

THE IMPACT OF SCREEN TIME ON GLYCEMIC CONTROL IN TYPE 2 DIABETES MELLITUS PATIENTS - THE SCREEN STUDY

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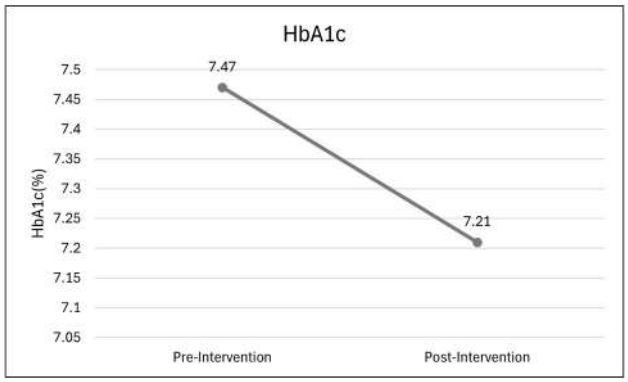
Keywords
Epidemiology • Education • Other complications

Background and Aims
Background - Type 2 diabetes mellitus (T2DM) is managed through pharmacological interventions; however, non-pharmacological factors such as screen time, sleep, physical activity, and diet significantly influence glycemic control. Screen time among adults remains a persistent and increasing concern regarding its impact on health behaviors and clinical outcomes. The association between screen time activity and essential metabolic indicators, including Glycosylated Hemoglobin (HbA1c), Fasting Blood Sugar (FBS), and Post Prandial Blood Sugar (PPBS), in adults diagnosed with type 2 diabetes mellitus (T2DM) is inadequately studied. Understanding screen time's impact could improve lifestyle interventions and glycemic control, making it key to managing T2DM alongside medication.
Aim – To evaluate the impact of a multidisciplinary counselling intervention on screen time behaviour and its effect on glycemic control in adults with T2DM.
Materials and methods
This interventional study included 300 T2DM patients through convenience sampling method, who provided data regarding their Screentime (Screentime Questionnaire) through a previously validated 18- item questionnaire. Type 1 diabetic and Gestational diabetic patients were excluded. Participants received an intervention involving counselling by a multidisciplinary team on the effects of screen time on glycemic control.
Results
We observed **significant correlations** (rho = 0.178, P = 0.002) between **HbA1c levels and weekday screentime** (including and excluding work hours), as well as weeknight and weekend screen times. Fasting Blood Sugar (FBS) and Postprandial Blood Sugar (PPBS) also showed positive correlation with screentime. Weekend screentime (5.57 ± 2.87 hours) exceeded weekday (4.7 ± 2.69 hours) and weeknight (2.66 ± 1.51 hours) screen times.
217 participants came for a follow up after 3 months post intervention.
There was a statistically **significant reduction in HbA1c** following the educational intervention, decreasing from 7.47 ± 1.53 % to 7.21 ± 1.46% (p <0 .001), showing a mean difference of **0.27 ± 1.17%** with a mean screentime reduction of 0.61 hours.

Graph/Table :



Conclusion

Our study suggests **a strong association between increased screen-time and poor glycemic control** among Indian T2DM adults. This is further warranted by the reduction in HbA1c levels by 0.27% in 3 months after an educational intervention. As screen time increases, it's effect on sedentary behaviour become more apparent. Understanding it's impact on glycemic control in patients with type 2 diabetes is critical for enhancing non-pharmacological treatment strategies.

P43

Incorporating treatment pauses, dosing flexibility and education to support GLP-1RA therapy persistence: data from PIONEER 6

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Keywords

Prevention of type 2 diabetes • Incretin based therapies 43 Novel agents • Education

Background and Aims

As the first oral GLP-1RA, oral semaglutide may facilitate increased access to the benefits of GLP-1RA therapy in broader care settings
Understanding the management of GLP-1RA therapy when intolerability occurs, including GI adverse events, is important in helping to overcome potential barriers to treatment persistence
Therefore, we aimed to assess the role of medication management strategies within the PIONEER 61,2 cardiovascular outcomes trial in supporting treatment continuation of oral semaglutide
Events of treatment discontinuation (temporary or permanent), dose reductions and treatment pauses were reviewed

Materials and methods

Patients educated as needed to address GI tolerability issues throughout trial. If AEs were absent or manageable,dose escalation continued as scheduled. If AEs were more problematic, investigators could reduce the dose. Dose escalation resumed once symptoms resolved or diminished. If needed, treatment pauses were allowed until AEs resolved. Patients were encouraged to resume treatment once willing or once AE had ceased. For treatment pauses >21 days, re-escalation from a lower dose was recommended to mitigate GI AEs

Results

Discontinuation of oral semaglutide was uncommon and mostly occurred during initial dose escalation. **85% of patients completed treatment with oral semaglutide**

Conclusion

Treatment discontinuations (temporary or permanent) with oral semaglutide mostly occurred during initial dose escalation
During dose initiation and escalation, patient education and shared management strategies may help overcome treatment-persistence barriers with GLP-1RA therapy

P44

A COMPARATIVE STUDY TO EVALUATE THE CORRELATION OF MEAN PLATELET VOLUME AND HbA1C LEVELS IN TYPE 2 DIABETES MELLITUS PATIENTS

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Keywords

Prediction of type 2 diabetes • Insulin sensitivity and resistance • Retinopathy • Cardiac complications

Background and Aims

Diabetes is the most common endocrinopathy. It is a chronic metabolic disorder, characterized by insulin resistance and hyperglycemia. One of the key parameters in the management of T2DM is the monitoring of glycaemic control which is assessed by measuring Glycated hemoglobin (HbA1c) levels. HbA1c reflects the average blood glucose concentration over the previous 2 to 3 months. Mean Platelet Volume (MPV) is a marker of platelet activation and inflammation in T2DM.
Aim: A Comparative study to evaluate the correlation between Mean Platelet Volume and HbA1c levels in T2DM patients
Objectives:

1. To measure Mean Platelet Volume (MPV) and HbA1c levels in T2DM patients.
2. To analyze the correlation between MPV and HbA1c levels in controlled and uncontrolled T2DM patients

Materials and methods

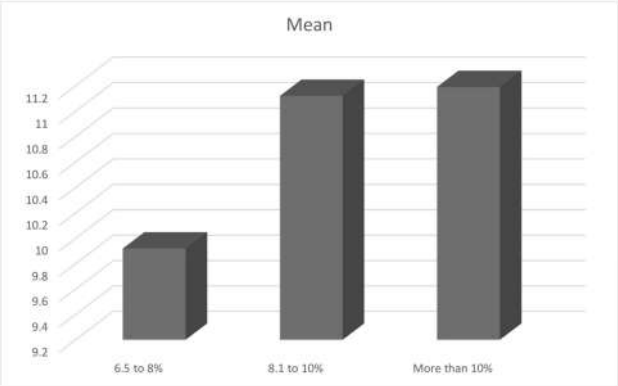
A cross-sectional study was conducted on 130 patients with Type 2 Diabetes Mellitus at a tertiary care institution of Western Uttar Pradesh. We used high performance liquid chromatography for measuring HbA1c levels. Mean Platelet Volume was measured using an automated blood counter. Fasting Blood Sugar and Post Prandial Blood Sugar was estimated using the glucose oxidase technique in an autoanalyzer.

Results

Between MPV and HbA1c, a stronger positive correlation is observed ($r = 0.3657$, $p < 0.0001$). This indicates that higher HbA1c levels, which reflect poorer long-term glucose control, are associated with higher MPV. Similarly, MPV has significant positive correlations with fasting blood sugar (FBS) ($r = 0.3362$, $p = 0.0001$) and postprandial blood sugar (PPBS) ($r = 0.3404$, $p = 0.0001$). Mean Platelet Volume showed a positive correlation with HbA1c, FBS, PPBS and duration of diabetes.

Graph/Table :

Graph 1 : Correlation of MPV (fl) levels with HbA1c categorization



Conclusion

This observational study shows a significant correlation between Mean Platelet Volume and key glycemic indicators like HbA1c, FBS, and PPBS in T2DM patients. Results showed that greater HbA1c levels are associated with an increased level of MPV. It also highlighted that longer duration of diabetes, and higher blood sugar levels (both postprandial and fasting) are associated with high MPV. It emphasizes its potential role as a marker of long term poor glycemic control and associated increased cardiovascular risk in T2DM patients.

P45

Correlation of fibrinogen to albumin ratio with severity of acute ischemic stroke

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Keywords

- Other complications

Background and Aims

Introduction: Acute ischemic stroke is a leading cause of disability and mortality worldwide, its severity varying significantly from one patient to another. Accurately assessing the severity of a stroke is crucial for determining the appropriate treatment and predicting patient outcomes. The National Institutes of Health Stroke Scale (NIHSS) has traditionally been used to quantify stroke severity. Still, a growing interest in identifying biomarkers can provide additional insight into the underlying pathophysiology and help refine prognostic assessments.

Aim: The study investigated the relationship between the fibrinogen-to-albumin ratio (FAR) and stroke severity in patients with acute ischemic stroke, as measured by the National Institutes of Health Stroke Scale (NIHSS). FAR may provide insight into stroke pathophysiology by reflecting inflammation and nutritional status.

Materials and methods

Methods: The study was conducted on 68 patients with acute ischemic stroke. NIHSS score was calculated. Serum albumin, fibrinogen, and FAR were analyzed, and their correlation with NIHSS scores was assessed. Patients with abnormal liver or kidney function were excluded to ensure the accuracy of biomarker analysis.

Results

Results: The mean serum albumin level was 3.00 g/dL (SD 0.65). Serum fibrinogen had a mean value of 3.90 g/dL (SD 1.46). The mean fibrinogen-to-albumin ratio (FAR) was 1.47 (SD 0.86). The mean NIHSS score was 10.72, with serum albumin showing a significant negative correlation with stroke severity ($r = -0.83$, $p < 0.001$) and fibrinogen displaying a positive correlation ($r = 0.91$, $p < 0.001$) with stroke severity. FAR had a robust positive correlation with NIHSS scores ($r = 0.95$, $p < 0.001$).

Conclusion

Conclusion: FAR is a promising biomarker for evaluating stroke severity, correlating strongly with NIHSS scores. This marker could enhance prognostic accuracy and help guide clinical decision-making in acute ischemic stroke management. Further studies are warranted to explore FAR's role in improving patient outcomes.

P46

Assessment of knowledge, facilitators and barriers of pneumococcal vaccination: A cross-sectional study among diabetologists in India

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Keywords

- Education • Other complications

Background and Aims

Pneumonia remains as one of the major causes of morbidity and mortality in elder adults in Low and Middle Income Countries (LMICs) and in India. There is a strong association between diabetes and pneumonia. The understanding and awareness of diabetologists regarding the pneumococcal vaccine may significantly impact their recommendations for individuals with diabetes and pneumonia comorbidity. Hence this study was conducted to assess the knowledge, attitude and practice of pneumococcal vaccine among the diabetologists in India. It also aimed to assess the facilitators and barriers of pneumococcal vaccination among them.

Materials and methods

A cross-sectional study conducted online among the diabetologists across all the regions of India (North = 23, North East = 26, West = 25 and South = 34) from Sep 2023 to Feb 2024. An education session on the importance of pneumococcal vaccine in people with diabetes was conducted region wise. A pre-test was conducted using a semi-structured questionnaire which included knowledge and practice of pneumococcal vaccine and ideal barriers in recommending it. A post-test was also conducted to assess the knowledge improvement on the vaccine among the participants.

Results

The knowledge improvement on pneumococcal vaccine was evident in all the four regions – North (pre vs. post education: 7.5 ± 1.7 vs. 8.4 ± 1.6, $p=0.003$), North East (6.6 ± 1.8 vs. 9.1 ± 2.0, $p<0.001$), West (7.2 ± 1.4 vs. 9.5 ± 1.6, $p<0.001$) and South (7.1 ± 1.5 vs. 8.9 ± 1.2, $p<0.001$). The average of correct responses was increased by 17.4% (from 63.5% to 80.9%) as a result of the education. It was found that there was a significant difference in the average knowledge score on pneumococcal vaccine between the participants with <10 years and ≥ 10 years of experience (6.6 ± 1.7 vs. 7.4 ± 1.5, $p=0.021$). But the knowledge score was significantly improved after the education session in the participants with <10 years of experience and their scores were found

to be similar compared to the participants with ≥ 10 years of experience (8.9±1.7 vs. 9.1±1.6, p=0.508) after the session. The practice of vaccination did not differ based on knowledge, gender and experience of the participants. Cost of the vaccine was found to be an important barrier in recommending and accepting for vaccination.

Conclusion

There was an overall increase in the knowledge among diabetologists post education session on pneumococcal vaccine. In addition, reduction of the vaccine cost may increase the recommendation of the vaccine. A prospective observational study is needed to assess the practice of vaccination at different time points after education session.

P47

The Effectiveness of DSMES (Diabetes Self-Management Education and Support) on the glycaemic control and quality of life among people with diabetes

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Keywords

Prevention of type 2 diabetes • Nutrition and diet • Psychological aspects

Background and Aims

Background & Aim: Evidence available suggests that Diabetes Self-Management Education and Support (DSMES) system helps in maintaining blood glucose levels and prevention of complications in people with diabetes. However, no systematic study has been conducted in India.To evaluate the effectiveness of DSMES on the glycaemic control and quality of life (QoL) among people with type 2 diabetes (T2DM)

Materials and methods

Materials & Methods:111(M:F-50:61)participants with T2DM without any complications were enrolled from a tertiary care centre in Chennai in February and March 2024 and were followed up till July 2024. They were randomly assigned to 2 groups of 55 in Group 1(intervention) and 56 in group 2 (Control). Group 1 underwent a 2 to 3 hour intensive counselling on diet, education, importance of self-monitoring of blood glucose (SMBG), regular exercise/yoga for 30 mins each day for at least 5 days in a week along with stress counselling by Psychologists. They were followed up after 7 days and 45 days to emphasize on the different aspects to reinforce the counselling given to them. Group 2 was given standard counselling with no counselling and follow up phone calls. There were 11 drop outs (5 in group 1 and 6 in group 2) and 100 participants were included for final analysis. Anthropometric, dietary recall for one holiday and two working days were taken with their average values calculated. HbA1c, exercise pattern, presence of stress, QoL was assessed by using WHO questionnaire at baseline and follow up.

Results

Results: The mean age was 53.9 in group 1 and 48.5 in group 2 respectively.32 % of the participants were overweight in each group and 50% in group 1 and 38% in group 2 were obese. A 60% (from 24 to 84%) increase was noted in the participants who were doing regular exercise in the intervention group (p<0.001) whereas the increase was only 22% in the control (from 36 to 58%) (p <0.04). A 46% (from 30 to 76%) increase was noted among those who were doing SMBG in the intervention (p<0.001) whereas the increase was only 12% in the control (from 38 to 50%) (p=0.313).In Group 1, 84% reported of having stress at baseline, while only 16% reported stress after intervention(p<0.001)which showed effectiveness of counselling.Diabetes distress was observed in 72% before intervention while only8% reported distress after counselling (p<0.0001). The initial HbA1c of group 1 was10.2±1.23 and it reduced to 7.7±0.89 after intervention (p<0.0001).In Group 2,it was 10.8±1.67 at baseline and it reduced to 9.5±1.45 (p=0.12).The impact of intervention was evident on the dietary parameters also. The QoL also improved drastically in the intervention, especially in domain 1 and 2: physical domain score [24.1to27.9; (p<0.001)] and 24.4 to 25 (p=0.036) in group2.Psychological health (22.7 to 24.6;p=0.002) in group 1 and(22.4 to 22.7;p=0.0147)in group 2. There was a significant change in domain3 (social relations) which was 9.4 at baseline and 10.3 at follow up (p=0.012) in group 1.In group 2,it was 8.8 at baseline and 9.5 (p=0.005) in group 2. In domain 4 (environmental) it was 31.4 at baseline and increased to 34.4 (p=0.01) after intervention in group 1 with no difference in group 2.

Conclusion

Conclusion: The findings proved that the DSMES protocol resulted in the improvement of all aspects in the control of diabetes and the quality of life in people with diabetes.

P48

Perception mapping of clinical utilization of fixed dose combination of metformin 500mg, glimepiride 1mg and sitagliptin 50mg: An expert opinion

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Keywords

Epidemiology • Oral therapies: metformin, sensitizers and other non-secretagogues • Other complications

Background and Aims

Uncontrolled hyperglycemia is one of the leading causes of diabetes related complications in Indian type 2 diabetes mellitus (T2DM) patients. Several drug combination armamentaria have been utilized by clinicians for uncontrolled glycemia. However, their clinical utility among clinicians is sparse. Objective of the study is to seek an expert opinion on clinical utilization of triple drug fixed dose combination (FDC) of metformin 500mg, glimepiride 1mg and sitagliptin 50mg in Indian T2DM patients.

Materials and methods

A cross sectional, observational, questionnaire-based survey was conducted among 1336 clinicians across India from Feb to April 2024, through in person consultation with the health care providers. The questionnaires were focused on clinical utility of Metformin, Glimepiride and Sitagliptin triple combination therapy for its efficacy, safety in uncontrolled T2DM patients with different age group and comorbidities.

Results

As per the survey, majorly 31% clinicians reported that 20-30% of T2DM patients required triple drug combination therapy for uncontrolled glycemia and among them 65 % physicians were in favor of triple drug combination with metformin, sulfonylurea (SU) and DPP4i. Nearly 60% clinicians prefer triple drug combination of metformin, glimepiride and sitagliptin for 10-30% uncontrolled T2DM patients with CV risk. The typical age group of the patients requiring triple drug combination was 40-50yrs. As

reported by 32% of physicians glycemic variability was observed in 20-30% of T2DM patients, among them 52% clinicians agreed that around 10-30% patients require triple drug combination of metformin, glimepiride and sitagliptin to improve their glycemic variability. Nearly 80 % of physicians anticipate HbA1c reduction of 1-2% with this regime, improved patient compliance and decreased pill burden was the notable benefits observed by merely 40-50% of clinicians.

Conclusion

The Survey emphasizes clinical utilization of FDC triple drug combination of metformin 500mg, glimepiride 1mg and sitagliptin 50mg is the preferred choice among uncontrolled T2DM patients requiring decreased glycemic variability and modest HbA1c reduction with CV safety.

P49

Comparison of linagliptin and sitagliptin in Indian comorbid type 2 diabetes patients: An expert opinion

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Keywords

Epidemiology • Oral therapies: metformin, sensitizers and other non-secretagogues • Hypoglycaemia • Other complications

Background and Aims

Dipeptidylpeptidase-4 (DPP-4) inhibitors were known to exist in type 2 diabetes mellitus (T2DM) management since decade. Clinical utilization of linagliptin and sitagliptin is diverse among health care providers for management of T2DM patients. However, there use in comorbid T2DM patients is unknown in Indian clinical practice. Objective of the study is to seek an expert opinion on comparison of linagliptin and sitagliptin as monotherapy and add on to metformin across different comorbid Indian T2DM patients.

Materials and methods

A cross-sectional, observational, questionnaire-based survey was conducted among 1247 clinicians across India. The survey questions were focused on utilization of DPP4i in comorbid drug naive, elderly, chronic kidney disease (CKD), cardiovascular disease (CVD) T2DM patients among clinical practitioners. The questions majorly focused on Linagliptin and Sitagliptin monotherapy as well as add-on to metformin in various comorbidities.

Results

According to survey, physicians typically encounter a substantial patient load of 50 to 70 patients weekly. Almost 96% physicians prescribe DPP4i for effective glycemic management. DPP4i considered as a monotherapy by almost 62% of clinicians. In drug naive T2DM patients, Linagliptin 5 mg was preferred when contraindicated or intolerant to metformin. Linagliptin as add on to metformin was the preferred choice among 93% physicians compared to sitagliptin and other gliptins due to safety and efficacy whereas 41% clinicians responded that up to 30% patients requires linagliptin as an add on to metformin. In T2DM patients with CVD, 48% of clinicians preferred linagliptin in drug naive or add on to metformin in 11-30 % of their patients. Lack of renal safety, frequent dose adjustments and non-compliance among CKD patients was considered by majority of clinician for not prescribing sitagliptin. DPP4i was preferred by 47% clinicians for elderly T2DM patient and linagliptin was preferred over sitagliptin due to lack of hypoglycemia, weight neutrality, and tolerability.

Conclusion

The survey emphasizes Linagliptin as a promising antidiabetic agent by the clinicians for the management of drug naive, elderly, CKD and CVD patients with type 2 diabetes.

P50

Cardiac autonomic neuropathy in type 2 DM

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Keywords

- Neuropathy: autonomic, incl. erectile dysfunction • Cardiac complications

Background and Aims

Aims/Introduction: Type 2 Diabetes (DM2) is a major global health issue, often leading to autonomic dysfunction. A critical complication is Cardiac Autonomic Neuropathy (CAN), which can cause silent myocardial infarction and sudden death. Early detection of asymptomatic cardiac dysautonomia is vital to delay or prevent CAN progression, yet it is frequently missed despite its association with increased mortality

Materials and methods

Material & Methods: We divided the patients into two groups based on the duration of their diabetes: those with diabetes < 5 years (n=33) and those with diabetes >5 years(n=67). We assessed postural hypotension, heart rate variability, and QTc interval using ECG and sphygmomanometer.

Results

Results: Comparing the two groups, patients with diabetes for > 5 years had significantly more prolonged QTc intervals ($p < 0.001$) and a lack of heart rate variability (HRV < 20 bpm) in all 67 subjects, compared to 31 out of 33 in < 5 years group.Postural hypotension was also more common in the over 5years group.

Conclusion

Conclusion:Our study reveals that cardiac autonomic dysfunction is prevalent in diabetic patients and increases with diabetes duration. Significant correlations exist between longer diabetes duration and QTc prolongation, reduced heart rate variability, and postural hypotension. Early screening for heart rate variability (HRV) and proactive treatment can prevent disease progression and catastrophic events.

P51

Physical and biochemical complications and socioeconomic status of Type 1 diabetics in West Bengal - A 25 year follow up report

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Keywords

Epidemiology • Socio-economic aspects

Background and Aims

BACKGROUND:

Limited information is available on the total profile of type 1 diabetes mellitus patients in India. The present study has been undertaken in search of socioeconomic status, glycaemic status and the state of complications of the type 1 diabetics attending a diabetic clinic in Kolkata over a long period of 25 years.

AIMS:

(1) To obtain the glycemic, socioeconomic, and complications status of type 1 diabetic patients
(2) to see any change of the abovementioned parameters in this follow-up period of 25 years
(3) to take necessary action to improve the quality of care and the health condition of the type 1 diabetics attending the clinic.

Materials and methods
A longitudinal observational study. A total of 265 patients were recruited for the study, having been diagnosed or seen within 1 year of diagnosis of type 1 diabetes at a Diabetic Clinic.
A total of 41 patients were excluded from the study for different reasons,and 224 patients were finally selected.
These 224 patients were classified into five separate cohorts according to their first attendance in the diabetes clinic: 1996–2000 (I), 2001–2005 (II), 2006–2010 (III), 2011–2015 (IV), and 2016–2020 (V). Baseline and socioeconomic (based on education and occupational status) data was obtained at the first visit, and mean biochemical parameters were taken from multiple visits. Complications and mortality rates were calculated against the duration of the disease at the end of the study.
Results
Gradual improvement of glycemic status was noted when groups I and V were compared. Delayed development of complications and comparatively long life were also observed. Improved socioeconomic status was also seen with improving quality of life and better glycemic control of the patients.
Conclusion
Several methods of improvement of clinical disease management, including continuous diabetes education with proper training, can improve diabetes care, leading to delays in the development of diabetic complications and ensuring longer as well as healthier life in patients living with type 1 diabetes mellitus.

P52

Assessing the Impact of Dietary Trends and Glycemic Load on CGM-Based Glycemic Control

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Keywords
• Carbohydrate metabolism • Nutrition and diet • Devices

Background and Aims
Continuous Glucose Monitoring (CGM) has emerged as a vital tool for real-time tracking of glucose levels, providing valuable insights into glycemic control. This study evaluates the impact of dietary trends and glycemic load on CGM outcomes, assessing how specific dietary patterns influence glucose variability and metabolic health over a two-week period.
Materials and methods
In this two-week study, participants followed their usual dietary routines in the first week while CGM data was collected. In the second week, dietary changes were implemented, and the impact on glycemic control was assessed by comparing CGM metrics between the two weeks.
Results
The study included 94 participants with an average age of 47.07 ± 13.10 years. Significant improvements were observed in glycemic control following dietary modifications. Estimated A1c decreased from 6.58 ± 1.89 in Week 1 to 6.28 ± 1.67 in Week 2 ($p < 0.05$), while Time in Range (TIR) increased from 64.02 ± 28.98% to 69.60 ± 26.97% ($p < 0.05$). Average glycemic load dropped from 113.51 ± 51.67 in Week 1 to 82.91 ± 34.04 in Week 2 ($p < 0.05$). The predominant dietary trend during the 1st week was a carb-rich, low-protein, and low-fibre intake, followed by patterns such as two-grain and multiple-grain meal combinations. A weak correlation ($r = 0.1178$) was found between changes in glycemic load of the diet and estimated A1c.
Conclusion
This study highlights that dietary modifications can significantly improve glycemic control in individuals using CGM, as evidenced by reductions in estimated A1c and TIR. While a weak correlation was noted between changes in glycemic load of the diet and estimated A1c, the findings emphasise the critical role of diet in managing glucose variability.

P53

Clinical and Baseline Demographic Characteristics of Indian Patients with Hypertension Receiving Telmisartan and Amlodipine Fixed-dose Combination (TACT-India Study).

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Keywords
• Hypertension

Background and Aims
Hypertension (HTN) is a prevalent cardiovascular condition affecting millions worldwide, and with a prevalence of 35.5% in the Indian population. Telmisartan and amlodipine fixed-dose combination (FDC)

represents a commonly prescribed treatment approach and yet understanding the baseline clinical characteristics of Indian patients undergoing this therapy is crucial for optimizing treatment strategies and improving patient outcomes. This study aimed to evaluate the baseline characteristics of Indian adults with HTN receiving treatment with telmisartan and amlodipine FDC.
Materials and methods
TACT India is an ongoing prospective, longitudinal, multicentre, observational real-world study evaluating the effectiveness and safety of telmisartan and amlodipine FDC in Indian adults with HTN. Adults with newly diagnosed HTN (SBP/DBP ≥140/90 mmHg) or inadequate control on monotherapy (SBP/DBP ≥140/90 mm Hg) who met the criteria for initiating the telmisartan and amlodipine FDC were included in the study
Results
A total of 6,232 patients with HTN were included in the study. The mean (SD) age was 57.11 (12.09) years. A total of 3,429 (55.02%) were men and 2,803 (44.98%) were women. The mean (SD) body weight was 72.16 (16.13) kg, and the mean (SD) BMI was 28.07 (3.73) kg/m². A total of 44.19% of patients had a history of smoking. The mean (SD) SBP and DBP were 156.42 (7.60) and 105.24 (7.84) mmHg, respectively. Most patients (67.11%) had a history of HTN, while 32.89% were newly diagnosed with HTN. The mean duration of HTN was 4.43 (2.28) years. A sedentary lifestyle was reported by 41.34% (n=2576) of patients, while 58.66% (n=3656) were physically active. The mean (SD) total cholesterol, serum triglyceride, serum high-density lipoprotein cholesterol, serum low-density lipoprotein cholesterol and serum creatinine were 141.21 (18.85) mg/dL, 129.73 (46.88) mg/dL, 40.06 (6.05) mg/dL, 101.48 (18.26) mg/dL, 1.13 (0.10) mg/dL, respectively. T2DM (86.98%) was the most prevalent comorbidity observed in these patients. Among concomitant medications, metformin was the most common medication (43.34%).
Conclusion
The TACT-India study provides valuable insights into the baseline characteristics of Indian patients with HTN receiving treatment with telmisartan and amlodipine FDC.

P54

Gender Difference in Clinical and Baseline Demographic Characteristics Among Indian Patients with Hypertension Receiving Telmisartan and Amlodipine FDC

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Keywords

- Hypertension

Background and Aims
Hypertension (HTN), a prevalent global health concern, often lacks gender-specific research in India. Understanding the impact of gender-specific baseline clinical characteristics can help achieve better treatment strategies and improve HTN management. This study aimed to understand the impact of gender- specific characteristics in HTN management
Materials and methods
TACT-India is an ongoing prospective, observational study conducted amongst Indian HTN patients. Participants aged >18 years, who were newly diagnosed with HTN (SBP/DBP ≥ 140/90 mmHg) or inadequately controlled on monotherapy (SBP/DBP ≥ 140/90 mmHg) who met the criteria for the FDC were included
Results
A total of 6,232 participants were included in this study. The majority of patients were men (n=3429; 55.02%). The mean (SD) age was 57.32 (12.29) years and 56.85 (11.82) years among men and women, respectively. The mean (SD) BMI was higher among women compared to men (29.55 [4.32] kg/m^2 vs 28.41 [3.72] kg/m^2). The mean (SD) waist circumference was higher in men compared to women (86.89 [14.63] cm vs 82.06 [12.78] cm). The mean pulse rate, respiratory rate, and duration of HTN were comparable between men and women. A comparatively higher proportion of men had a history of smoking compared to women (53.83% vs. 32.39%, respectively). The mean (SD) duration of HTN was comparable among men and women (4.95 [2.60] years vs. 4.98 [2.54] years). The majority of men and women had a known history of HTN (67.45% vs. 66.68%, respectively). New onset HTN was reported in 32.55% and 33.32% of men and women, respectively. The majority of men and women had T2DM (88.69% and 84.96%, respectively) as a comorbid condition.
Conclusion
This sub-analysis of the TACT-India study showed higher waist circumference trends in men and higher BMI in women

P55

Correlates of time to microvascular complications among type 2 diabetes mellitus patients

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Keywords

- Retinopathy • Macrovascular disease

Background and Aims
Microvascular complications, such as retinopathy, nephropathy, and neuropathy, are significant consequences of poorly controlled type 2 diabetes mellitus (T2DM), which lead to increased morbidity. Identifying key risk factors that accelerate the onset of these complications is crucial for improving patient outcomes and tailoring management strategies.

1. To identify the risk factors involved in the development of microvascular complications of T2DM
2. **To e**stimate average survival times for the time to the development of microvascular complications of diabetic patients.

Materials and methods
The study was conducted among 130 T2DM patients attending the Diabetes OPD at Urban Health Centre, Malvani, Malad, Mumbai. The participants were diagnosed and were on treatment withT2DM for at least 3 Years excluding GDM and other variants. We abstracted clinical data

from semi structured pre- validated interview schedule. Other parameters patients investigation reports & treatment sheet were referred.
Results
Amongst 130 study participants 75% (67.6%) were males. Mean age amongst both males and females was 56.5 ±11.4yrs . 64 (25%) participants were unmarried. Almost half of participants were non-professionals and educated less than higher secondary grade. The mean duration of diabetes among study participants was 7.9±4.6 years. 26 (19.1%) participants showed unsatisfactory glycaemic control (HbA1C level ≥8%).The prevalence of microvascular complications during the follow up period in the studied population was 33, (24.6%) and was more prevalent in women (63.6%). Only diabetic retinopathy was seen in 7 (5.1%) of the study participants. Only neuropathy and only nephropathy were seen in 7 (5.1%) and 6 (4.4%) participants respectively. 2 study participants had all three microvascular complications. Factors associated with increased risk of microvascular complications among the sampled diabetes mellitus patients as identified by the Weibull model were older age>50Yrs (HR=2.25, 95% CI: 1.018-3.43, p=0.039), female sex (HR=1.87, 95% CI: 1.063-4.26, p=0.021), Unsatisfactory control (HR=4.1, 95% CI: 2.045-6.1, p=0.41). Median duration of microvascular complication amongst unsatisfactory control patients was 12.0 with (95% CI: 11.3-12.6, p=0.01).
Conclusion
The incidence microvascular complications among T2DM patients remains a significant public health problem. Unsatisfactory control, Previous admission to hospital, Hypertension, dyslipidaemia, female sex, addiction are significant predictors of microvascular complication. However, Unsatisfactory control, dyslipidaemia and sedentary lifestyle and poor follow up with doctor are known risk factors contributing to early development of risk factor.

P56

Exploring the Connection Between Cortical Renal Thickness and eGFR in Diabetic Nephropathy

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Keywords
- Nephropathy

Background and Aims
Introduction: Diabetic nephropathy is the leading cause of end-stage renal disease worldwide. Usually serum creatinine, urine albumin-to-creatinine ratio, and 24-hour protein measurements are used to track disease progression in diabetic nephropathy. Ultrasonography is a simple, non-invasive procedure that utilizes various parameters such as cortical renal thickness and bipolar renal length to monitor the disease's progression.
Aims andObjectives: 1. 2. To determine the correlation between cortical renal thickness and Estimated Glomerular Filtration Rate in diabetic nephropathy. To assess whether cortical renal thickness is a better predictor of Estimated Glomerular Filtration Rate than linear bipolar length in diabetic nephropathy
Materials and methods
Method: A cross-sectional study was conducted on 172 patients with diabetic nephropathy. We used a 3.5- megahertz curvilinear transducer for the USG examination, measuring renal length in the sagittal plane and cortical renal thickness in the middle and upper regions of both kidneys. The CockcroftGault formula was used to measure creatinine clearance
Results
Cortical renal thickness and renal length showed a positive correlation with estimated glomerular filtration rate
Conclusion
Our results demonstrate a significant correlation between estimated glomerular filtration rate and both cortical renal thickness and renal length. Notably the correlation coefficient (r) for cortical renal thickness (r = 0.86) indicates it is a more robust predictor of Estimated Glomerular Filtration Rate compared to renal length (r = 0.59).

P57

Comparison of ambulatory blood pressure monitoring parameter in Type 2 diabetic and Non diabetic Hypertensive patients

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Keywords
- Hypertension

Background and Aims
Background: The presence of hypertension in type 2 diabetes mellitus(T2DM) patients significantly increases the risk of diabetic complications. Ambulatory blood pressure monitoring (ABPM) is a better tool to manage hypertension than office-based blood pressure (BP) monitoring. In this study, we tried to analyze ABPM parameters in diabetic and non-diabetic patients.
Aims:
To study ABPM parameters in diabetic and non-diabetic Hypertensive patients To compare clinical profile and drug therapy in both groups
Materials and methods
Materials and Methods: The study was conducted over 1 year in 150 hypertensive patients (T2DM/non- DM: 75/75). The method of ABPM was explained and interested patients were included. Patients with secondary hypertension or significant end-organ disease were excluded. Details of anti-hypertensive drugs were noted. ABPM was performed with an Oscillo metric (Meditech) device.
Results
Results: Mean age was higher in DM patients than non-DM patients (58.23 ± 9.92 versus 45.52 ± 8.27, p = 0.0001). Body mass index (BMI), mean duration of hypertension, and number of patients using multiple drug therapy were comparable in both groups. Baseline mean office BP was significantly higher in non- DM than T2DM patients (144/86 versus 135/78, p = 0.001). ABPM parameters like mean systolic and diastolic BP, maximum systolic and diastolic BP, mean nocturnal BP and blood pressure variability were higher in non-diabetic patients ($p < 0.05$). Whitecoat and masked effects were common in both groups. The number of patients with non-dipping, reverse dipping, and exaggerated morning surge was higher in diabetic patients (p= 0.5).

Graph/Table :

ABPM parameters in Type 2 Diabetic and Non-diabetic patients

Parameter	T2DM (n=75)	NON-DM (n=75)	p VALUE
Mean SYS.BP	125± 13.9	132± 15.74	0.0061
Mean Dia BP	70.9± 11.49	79.2± 10.13	0.001
High baseline (OFFICE)BP*	34(45.3%)	43 (57%)	0.00012
Max Systolic BP	155± 18.93	167± 22	0.0007
Max Diastolic BP	94.8± 19.9	107± 14.8	0.0001
Min Systolic BP	98.5±13.6	99.8±18.45	0.6
Min diastolic BP	50.05±10.9	56.9±11.9	0.0003
Nocturnal SBP	128.13±19.1	121±15.3	0.017
Nocturnal DBP	75.21±10.16	66.23±10.85	0.0001
BP Variability (SD >12)	41 (54.6%)	66 (88%)	0.0001
Dipping(Diurnal Index)			
Normal 10-20	16(21.3%)	18(24%)	0.402
Non-dippers (0-10)	43(57.3%)	41(54.6%)	
Reverse Dipping <0	13(17.3%)	14(18.6%)	
Extreme dipping >20	3(4%)	2(2.6%)	
Masked effect +	7(0%)	7(9%)	
White coat effect +	20(26%)	25(28.6%)	0.84
Morning surge			
Exaggerat surge (>20)	17(22.6%)	13(17.3%)	0.54

Conclusion

Conclusions: ABPM abnormalities were common in non-diabetic and diabetic patients. Many of the ABPM parameters were worse in non-diabetic patients. A small cohort, higher baseline BP, and less seriousness about the disease could be possible reasons for the difference.

P58

Sex Specific Association and prevalence of Insulin Resistance HOMA -IR in Indian Diabetic Population

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Keywords

- Insulin sensitivity and resistance

Background and Aims

Background-Insulin resistance and progressive pancreatic B-cell dysfunction have been identified as the two fundamental features in the pathogenesis of type 2 diabetes. .Insulin resistance plays an important role in clustering risk factors of atherosclerosis such as HTN, dyslipidemia,and abnormal glucose metabolism.

Aim-Determine the prevalence of IR in Indian diabetic population and its correlation with gender and other metabolic factors

Materials and methods

(HOMA) is a widely validated clinical and epidemiological tool for insulin resistance and B-cell function.The importance of HOMA-IR in relation to risk of T2DM has been less in Indian Population.250 subjects (131 M / 109 F),between the age of 26-78 years were recruited for the study.After fasting, blood sample was drawn for biochemical measurements including plasma glucose, insulin and lipids. BMI, waist and hip circumference were also measured.

Results

The prevalence of IR using HOMA IR was found to be 34.35% in males and 33.02% in females.No significant correlation was found between HOMA - IR and Age, BMI, BP, Lipid profile in both the genders. In males the correlation of HOMA - IR with FPG (p = 0.001), WC (p=0.013) and HC (0.019) was significant. In females, HOMA-IR was significantly correlated with FPG (p=0.0001).FPI was significantly correlated with HOMA - IR in the both genders (p=0.0001).

Conclusion

IR is an important risk factor for development of T2DM and incident cardiovascular diseases, identification of subjects with insulin resistance is a strategy for identifying high-risk people for targeted preventive interventionThe study concludes that IR is common in male and has correlation with obesity and FPG. Risk factors for IR should be detected in diabetics for effective preventive measures. IR is a modifiable risk factor; reduction of IR may therefore be a new target in treating these patients. It is possible that by diet, exercise and changes in lifestyle, the prevalence of insulin resistance can be reduced and this preventive strategy is the need of the hour in our country which is facing twin epidemic of diabetes and coronary heart disease.

P59

Age-wise Distribution of Clinical and Demographic Characteristics Among Indian Patients with Hypertension Receiving Telmisartan and Amlodipine Fixed-dose Combination

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Keywords

- Hypertension

Background and Aims

Understanding the age-related patterns of baseline characteristics in patients with hypertension (HTN) is crucial for optimizing treatment strategies. As HTN prevalence varies across different age groups, it becomes essential to assess whether age influences the presentation and management of HTN. This study aimed to evaluate the difference in the distribution of demographic and clinical characteristics between Indian HTN patients aged ≤50 and >50 years who are receiving a fixed-dose combination (FDC) of telmisartan and amlodipine.

Materials and methods

The TACT-India is an ongoing prospective, observational real-world study to assess the effectiveness and safety of telmisartan and amlodipine FDC in Indian HTN patients from multiple sites across India. Participants aged ≥18 years newly diagnosed with HTN or those uncontrolled on monotherapy and eligible for initiation of the telmisartan and amlodipine FDC were included in this study.

Results

A total of 6,232 patients were included in the study. The majority of patients (n=4,383; 70.33%) were aged >50 years. The proportion of men and women was comparable between the groups. The duration of HTN was comparable in both groups (≤50 years: 5.08 [2.56] years vs. >50 years: 4.92 [2.58] years). The mean (SD) BMI was 28.66 (4.06) kg/m^2 in patients aged ≤50 years and 29.04 (4.02) kg/m^2 in those with >50 years of age. History of smoking was comparable between patients aged ≤50 years and patients aged >50 years (44.94% and 43.87%, respectively). The majority of patients aged ≤50 years and >50 years

had a known history of HTN (62.95% vs 68.86%, respectively). New onset HTN was reported in 37.05% and 31.14% of patients aged ≤50 years and >50 years, respectively. The majority of the patients aged ≤50 years and >50 years had T2DM as a comorbid condition (87.54% and 86.75%, respectively). Among concomitant medications, metformin was the most common in both groups (patients aged ≤50 years: 43.29% and >50 years: 43.38%).
Conclusion
This sub-analysis of the TACT-India study revealed comparable demographic and clinical characteristics between participants aged ≤50 and >50 years of age.

P60

MUSCULOSKELETAL COMPLICATIONS IN TYPE-2 DIABETICS VERSUS NON-DIABETICS

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Keywords

Prevention of type 2 diabetes • Insulin sensitivity and resistance • Other complications
Background and Aims
Prevalence of diabetes is increasing exponentially and India having 3rd most cases of diabetes makes it a grave issue to tackle.Diabetic complications can be both acute (hyperglycemia, hypoglycemia) and Chronic (retinopathy, nephropathy, neuropathy, hyperinsulinemia).A number of musculoskeletal complications have been linked to type-2 diabetes,but the most common ones are Adhesive-capsulitis (frozen shoulder),Carpal tunnel syndrome,Duyputrens-contracture, tendinitis,Diabetic- Cheiroarthropathy(Stiff-hand syndrome).They cause limited joint mobility and are important to detect as they affect quality of life.
Aim
To find out and compare distribution of musculoskeletal complications in type 2 diabetes patients and non-diabetics and study its correlation with gender, obesity, lifestyle, diet and glycemic control.
Materials and methods
Method
After informed consent, patients were recruited from the KGMU OPD, presenting with these musculoskeletal complications. Patients were screened for type-2 diabetes using fasting, postprandial blood glucose and HbA1c levels. Patient's personal information and adequate history was taken to find out correlation of gender, obesity, lifestyle, dietary preferences and glycemic control with musculoskeletal complications in type 2 diabetics. The non-diabetics were also categorized to study the prevalence of musculoskeletal disorders in them.Based on history, anthropometric parameters and biochemical screening, 200 diabetic patients and 200 non diabetic patients were segregated.
In each group, distribution of each of the musculoskeletal complications was assessed along with relation of the above mentioned factors.
Results
Result
On screening 400 study participants (200 type 2 diabetics and 200 non-diabetics); Shoulder adhesive capsulitis was the most common musculoskeletal disorder in diabetic patients.Tendinitis was the most commonly occurring complication in non-diabetics. Positive correlation of musculoskeletal disorders with gender, obesity, lifestyle habits, glycemic control and duration of diabetes.
Conclusion
Conclusion
Hence assessing these parameters becomes an important screening tool for preventing and resolving musculoskeletal complications in diabetes mellitus patients. Thus helping in disability prevention and improving quality of life.

P61

Impact of a Connected Ecosystem with 24/7 Telemedicine on Glycemic Control in Individuals with Type 2 Diabetes

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Keywords

- Devices

Background and Aims
The Connected Ecosystem in diabetes management refers to the integration of Continuous Glucose Monitoring (CGM) systems with connected technologies, including mobile apps, data platforms, and other devices, to enable real-time glucose monitoring and analysis. This ecosystem allows for continuous tracking of glucose levels, facilitating timely interventions and personalized care. At our comprehensive diabetes care center in Kerala, we integrated the connected care system, available in India (isCGM) along with 24/7 telemedicine support to assess its impact on glycemic control. The objective of this study is to evaluate the effectiveness of the connected care ecosystem combined with telemedicine in improving glycemic outcomes for T2D.
Materials and methods
We integrated CGM ecosystem with real-time telemedicine services, allowing patients to receive continuous support and adjustments to their diabetes management plans based on their values. Data was analyzed to assess changes in glycemic control, particularly focusing on metrics such as Time in Range (TIR), HbA1c, and other relevant outcomes.
Results
Among participants (210 T2D, Age: 57.3 ± 12.9 y, mean BMI= 26.3 ± 3.8 kg/m², mean diabetes duration of 16.7 ± 11 y baseline HbA1c: 8.06 ± 1.8%) had a Coefficient of Variation (CV) <36%. HbA1c showed a significant +ve correlation with the Glucose Management Indicator (GMI), with correlation coefficients of 0.526 for GMI%. For every 1% increase in TIR, HbA1c was expected to decrease by 0.048 units, with an R^2 value of 0.24. Participants using OHA or OHA + GLP therapies had the highest TIR, averaging around 85%. Significant differences were observed in TIR and TAR across different medication groups ($p < 0.05$), though no significant differences in TBR were found. Additionally, males exhibited significantly higher TIR (79.2%) compared to females (69.4%, $p = 0.006$) and had lower TAR (19.4% vs. 28.9%, $p = 0.010$).
Conclusion
The connected ecosystem, combined with 24/7 telemedicine, significantly improved glycemic outcomes in individuals with T2D. we strongly recommend the integration of structured telemedicine services within connected ecosystems to optimize glycemic control. Furthermore, telemedicine, when combined with routine physical consultations, should be incorporated into standard diabetes care to improve outcomes for individuals with T2D.

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Understanding the Psychological Impact of Body Weight Variations: A Study of Weight-Related Body Image Concerns Among Young Adults in a Diabetes- Prone Population

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Keywords
Epidemiology • Weight regulation and obesity • Nutrition and diet • Psychological aspects

Background and Aims
Body weight variations significantly affect mental health, especially among young adults (YAs) residing in diabetes-prone areas, where weight-related body image concerns often intersect with metabolic and societal factors. Besides, Cultural, digital, and social dynamics are critical in shaping these perceptions. However, there is limited research exploring the psychological implications of body weight variations among YAs, a key demographic for early diabetes prevention. This study aims to investigate weight-related body image concerns in YAs using a validated tool to identify psychological risk factors contributing to potential metabolic issues like obesity and diabetes.
Materials and methods
A cross-sectional analytical survey was conducted using a pre-validated tool in the outpatient clinics of a tertiary healthcare institute in India, focusing on YAs at risk of developing metabolic conditions. Snowball and purposive sampling techniques were employed, and the data were analyzed using STATA/SE version 14.2. The study considered body mass index (BMI) categories, socioeconomic status, and lifestyle behaviors relevant to metabolic health.
Results
The study enrolled 1,071 YAs (mean age 22.3±3.5 years), primarily from middle-income backgrounds (61.9%) and student populations (63.6%), with a slight female predominance (57.1%). The prevalence of obesity (25.2%) and underweight (11.5%) in the sample highlighted the extremes of body weight variations. Nearly half of the obese (49.6%) and underweight (47.1%) participants reported moderate to severe body image concerns, with obesity-related psychological issues (e.g., self-consciousness and lack of confidence) particularly pronounced. Regression analysis revealed significantly higher odds of body image concerns in underweight (OR 1.89 [1.29-2.76], $p<0.001$) and obese (OR 2.89 [2.18-3.83], $p<0.001$) individuals. Key subdomains such as anxiety ($p<0.001$), loneliness ($p<0.01$), and embarrassment ($p<0.001$) were more common in underweight participants, while obese individuals exhibited heightened self-consciousness and lower confidence levels ($p<0.001$).
Conclusion
The high prevalence of weight-related body image concerns among YAs underscores the need for targeted, culturally tailored mental health and metabolic interventions. Early identification and management of these psychological factors could play a crucial role in preventing diabetes and improving mental health outcomes in YAs with obesity and other metabolic risk factors. The findings advocate for integrating mental health support within diabetes care strategies for young adults.

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Effectiveness of sitagliptin and metformin FDC in Indian patients with T2DM from a real-world retrospective EMR based study

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Keywords
- Oral therapies: secretagogues

Background and Aims
We conducted a real-world, retrospective, observational, electronic medical records (EMR) based study to understand the effectiveness of sitagliptin and sitagliptin + metformin fixed-dose combination (FDC) in Indian patients with type 2 diabetes mellitus (T2DM). The data here presents a subgroup analysis of patients who received sitagliptin + metformin FDC.
Materials and methods
EMR data of adult (age ≥18 years) male and female patients having T2DM, who were prescribed with sitagliptin or sitagliptin + metformin FDC, with or without other oral anti-diabetic medicines and had data available for at-least 1 follow-up visit at 3 months between 2017 and 2023 was retrieved. Patients who were on insulin or any other injectable antidiabetic medication like GLP-1 agonists were excluded. This subgroup analysis assessed the effectiveness of Sitagliptin + Metformin FDC on glycosylated haemoglobin (HbA1c), fasting (FBG) and postprandial blood glucose (PPBG) in patients from baseline to 3 months with HbA1c ≥ 7% at baseline.
Results
Of the EMR data, a total of 5,721 patients who received sitagliptin + metformin FDC; 2,113 had HbA1c ≥ 7% at baseline and had a 3 months follow-up data. Mean change from baseline (CFB) in HbA1c at 3 months was statistically significant (8.57 ± 1.50 to 7.54 ± 1.11; CFB: -1.03 ± 1.59, $p<0.001$). Mean change in FBG (n=1928) from baseline to 3 months was statistically significant (161.57 ± 53.14 to 135.12 ± 40.04; CFB: -26.45 ± 57.58, $p<0.001$). Similarly, CFB to 3 months in PPBG (n= 1605) was significant (232.62 ± 76.97 to 192.55 ± 63.22; CFB: -41.07 ± 86.99, $p<0.001$). Proportion of patients achieving HbA1c < 7% at 3 months was 31.47 % (n= 665/2113).
Conclusion
This EMR-based study in India demonstrates effectiveness of Sitagliptin and Metformin FDC, in significantly improving glycemic parameters (HbA1c, FBG and PPBG) in patients with T2DM having HbA1c ≥ 7% at baseline in a real world setting.

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Effectiveness of sitagliptin in Indian patients with T2DM from a real-world retrospective EMR based study: A post-hoc analysis in treatment-naive patients

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Keywords
- Oral therapies: secretagogues

Background and Aims
We conducted a real-world, retrospective, observational, electronic medical records (EMR) based study to understand the effectiveness of sitagliptin and sitagliptin + metformin fixed-dose combination (FDC) in Indian patients with type 2 diabetes mellitus (T2DM). Post-hoc analysis of treatment-naïve patients who received sitagliptin is presented here.
Materials and methods
EMR data of adult (age ≥18 years) male and female patients having T2DM, who were prescribed with sitagliptin or sitagliptin + metformin FDC, with or without other oral anti-diabetic medicines and had data available for at-least 1 follow-up visit at 3 months from 2017 to 2023 was retrieved. Patients who were on insulin or any other injectable antidiabetic medication like GLP-1 agonists were excluded. This is a post- hoc analysis that assessed effectiveness of sitagliptin on glycosylated haemoglobin (HbA1c), fasting (FBG) and postprandial blood glucose (PPBG) in treatment-naive patients who had baseline HbA1c between ≥ 7.5% and ≤ 11%.
Results
Of the EMR data of 301 treatment-naive patients who received sitagliptin, 56 had HbA1c between ≥7.5% and ≤ 11% at baseline and had 3 months' follow-up data. Mean HbA1c at baseline was 8.84 ± 1.04%. Mean change from baseline (CFB) in HbA1c at 3 months was statistically significant (8.84 ± 1.04 to 7.57 ± 1.15, CFB: -1.27 ± 1.36, p<0.001). Mean change in FBG (n=61) from baseline to 3 months was statistically significant (156.47 ± 53.35 to 135.90 ± 47.76; CFB: -20.57 ± 57.91, p=0.007). Similarly, CFB to 3 months in PPBG (n= 55) was significant (240.43 ± 89.87 to 181.08 ± 66.57; CFB: -59.35 ± 100.73, p<0.001). Proportion of patients achieving HbA1c < 7% at 3 months was 32.10 % (n=18/56).
Conclusion
This post-hoc analysis of EMR based study in India demonstrates effectiveness of Sitagliptin, in significantly improving glycemic parameters (HbA1c, FBG and PPBG) in treatment-naïve patients with T2DM having HbA1c between ≥ 7.5% and ≤11.0% at baseline in a real-world setting.

P65

Effectiveness of sitagliptin and metformin FDC in Indian patients with T2DM from a real-world retrospective EMR based study: A subgroup analysis in treatment naive patients

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Keywords
- Oral therapies: secretagogues

Background and Aims
We conducted a real-world, retrospective, observational, electronic medical records (EMR) based study to understand the effectiveness of sitagliptin and sitagliptin + metformin fixed-dose combination (FDC) in Indian patients with type 2 diabetes mellitus (T2DM). Subgroup analysis of treatment-naïve patients who received sitagliptin + metformin FDC is presented here.
Materials and methods
EMR data of adult (age ≥18 years) male and female patients having T2DM, who were prescribed with sitagliptin or sitagliptin + metformin FDC, with or without other oral anti-diabetic medicines and had data available for at-least 1 follow-up visit at 3 months from 2017 to 2023 was retrieved. Patients who were on insulin or any other injectable antidiabetic medication like GLP-1 agonists were excluded. This is a subgroup analysis that assessed effectiveness of Sitagliptin + Metformin FDC on glycosylated haemoglobin (HbA1c), fasting (FBG) and postprandial blood glucose (PPBG) in treatment-naive patients who had baseline HbA1c ≥ 7.5%.
Results
Of the EMR data of 986 treatment-naive patients who received sitagliptin + metformin FDC, 256 had HbA1c ≥7.5% at baseline and had 3 months' follow-up data. The mean HbA1c at baseline was 9.34 ± 1.74%. Mean change from baseline (CFB) in HbA1c at 3 months was statistically significant (9.34 ± 1.74 to 7.40 ± 1.11; CFB: -1.94 ± 1.86, p<0.001). Mean change in FBG (n=255) from baseline to 3 months was statistically significant (180.85 ± 59.19 to 132.26 ± 39.58; CFB: -48.58 ± 66.39, p<0.001). Similarly, CFB to 3 months in PPBG (n= 214) was significant (253.97 ± 84.87 to 195.28 ± 71.64; CFB: -58.69 ± 106.41, p<0.001). Proportion of patients achieving HbA1c < 7% at 3 months was 38.70 % (n= 99/256).
Conclusion
This subgroup analysis of EMR based study in India demonstrates effectiveness of Sitagliptin and Metformin FDC, in significantly improving glycemic parameters (HbA1c, FBG and PPBG) in treatment- naïve patients with T2DM having baseline HbA1c ≥ 7.5% in a real-world setting.

P66

Comparison of Clinician vs. Patient-Managed Continuous Glucose Monitoring: Insights from Real-World Applications

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Keywords
- Devices

Background and Aims
Devices that enable Continuous Glucose Monitoring has been on the rise. It facilitates a self-management approach and has been a boon in patients with diabetes mellitus. Devices are designed for use by clinicians and for patients. One such clinician device records the glucose levels every 15 mins, automatically stores data for a period of two weeks in the device and requires calibration 3-4 times a day. A variant of the device for patient use records glucose levels every minute, requires a reader to scan the device at

least every eight hours to record the data, and does not require calibration. Additionally, the devices vary in their costs. The current study evaluates and compares the effectiveness of implementing these devices in improving glycemic parameters in patients with diabetes mellitus.

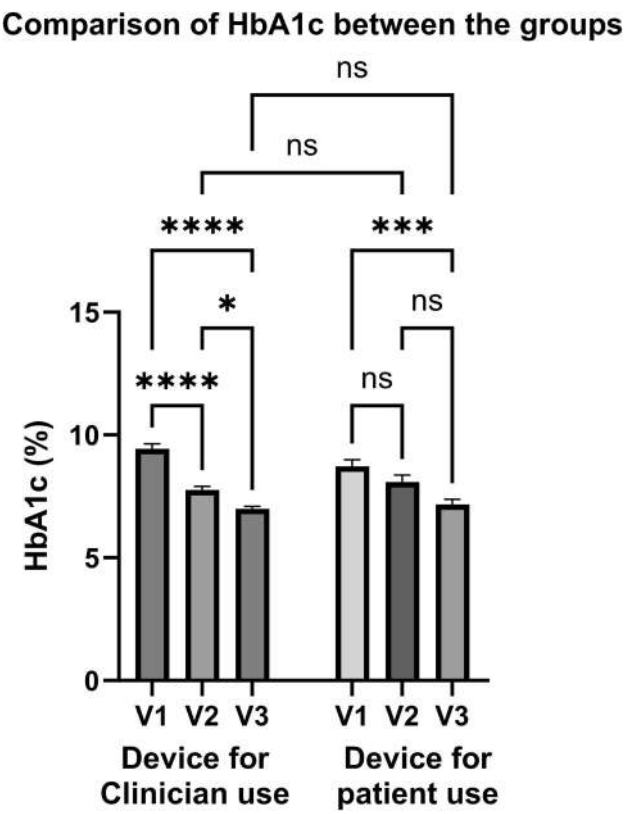
Materials and methods

The current retrospective study included patients with T2DM and poor glycemic control, attending a clinic. The patients started on Continuous Glucose Monitoring device: designed for clinician use (Group A) or patient use (Group B) for at least three months. HbA1c was obtained at baseline and two consecutive visits. Lipid profile (including total cholesterol, high density lipoprotein and triglycerides) were obtained at baseline and during a follow-up visit. The patient demographics and clinical parameters were compared between groups A and B. $P<0.05$ was considered statistically significant.

Results

A total of 75 patients were included in the study with 50 patients in group A and 25 patients in group B. Mean HbA1c levels indicated significant improvement by the end of study duration in either group (Figure 1). However, no significant differences in HbA1c were observed between Group A and Group B at the end of study duration (Figure 1). Similarly, lipid parameters including total cholesterol (Group A: 162.7 ± 43.1 to 149.3 ± 33.3 mg/dl vs Group B: 166.5 ± 34.6 to 149.8 ± 39.9 mg/dl), high density lipoprotein (Group A: 39.3 ± 9.03 to 38.2 ± 10.9 mg/dl vs Group B: 42.9 ± 12.6 to 41.60 ± 12.4 mg/dl) and triglycerides (Group A: 179.4 ± 70.8 to 174.7 ± 115.0 mg/dl vs Group B: 188.2 ± 112.2 to 126.1 ± 51.9 mg/dl) were comparable between the groups at baseline and at the end of the study duration.

Graph/Table :



Conclusion

The study findings suggest that the use of continuous glucose monitoring devices that are designated for clinician use, or patient use does not have significant differences in their impact on glycemic response or lipid parameters. The current study lends scope for prospective studies that highlight distinct advantages of each device, ultimately enhancing patient care and outcomes.

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Survey to understand management practices of healthcare professionals for Diabetes Mellitus with cardio-renal co-morbidities (DM-CARE Survey)

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Keywords

• SGLT inhibitors • Nephropathy • Cardiac complications

Background and Aims

Type 2 Diabetes mellitus (T2DM) is one of the most common metabolic disorders encountered in India with 101 million patients suffering from it. T2DM can lead to significant cardiovascular and renal complications especially if inadequately treated. Newer antidiabetic drugs such as sodium glucose transport protein 2 inhibitors(SGLT2i) and glucagon-like peptide-1(GLP-1) receptor agonists have shown improved glycemic control with cardio-renal benefits. Objective of this survey was to understand beliefs and practices among healthcare professionals(HCPs) with regard to T2DM management using newer oral antidiabetic drugs(OADs) and their combinations with an emphasis on cardio-renal advantages.

Materials and methods

Survey was conducted among 1188 HCPs across India using questionnaire consisting of 25 questions on current disease scenario of T2DM with cardiorenal comorbidities, and management practices of HCPs with newer anti-diabetic drugs in these patients

Results

Among 1188 participating HCPs, 100 (8.4%) were endocrinologists, 165 (13.8%) diabetologists, 370 (31.1%) consulting physicians, and 553 (46.5%) were general practitioners. Overall, 697 (58.6%) HCPs agreed that Indian diabetic phenotype is associated with early age of onset of diabetes, 727 (61.2%) said there is faster progression from pre-diabetes to diabetes and 578 (48.6%) HCPs agreed that there is increased susceptibility for cardio-renal complications in T2DM patients. Total of 337 (28.3%) HCPs responded that >30%, 510 (42.9%) responded that 20-30% and 297 (25%) responded that 10-20% of T2DM patients have cardiovascular comorbidities. About, 133 (11.2%) HCPs responded that >30%, 351 (29.5%) responded that 20-30% and 575 (48.4%) responded that 10-20% patients have renal comorbidities. Total of 697 (58.6%) HCPs strongly agreed and 401 (33.7%) agreed that diabetes increases risk of Heart Failure (HF). About, 375 (31.5%) HCPs responded that chronic kidney disease (CKD) increases risk of HF, 349 (29.3%) responded that risk for both the conditions is similar and 302 (25.4%) responded that CKD

risk is greater in diabetic patients. In diabetic patients with established atherosclerotic cardiovascular disease (ASCVD) or HF, 817 (68.7%) HCPs preferred SGLT2i, 189 (15.9%) preferred DPP4i, and 111 (9.3%) GLP1 receptor agonists (GLP 1 RA) as add-on to metformin. In T2D patients with CKD, 817 (68.7%) and 189 (15.91%) HCPs prefer SGLT2i and DPP4i respectively as add on to metformin. Around 349 (29.3%) HCPs strongly agreed and 504 (42.4%) agreed that non- steroidal mineralocorticoid receptor antagonist (MRA) should be used as add-on in diabetic patients with CKD.
Conclusion
The Survey suggests a significant proportion of patients have cardiorenal comorbidities, SGLT2i and DPP4i are preferred OADs.

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Blood pressure control status among hypertensive patients with diabetesusing both clinic and HBPM across 12 states in India:the GRAND Study

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Keywords
Epidemiology

Background and Aims
Approximately 30% to 50% of individuals diagnosed with hypertension also suffer from type-2 diabetes mellitus (DM). Blood pressure (BP) control rate among hypertensive patients with diabetes mellitus in India is between 25-40%. We investigated the current "real" BP control status among hypertensive patients with DM in India using both clinic BP (CBP) and home BP (HBP).
Aim: To provide new evidence on hypertension status and address the "real" BP control using both CBP and HBP among hypertensive patients with DM in India.
Materials and methods
Multicenter noninterventional study conducted across 18 centers in 12 states within 7 regions in India, enrolled hypertensive participants (ages 20-70) under medication ≥3 months who regularly visit their clinic for treatment and consultation. The first day of study enrollment was indicated as clinic visit 1 (Day 0), in which a background survey and two CBP readings were collected. Then the patients measured their HBP for seven days in the morning and evening. The patients returned for clinic visit 2 (Day 8) in which 2 CBP readings were collected. Hypertension categories were defined as cut-off CBP <130/80 and HBP <125/75 for hypertensive patients with DM and as cut-off CBP <140/90 and HBP <135/85 for hypertensive patients without DM. Patients were divided into 2 groups; well-controlled hypertensive patients with DM (controlled group) and uncontrolled hypertensive patients with DM (which includes white-coat uncontrolled hypertension, masked uncontrolled hypertension, and sustained uncontrolled hypertension) (uncontrolled group).
Results
In this study, among 1,692 participants analyzed, 690 (40.8%) were hypertensive patients with DM while 1,002 (59.2%) were hypertensive patients without DM. Among the hypertensive patients with DM, 42.5% of the patients measured HBP prior to their participation in the study. Notably, 65.4% of the hypertensive patients with DM measured their HBP for 7 days in the morning and evening which was higher than the percentage of hypertensive patients without DM (52.8%). Under the cut-off CBP <140/90 and HBP <135/85, the well-controlled percentage among hypertensive patients with DM was 42.6% compared to 53.1% among hypertensive patients without DM.
This shows a gap of 10.5%. On the other hand, under the cut-off CBP <140/90 only, the well-controlled percentage among hypertensive patients with DM was 60.7%, which shows a gap of 18.1% (60.7% vs 42.6%). The results show the hypertension categories for hypertensive patients with DM as 13.2% achieved well-controlled hypertension, 7.7% had white-coat uncontrolled hypertension, 19.9% had masked uncontrolled hypertension, and 59.3% had sustained uncontrolled hypertension.
Conclusion
It is more important for diabtic patients to measure HBP and assess the "real" BP control of hypertensive patients with DM to manage their hypertension condition.

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A Hospital Based Cross Sectional Study To Determine The Role Of High Triglyceride Glucose Index In Early Prediction Of Metabolic Syndrome In Adults.

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Keywords
- Insulin sensitivity and resistance • Lipid metabolism • Dyslipidaemia, lipoproteins

Background and Aims
Background : Metabolic Syndrome is an umbrella term for a plethora of metabolic dysfunctions seen as a result of development of Insulin resistance . As insulin resistance progresses in a patient , the clinical hallmarks of metabolic syndrome start to appear namely - visceral obesity, hypertension, and dyslipidemia. Insulin resistance and thus metabolic syndrome is further exacerbated by excess calorie surplus and sedentary lifestyle. As a result of these complex interrelated pathways, the probability of atherogenic cardiovascular disease, diabetes mellitus and stroke is markedly increased in these patients. Out of the various definitions of metabolic syndrome given by different bodies, it is the definition given by NCEP ATP III is most followed .
Aim : This study aims to evaluate the effectiveness of the Triglyceride Glucose Index (TGI) as a tool for early diagnosis of MetS, given its potential sensitivity and specificity.
Materials and methods
Methods: A cross-sectional study was conducted at the Department of Medicine, S. N. Medical College, Agra, between January 2022 to June 2024. Participants aged >30 years were enrolled into the study who partially or fully satisfied the ATP III criteria. Exclusion criteria included steroid therapy, endocrine disorders, and liver diseases. Data were analyzed using SPSS version 26.0, and descriptive and comparative statistics were applied.
Results
Results: Among 215 patients (mean age 49.42 years, 60.9% male), the study found an average BMI of 26.1 kg/m² and waist circumference of 96.1 cm. Blood pressure averaged 140.5/84.7 mmHg. The study revealed significant correlations between TGI and blood pressure, glucose levels, triglycerides, and HDL cholesterol. TGI was notably higher in smokers and those meeting the ATP III criteria.
Conclusion
Conclusion: The TGI index demonstrates significant potential in the early detection of Metabolic Syndrome and its associated metabolic

risks. It could serve as a practical tool for identifying individuals at higher risk, enabling early intervention and management.

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Correlation of Triglyceride Glucose Index with varied Metabolic Biomarkers in newly diagnosed Type 2 Diabetes Patients.

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Keywords

- Dyslipidaemia, lipoproteins

Background and Aims
The Triglyceride Glucose index (Ln[fasting triglycerides (mg/dL) × fasting glucose (mg/dL)/2]) has been proposed to be a surrogate of insulin resistance.
Aim- To evaluate the correlation of TYG index across Metabolic parameters in newly diagnosed T2DM.
Materials and methods
We conducted a cross sectional (n=2068) analysis to evaluate.
Results
The mean age was 52 (SD±14, 95% CI 51 to 53), BMI (kg/m2) was 27(SD±5.3, 95% CI 27 to 27), A1C (%) was 8.9(SD±2.1, 95% CI 8.8 to 9), FPG (mg/dL) was 203(SD±64, 95% CI 200 to 206), TG(mg/dL) was 220 (SD±51, 95% CI 218 to 223), LDL-C was 139 (mg/dL) (SD±55, 95% CI 137 to 142), TC (mg/ dL) was 200(SD±37,95% CI 198 to 201), Non HDL-C (mg/dL) was 164 (SD±38, 95% CI 163 to 166), TyG index was 9.9 (SD±0.38, 95% CI 9.9 to 10), Body fat % was 32 (SD±8.1, 95% CI 31 to 32),muscle mass (%) was 27 (SD±10, 95% CI 27 to 27), BMR (Kcal) was 1503 (SD±260, 95% CI 1492 to 1515),TyG showed a significant positive correlation with FBS (r 0.75, 95% CI 0.73 to 0.77, p<0.0001), HbA1c (r 0.72, 95% CI 0.7 to 0.74, p<0.0001), LDL-C (r 0.066, 95% CI 0.023 to 0.109, p=0.0025), TG (r 0.58, 95% CI 0.55 to 0.60, p<0.0001), and non-HDL-C (r 0.05, 95% CI 0.01 to 0.09, p= 0.01). TyG showed significant negative correlation with HDL-C (r -0.11, 95% CI -0.16 to -0.076, p<0.0001). TyG was comparable across the underweight (BMI <25 Kg/m2) (n=763) and obese (BMI ≥ 25 Kg/m2) (n=1305), 9.93 Vs 9.95 p=0.22 NS. TyG was significantly less in the LDL-C (<100 mg/dL) (n=469) and LDL-C (≥100 mg/dL) (n=1599), 9.89 Vs 9.95 p=0.0012. TyG was significantly less in the non HDL C (<130 mg/ dL) (n=379) and non HDL-C (≥130 mg/dL) (n=1689), 9.89 Vs 9.95 p= 0.0067. TyG was significantly less in the HbA1c (<9 %) (n= 1118) and HbA1c (≥9 %) (n=950), 9.58 Vs 9.81, p<0.0001. TyG was significantly lower in men and female, 9.92 Vs 9.96, p=0.04).
Conclusion
TyG index was independent of BMI.Patients with LDL-C<100,non HDL-C 30,A1c <9 % had significantly lower value of TyGI.Men as compared to women had lower TyGI.TyGI positively correlated with FBS,A1c,LDL-C,TGs and non-HDL-C.TyG index is a useful for assessing glycemic control in T2DM patients

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Assessment of Th9 and Treg Cell Frequencies and Th9/Treg Ratio in Anti- diabetic Drug Treatment Groups: Impact of Vildagliptin

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Keywords

- Clinical immunology • Oral therapies: metformin, sensitizers and other non- secretagogues • Nephropathy

Background and Aims
Th9 and Treg cells are vital for immune balance. We investigate their status in various drug- treated diabetic groups, with a focus on Vildagliptin, a Dipeptidyl peptidase-4 inhibitor. This study assesses Th9 and Treg cell frequencies and Th9/Treg ratios in anti-diabetic drug treatment groups, emphasizing Vildagliptin.
Materials and methods
This study analyzed Th9, Treg, and Th9/Treg ratio in various patient populations. The diabetic patient's groups examined were a combination group receiving Metformin (M), Glimepiride (G), Dapagliflozin (D), and Vildagliptin (V) (n=8), a combination group with MGD (n=6), a non-antidiabetic treatment group (n=28), and untreated healthy controls (n=36).
Blood samples (2 ml) were collected from all the participants. After the staining of samples, the Th9 and Treg cell percentages were assessed by flow cytometry (BD FACSCanto II). We performed data analysis via FlowJo v8.0 software.
Results
Th9, Treg, and Th9/Treg ratios were compared. Vildagliptin in MGDV showed a lower Th9 frequency (Median 15.1, IQR 6.55) than non-diabetic (Median 18.2, IQR 6.90), while MGD without Vildagliptin had a higher frequency (Median 20.55, IQR 5.73). MGDV had higher Treg levels (Median 2.74, IQR 0.38) than non-diabetic (Median 2.36, IQR 1.01). Th9/Treg ratio was lower in MGDV (Median 6.21, IQR 3.17) than non-diabetic (Median 8.23, IQR 3.55), suggesting immune balance by Vildagliptin.
Conclusion
Vildagliptin impacts Th9, Treg frequencies, and Th9/Treg ratios. Lower Th9 in MGDV and higher Treg suggest immune modulation. This highlights Vildagliptin's potential for regulating Th9 and Treg cells and immune balance in diabetes treatment.

P72

Project DREAMS (PD): A Holistic Approach to Empowering Individuals with Type 1 Diabetes

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Keywords

- Education

Background and Aims
Project DREAMS (Diabetes Resources, Education, Awareness, Advocacy, Mentorship, and Support) [PD] is an initiative by P. Kesavadev Trust that represents third phase of its commitment to raising awareness and supporting T1D. The key objectives of PD focus on addressing

the challenges faced by T1D. It aims to improve access to essential resources particularly for those with financial constraints, while bridging healthcare gaps through partnerships and advocacy. The project also offers hands-on education for T1D, families, teachers and caregivers, equipping them with effective management skills. PD tackles psychological and social challenges by fostering peer support, reducing stigma, and providing emotional support.
Materials and methods
PD was launched on September 25, 2023, in Trivandrum, Kerala, and includes several key initiatives to support T1D management. DREAMS Practicals, provides hands-on educational sessions for daily diabetes management. DREAMS Diabetes Academy serves as an online hub offering webinars, courses, and workshops led by healthcare professionals. DREAMS Type 1 Registry collects data on T1D across Kerala to enhance research and enable personalized care. DREAMS Smart Kits, which provide essential tools and educational materials tailored for both beginners and veteran T1D, and the DREAMS Squad, a multidisciplinary team offering ongoing support. The DREAMS Guru and Disciple Project educates teachers and students about T1D management in schools, while the DREAMS Helpline offers 24/7 emotional support, advice, and access to supplies. Starting in 2025, the DREAMS Screening for T1D will focus on early detection in relatives of those diagnosed with T1D.
Results
Initial outcomes from PD have shown promising results. Participants in PD's various initiatives reported increased knowledge and confidence in managing their condition. Pre- and post-assessment data demonstrated significant gains in understanding practical aspects of T1D management. Feedback indicates that holistic approach of combining education, peer support, and access to resources has improved participants' quality of life and enabled them to make more informed decisions about their diabetes care.
Conclusion
PD is a comprehensive and impactful initiative addressing wide range of challenges faced by T1D. By providing education, advocacy, and robust support system, PD is helping individuals overcome socioeconomic, psychological, and logistical barriers to better manage their condition. As PD expands, it will further empower the T1D community by raising awareness, fostering a supportive environment, and enhancing access to tools and knowledge necessary for effective diabetes management.

P73

A Real-world study on drug utilization of fixed dose combination of Teneligliptin + Pioglitazone + Metformin in Indian patients with Type 2 Diabetes Mellitus

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Keywords

- Oral therapies: metformin, sensitizers and other non- secretagogues • Cardiac complications

Background and Aims
Insulin resistance is the strongest indicator for onset of Type 2 Diabetes Mellitus (T2DM). Hence, it is a crucial therapeutic target along with hyperglycaemia in T2DM patients. Triple drug combination of metformin, DPP4 inhibitor and thiazolidinedione is frequently used in patients with inadequately controlled T2DM and insulin resistance. This study was undertaken to understand the utilization pattern of Teneligliptin + Pioglitazone + Metformin FDC in Indian T2DM patients.
Materials and methods
This cross sectional, multicentric, observational study was conducted to evaluate clinical use of Teneligliptin + Pioglitazone + Metformin in T2DM patients from 150 centres across India. With approval from Independent ethics committee, patient data was collected from medical records using predesigned structured proforma in Electronic Case Report Form (eCRF) from October 2023 to April 2024. The details of demographics, medical history, laboratory parameters, concomitant medications were collected.
Results
Data of 750 patients were available for analysis. Most common comorbidities observed were obesity (48%), cardiovascular diseases (42.4 %), dyslipidaemia (35.73%). About 62.40% patients were pre- treated and 25.33% were treatment naïve. The transition from monotherapy occurred in 35.11% cases, followed by 45.92% patients switching from a different dual therapy and 18.00% from triple drug therapy. The most common switch occurred from Metformin monotherapy (18%) and Glimepiride + Metformin (25.22%) dual therapy. The mean HbA1C observed was 8.25 ± 1.17(%) at initiation of FDC. The mean values of glycaemic and other clinical laboratory parameters are depicted in Table 1.
Graph/Table :

Table 1: Profile of Laboratory Parameters

Parameters	n	Mean ± SD
Fasting Blood Glucose (FBG) (mg/dl)	641	159.58 ± 50.65
Post-prandial blood Glucose (PPG) (mg/dl)	635	241.94 ± 69.64
HbA1C (%)	599	8.25 ± 1.17
Serum creatinine (mg/dl)	187	1.25 ± 0.70
Serum albumin (g/dl)	116	7.93 ± 13.92
eGFR	148	68.46 ± 28.55
Blood Urea Nitrogen (BUN) (mg/dL)	83	20.20 ± 9.26
Sr. total cholesterol (mg/dl)	160	202.14 ± 53.54
LDL cholesterol (mg/dl)	159	116.80 ± 37.36
HDL cholesterol (mg/dl)	153	44.96 ± 18.24
Sr. triglycerides (mg/dl)	155	178.10 ± 67.12

Note: percentage=n/N; where N=total no. of subjects enrolled (N=750)

Conclusion
This real world study observed that the FDC of Teneligliptin + Pioglitazone + Metformin was utilised more commonly in patients, with an HbA1C on a higher side and in T2DM patients associated with comorbidities like obesity, dyslipidaemia and cardiovascular disease.

P74

Correlation of Serum Uric Acid Levels with Certain Anthropometric Parameters in Prediabetic and Drug-naive Diabetic Subjects

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Keywords

- Insulin sensitivity and resistance

Background and Aims
Uric acid is produced during the metabolism of nucleotide and adenosine triphosphate and contains the final product of human purine metabolism. It acts both as an antioxidant and pro-inflammatory marker and has a positive association with visceral fat in overweight subjects. The aim of the present study is to find an association of uric acid level with certain anthropometric parameters in subjects having type 2 diabetes.
Materials and methods
The study included 124 urban drug-naive diabetic Indian subjects above 18 years of age from the general population of the city of North India. Uric acid concentrations were estimated by the uricase method. Fasting plasma glucose (FPG) concentrations were estimated by the glucose oxidase-peroxidase method. Anthropometric measurements and information on lifestyle factors and disease history were collected through in-person meeting.
Results
All participants of the study subjects had a body mass index (BMI) of more than 23.5. BMI, waist-to-hip ratio (WHR), waist-to-height ratio, waist circumference, neck circumference, weight, age, sagittal abdominal diameter (SAD), skinfold thickness, and body roundness index were positively correlated with the serum uric acid level. The correlation of weight, BMI, SAD, and WHR was statistically significant.
Conclusion
We found that serum uric acid level increases as body fat content increases. Statistical data show remarkable results for a significant correlation of uric acid level with BMI, WHR, SAD, and FPG. Hypertrophy occurs as a result of inflammatory processes and oxidative stress when the supply of energy starts to exceed the storage capacity of adipocytes, as a result, adipokines such as interleukin (IL)-1, IL-6, and tumor-necrosis factor-alpha are released more frequently which lead to low-grade chronic inflammation. Uric acid levels are much lean toward visceral obesity than overall body fat content.

P75

A Real world, cross-sectional study to assess the usage of Sitagliptin and Dapagliflozin Fixed-Dose Combination in Indian Patients with Type 2 Diabetes Mellitus

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Keywords

- Carbohydrate metabolism • SGLT inhibitors • Cardiac complications

Background and Aims
In Type 2 diabetes mellitus (T2DM) timely adoption of combination therapy is crucial to prevent complications. SGLT2 inhibitors (SGLT2i) are frequently used with DPP4 inhibitors (DPP4i) for optimum glycemic control, reduction in cardio renal risk, modest weight reduction, good tolerability and compliance due to reduced pill burden when used as a fixed dose combination (FDC). This cross-sectional study assessed the drug utilization pattern of Sitagliptin and Dapagliflozin FDC in the Indian T2DM patients.
Materials and methods
This cross-sectional study was conducted to evaluate clinical use of FDC of Dapagliflozin and Sitagliptin in T2DM patients across 100 centres in India from January 2024 to June 2024. With approval from Independent Ethics Committee, patient data was collected from medical records that included demographics, glycemic and other laboratory parameters, co-morbidities, and concomitant medications.
Results
Data of 873 patients with mean HbA1C 8.28 ± 1.25% and mean BMI of 28.2 kg/m^2 were included in the study with 321 (36.77%) being treatment naive, and 548 (62.77%) switched from other medications to Dapagliflozin + Sitagliptin. The anti-diabetic medications from which patients were most commonly shifted to this FDC were Metformin (n=104; 18.98%), followed by Glimepiride + Metformin (n=100; 18.25%). Commonly associated co-morbidities in these patients were obesity (44.90%), followed by cardiovascular diseases (CVD) (44.79%). Other common co-morbidities were dyslipidemia (33.56%), chronic kidney disease and anxiety/depression (10.42% each), obstructive sleep apnea (5.96%), and osteoporosis (5.61%). Details of laboratory parameters are depicted in Table No. 1.
Graph/Table :

Tab'le Jl: Details af Laboratory Parameters

Parameters	Value (Mean± SD)
i:asting blood glucose (FBG) (mg/di)	171.83 ± 54.96
Post-pn:1ndial blood glucose (PPG) (mg/di)	262.81 ± 67.71
Serum creatinine (mg/di)	1.89 :t 2.16
Serum albumin (g/dl)	4,.86 ± 1..59
Blood urea nitrogen (BUN) (mg/di)	22.61 ± 7.45
Serum total cholesterol lmg/dl)	191.45 ± 58.23
LDL cholesterol (mg/di)	112.7'9 ± 39.49
HDL cholesternl lmg/dl)	63.41 ± 36.56
Serum triglycerides (mg/di)	187.70 ± 91.04

Conclusion
This FDC was commonly used in treatment naïve as well as pre-treated T2DM patients including those with associated co-morbid conditions such as obesity, dyslipidaemia, CVD and CKD.

P76

Impact of age on the efficacy and safety of once-weekly insulin icodec vs. once- daily insulin in type 2 diabetes (ONWARDS 1-5)

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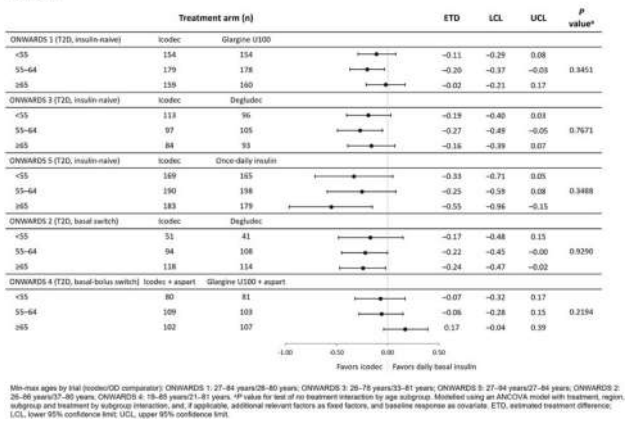
Keywords

- Insulin action • Insulin therapy

Background and Aims
This post hoc analysis assessed the treatment effects of once-weekly insulin icodec (icodec) vs once-daily (OD) basal insulin comparators across different age groups in adults with T2D.
Materials and methods
Efficacy outcomes and hypoglycemia rates for icodec vs OD comparators across three age subgroups (<55, 55–64 and ≥65 years) were assessed, by trial, in insulin-naïve (ONWARDS 1, 3, 5) and insulin-treated (ONWARDS 2, 4) adults with T2D.
Results
There were no statistically significant treatment by subgroup interactions for change in A1C from baseline to planned end of treatment (EOT) (**Figure**). A larger reduction in A1C with icodec was seen across age subgroups in ONWARDS 1–5, except for individuals ≥ 65 years in ONWARDS 4, where the opposite trend was seen. Overall, rates of clinically significant and severe hypoglycemic episodes were low in both treatment arms across age subgroups. In ONWARDS 1–5, the proportions of individuals achieving A1C <7% without clinically significant or severe hypoglycemic episodes at planned EOT were higher for icodec vs OD comparators irrespective of age, except for individuals < 55 and ≥ 65 years in ONWARDS 4; no statistically significant difference was seen in the treatment by subgroup interaction across different age subgroups.
Graph/Table :

Figure. Change in A1C from baseline to planned end of treatment by age subgroup in each of the ONWARDS 1–5 trials.



Min-max ages by trial (icodec/OD comparator): ONWARDS 1: 27–84 years/28–80 years; ONWARDS 3: 26–76 years/33–81 years; ONWARDS 5: 27–94 years/27–84 years; ONWARDS 2: 26–86 years/37–86 years. ONWARDS 4: 18–85 years/21–81 years. *P value for test of no treatment interaction by age subgroup. Modeled using an ANCOVA model with treatment, region, subgroup and treatment by subgroup interaction, and, if applicable, additional relevant factors as fixed factors, and baseline response as covariate. ETD, estimated treatment difference; LCL, lower 95% confidence limit; UCL, upper 95% confidence limit.

Conclusion
Overall, efficacy and hypoglycemia outcomes were consistent for icodec vs OD comparators irrespective of age.

P77

POSITIONING SULPHONYLUREAS IN PRACTICE

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Keywords

- Oral therapies: metformin, sensitizers and other non- secretagogues

Background and Aims
An open label longitudenal study to assess **Durability** of GLICLAZIDE MR in patients with TYPE 2 DM. Durability is defined as the 'duration' to failure of maximum / optimum dose of OHA as per standard of practice IN MAINTAINING GLYCEMIC CONTROL and needing insulin initiation. Secondarily, we looked at **HYPOGLYCEMIA, WEIGHT GAIN and EFFICACY.**
Materials and methods
300 patients under our continuous care and on Gliclazide and other OHAs were followed up in our OPD with duration of diabetes > 5 years and not suffering from malignancies, pregnancy, CKD beyond 3B or acute cardiac illnesses. Patients were assessed for GLYCEMIC CONTROL, HYPOGLYCEMIA, WEIGHT GAIN and NEED OF INSULIN.
Results
MEAN AGE OF PATIENTS- 55.14 YEARS MEAN HBA1C- 7.1% 82% PATIENTS HAD HBA1C<7% MEAN DURATION OF TREATMENT WITH GLICLAZIDE + other oral drugs- 12.81% 1% had minor hypoglycemia, no significant weight gain, 49 out of 300 (16.3%) patients needed insulin in the duration of diabetes 12.8+/- 7 years. (DURABILITY)
Conclusion
We concluded that GLICLAZIDE MR / MODERN SULPHONYLUREAS is an **effective, durable and safe treatment option in TYPE 2 DM.**
In my presentation I wish to present a simplified, rational treatment protocol for oral hypoglycemic agents.
(This presentation is author's original work and **part of this study was accepted for oral presentation at the International Congress of Endocrinology (ICE 2021) in Buenos Aires** and some part as **POSTER in IDF 2022, LISBON.**)

P78

Significant glycemic control with acarbose-metformin fixed dose combination in newly diagnosed Type 2 diabetes patients in India without any rescue therapy: START AM Study

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Keywords

- Oral therapies: metformin, sensitizers and other non- secretagogues

Background and Aims
Postprandial hyperglycemia (PPG) is eminent in Indians due to high dietary carbohydrate consumption resulting in high PPG excursion which activates pro-inflammatory, pro-oxidative & pro-coagulant pathways that drive further complications. PPG, compared to FBG is shown to be a stronger risk factor for CVD in large prospective studies. Acarbose & Metformin via different actions control PPG & FPG to provides optimal glycemic control. Aim of the study was to assess effectiveness of acarbose-metformin fixed dose combination (FDC) in reducing PPG & FPG in newly diagnosed T2DM patients.
Materials and methods
A prospective, observational, real-world study in newly diagnosed T2DM patients who were eligible for dual therapy (HbA1c ≥7.5% - 9.0%) and were prescribed acarbose-metformin FDC as an initial therapy as per the discretion of treating physician in clinical practice. Ethical committee approval & informed consent from all screened subjects were obtained prior to enrollment. Variables under observation were change in PPG & FPG levels at end of 24 weeks.
Results
1714 patients from 56 centers across India were included. Mean age was 49.6 ± 10.8 years.1592 patients were analyzed as per data availability at baseline. Mean PPG & FPG at baseline were 219.4 ± 54.1 mg/dl & 145.2 ± 35.8 mg/dl respectively. Mean reduction in PPG was 55.7 mg/dl & FPG was 32.0 mg/dl from baseline till 24 weeks (162.3 ± 30.0, 112.5 ± 19.6 mg/dl respectively, p<0.0001 each). Significant mean reductions in both PPG & FPG were seen at 6 weeks (37.0 mg/dl & 19.4 mg/dl, p< 0.0001) & 12 weeks (44.6 mg/dl & 25.0 mg/dl, p< 0.0001) respectively. Majority of patients (89.4%) continued this FDC without requiring any additional therapy for glycemic control. Mean PPG & FPG levels of patients who were only on acarbose-metformin FDC were 161.2 ± 29.8 mg/dl & 111.4 ± 19.3 mg/dl respectively at 24 weeks. Among 1706 safety population, 0.94% experienced drug related treatment emergent adverse event and 0.82% discontinued the treatment. FDC was well-tolerated.
Conclusion
Acarbose-metformin FDC alone was sufficient to achieve the glycemic targets in 90% of patients. Study concludes that the FDC provides significant glycemic control as early as 6 weeks without need of any rescue therapy & thus can be a preferred combination for initiating therapy in newly diagnosed treatment naïve T2DM patients in India who present with high starting FBG & PPBG and require robust durable glycemic control without significant intolerability and risk of incurring serious events.

P79

Use of Oral Electrolytes in Diabetic Adult and Older Adult Patients with Non- Diarrheal Conditions: A Retrospective, Real-World, Database Study

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Keywords

- Nutrition and diet

Background and Aims
Older adults are at a greater risk of dehydration than the younger population. Diabetes plays a synergistic role and makes them more susceptible to dehydration. Dehydration due to non-diarrheal conditions like fever, dengue, vomiting, etc. remains a neglected topic. There is no data published on non-diarrheal dehydration and the use of oral electrolytes in the diabetic population. This data is aims to evaluate use of oral electrolytes in subset of adult & older adults with diabetes and non-diarrheal conditions
Materials and methods
This retrospective, observational study was conducted using anonymized and aggregated data from the HealthPlix from January 2017 to March 2023 electronic medical records (EMR) database. This data is representing subset of adult & older adults with diabetes.
Results
There was a huge difference between the number of patients with dehydration(n=840) documented in their prescriptions and those prescribed oral electrolytes(n=11784)., signifying its underreporting. ORSL variants constituted around 31.2% & 31.7% of total RTD recommendations in adults & older adults respectively . ORSL Rehydrate, a low-sugar variant of ORSL, was recommended for diabetic patients with symptoms like chills, vomiting, and other associated symptoms. However, for some of the conditions like Fever, COVID-19, Respiratory tract infections other variants ORSL Plus and ORSL were prescribed. These variants were mostly prescribed for 1-3 days with twice daily (BID) or thrice daily (TID) regimen. The mean duration of recovery from conditions with fever as a symptom was similar for adults but shorter for older adults prescribed oral electrolytes as adjuvants to address fluid electrolytes & energy needs i.e. 5.18 days vs 6.28 days for those not prescribed oral electrolytes.
Conclusion
There is a need to emphasize the documentation of dehydration in the prescriptions and prescribe the most suited variant for diabetic patients. ORSL variants emerged as one of the preferred choice for multiple conditions and symptoms among the products studied. There exists a need to highlight the importance of prescribing oral FEE as adjuvant with standard medical care to support faster recovery in diabetic patients with non-diarrheal conditions.

P80

Real-World Correlation Between FIB-4 and Fibroscan in Predicting Liver Fibrosis Among Diabetic Patients

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Keywords

- Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
Liver fibrosis is a major complication in Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD), particularly in diabetic populations. This real-world study examines the correlation between FIB-4 and Fibroscan measurements in a cohort of diabetic patients aged 30-65 years, excluding alcoholics, and evaluates the impact of factors like age, diabetes duration, and dyslipidemia on fibrosis progression.
Materials and methods
We retrospectively analyzed 100 diabetic patients aged 30-65 years, excluding those with a history of alcohol consumption. FIB-4 scores were classified into low (≤ 1.30), intermediate (1.30-2.67), and high

risk (≥ 2.67). Pearson's correlation was used to assess the relationship between FIB-4 and Fibroscan, while multivariate regression evaluated the influence of age, diabetes duration, and lipid profiles on fibrosis risk.
Results
The overall correlation between FIB-4 and Fibroscan was weak (r = -0.065, p = 0.53) but stronger in the high-risk group (r = 0.42, p = 0.04). Among the patients, 50% had low FIB-4 risk (≤ 1.30), 35.11% had intermediate FIB-4 risk (1.30-2.67), and 14.89% had high FIB-4 risk (≥ 2.67). Of high-risk patients (FIB-4 ≥ 2.67), 78.9% had hypertension, and 23.7% had diabetes for over five years. Age and diabetes duration significantly increased fibrosis risk (OR = 3.2 and 1.9). Dyslipidemia, particularly abnormal LDL and HDL, was also significantly associated with higher fibrosis risk
Conclusion
This real-world study highlights the utility of FIB-4 in predicting advanced fibrosis in diabetic populations aged 30-65. Incorporating FIB-4 in primary care settings for early screening, especially in those with diabetes and dyslipidemia, could enhance early detection and management of liver fibrosis.

P81

Impact of the Fitterfly Diabetes Program on Glycemic Control and Weight Management in Newly Diagnosed Type 2 Diabetes Mellitus

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Keywords
• Nutrition and diet • Health care delivery

Background and Aims
Optimal glycemic control and weight reduction in early-stage type 2 diabetes mellitus (T2DM) are vital for minimizing complications and preserving potentially reversible β-cell function. The study aimed to evaluate the real-world outcomes of lifestyle changes through the Fitterfly diabetes program to improve glycemic control and manage weight in individuals with newly diagnosed T2DM.
Materials and methods
We analyzed de-identified data from 204 participants with T2DM (diabetes duration < 1 year; mean age: 43.6 ± 10.1 years; 28.9% females). The 90-day program included a wellness app, remote coaching, and expert care from nutritionists, physiotherapists, and psychologists. It included tailored diet and exercise plans, digital meal and activity tracking, and psychotherapy sessions based on intensive behavioral therapy principles. Participants were grouped according to baseline BMI into normal (≤ 22.9 kg/m²), overweight (23.0-24.9 kg/m²), or obese (≥ 25.0 kg/m²). Outcomes were assessed at the start and end of the program using the Wilcoxon signed-rank test, with data presented as mean (lower and upper 95% CI).
Results
For all participants, baseline mean values were as follows: HbA1c 7.0% (7.4, 7.9), weight 80 kg (78,82), and BMI 28.5 kg/m² (28,29). Significant reductions were observed in HbA1c [1.2% (1,1.4)], weight [3.5 kg (2.6, 4.4)], and BMI [1.2 kg/m² (0.9, 1.6)], all with p<0.0001. Participants grouped by baseline HbA1c (≤6.4%, 6.5–8.0%, 8.0–10%, ≥10%) showed significant reductions of 0.1%, 0.7%, 2.1%, and 4.3%, respectively (p<0.001, for all), with the greatest improvements seen in those with higher baseline HbA1c. Post-program, 80.4% (164/204) of participants achieved the target HbA1c value of ≤7%, while 66.2% (135/204) had HbA1c levels of ≤6.5%. BMI reductions among participants categorized as normal, overweight, and obese were 0.6 kg/m² (0.3, 0.9), 0.8 kg/m² (0.5, 1.2), and 1.4 kg/m² (1.0, 1.9), respectively (p<0.02, for all).
Conclusion
The Fitterfly Diabetes Program significantly improved glycemic control and facilitated weight loss in individuals recently diagnosed with type 2 diabetes mellitus. By offering continuous support for implementing sustainable lifestyle modifications, the program plays a vital role in the comprehensive management of diabetes.

P82

Effect of the Fitterfly Lifestyle Coaching Program on Glycemic Control in Type 1 Diabetes: Real-World Outcomes

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Keywords
• Nutrition and diet • Health care delivery

Background and Aims
Type 1 diabetes affects 9.5% of the global population and progresses through asymptomatic autoimmunity, dysglycemia, and symptomatic hyperglycemia. Effective management includes lifestyle tracking, personalized coaching, and digital tools like continuous glucose monitoring for real-time treatment adjustments, improving glycemic control and quality of life. The study evaluated the real-world outcomes of the Fitterfly program in improving glycemic control for individuals with type 1 diabetes.
Materials and methods
De-identified data of 39 participants with type 1 diabetes [mean age: 35 ± 14.1 years,46.1% females] were analyzed. Participants completed a 90-day program and had access to the Fitterfly mobile application for digital meal and physical activity tracking. They received remote lifestyle coaching, monitoring, and video consultations with experts, including psychologists, physiotherapists, and nutritionists. Participants received personalized exercise and diet plans with emphasis on carbohydrate counting, along with psychology sessions based on intensive behavioral therapy to facilitate sustainable lifestyle modifications. Participants were categorized based on age (≤25, 26–40, >40 years) and baseline weight (≤60 kg, 61–75 kg, >75 kg). Outcomes were assessed at the start and end of the program using the Wilcoxon signed-rank test. Data are presented as mean (lower & upper 95%CI).

Results
For all participants, baseline mean values were: HbA1c 8.9 (8.3,9.4) % and weight 65.2 (60.5,70) kg. HbA1c and weight were reduced by 1.1 (0.7,1.4) % ($p<0.0001$) and 3.7(-1.8,9.2) kg ($p>0.05$,for both) respectively. The program significantly reduced HbA1c levels across all age groups, with the largest decrease observed in participants under 25 years (1.5%, $p = 0.0098$), followed by those aged 26-40 (1.1%, $p = 0.0038$) and over 40 (0.72%, $p = 0.0144$). Significant reductions in HbA1c levels were observed for participants weighing 45-60 kg (1.2%, $p = 0.0029$) and 61-75 kg (1.4%, $p = 0.0025$). Baseline HbA1c categorization revealed the greatest reductions in individuals with higher initial values: 0.5% (0.2, 0.9) for HbA1c ≤8%, 0.9% (0.4, 1.4) for HbA1c 8-10%, and 2.3% (1.2, 3.5) for HbA1c >10%.
Conclusion
The Fitterfly diabetes program significantly improved HbA1c levels in individuals with type 1 diabetes, particularly in participants under 25 years and those with baseline weights up to 75 kg. These findings highlight the effectiveness of personalized digital lifestyle coaching and continuous monitoring in improving glycemic control in type 1 diabetes.

P83

Understanding the journey : Exploring the knowledge, attitude, and practices of parents managing type 1 diabetes in india

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Keywords
Prediction and prevention of type 1 diabetes • Nutrition and diet • Insulin therapy • Diabetes in childhood

Background and Aims
Type 1 diabetes (T1D) requires lifelong management, with parents playing a crucial role in their child's care. Assessing parents' knowledge, attitudes, and practices (KAP) is essential for improving outcomes in children with T1D. This study aimed to assess the KAP of parents of children with T1D in India.
Materials and methods
A descriptive-analytical cross-sectional study was conducted involving 214 parents of children with T1D aged under 25 years. A structured questionnaire was used to assess demographic information, knowledge, attitudes, and practices related to T1D management.
Results
Parents showed varying levels of knowledge, with significant awareness gaps in symptom recognition, insulin administration, and long-term complications. While many parents felt confident and supported, a significant proportion reported feeling overwhelmed and anxious about their child's future health. Parents demonstrated proactive involvement in diabetes management but showed room for improvement in areas like attending educational programs and involving children in management decisions.
Discussion: The study highlights knowledge gaps and emotional challenges among parents of children with T1D in India. Despite challenges, parents demonstrate proactive involvement in diabetes management, indicating the need for targeted educational interventions and psychosocial support.
Conclusion
Parents of children with T1D in India demonstrate proactive involvement in diabetes management, but there are opportunities to improve knowledge, address emotional concerns, and promote family-centered care to enhance T1D outcomes in children.

P84

Outcomes of Personalized Digital Lifestyle Coaching on Lipid Profiles in Type 2 Diabetes

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Keywords
• Nutrition and diet • Health care delivery

Background and Aims
Dyslipidemia affects 95.4% of patients with type 2 diabetes, significantly increasing cardiovascular risk. A reduction of 40 mg in cholesterol, triglycerides, or LDL correlates with a 20% decrease in risk. The study evaluated the impact of personalized digital lifestyle interventions on lipid profiles in this population.
Materials and methods
Deidentified data of 945 participants (mean age 48.5 ± 9.1 years; 22.9% female) who completed 90 days on the Fitterfly Diabetes Prime program were analyzed. Participants accessed the Fitterfly wellness app, for remote coaching, expert guidance (Nutritionists, Physiotherapists and psychologists), digital tracking of meals and physical activity, and behavioral therapy. They received individualized diet and exercise plans, along with psychology sessions based on intensive behavioral therapy principles. Baseline and 90-day data on anthropometry, HbA1c, and lipid profiles (total cholesterol, LDL, HDL, triglycerides) were analyzed using the Wilcoxon signed-rank test. Results are presented as mean with 95% CI.
Results
Baseline and 90-day time point data analysis of 945 participants revealed significant improvements in lipid profile: total cholesterol decreased by 9.3 (6.9, 11.7) mg/dL, triglycerides by 23.0 (16.8, 29.2) mg/dL, and LDL by 9.3 (7.3, 11.4) mg/dL from baseline levels of 179.9 (177, 182.8), 182 (174.9, 189), and 111.7 (109.3, 114) mg/dL, respectively ($p<0.0001$ for all). In participants with baseline total cholesterol (TC) >200 mg/dL, triglycerides (TG) >150 mg/dL, and LDL >130 mg/dL, average reductions by 42.8 (37.6,48.1)mg/dL, 50.5 (38.4,62.6)mg/dL, and 39.0 (35.1,43) mg/dL were noted, respectively. Additionally, participants with HDL levels <30 mg/dL experienced an average increase of 1.4 (0.2, 3.5) mg/dL. Baseline HbA1c categorization showed the highest total cholesterol, LDL, and triglycerides improvements among participants with higher HbA1c levels. After 90 days on the program, 60.1%, 60.5%, and 61.8% of participants saw reductions in total cholesterol, LDL, and triglycerides, respectively, while 47.9% noted a rise in HDL. Furthermore, 93% of participants showed improvement in at least one lipid profile parameter.
Conclusion
The Fitterfly Diabetes Prime program significantly improved lipid profiles, indicating that personalized digital lifestyle interventions effectively improve lipid profiles in type 2 diabetes and may help reduce long-term cardiovascular risk.

P85

ROLE OF BISPHENOL A IN GESTATIONAL DIABETES MELLITUS

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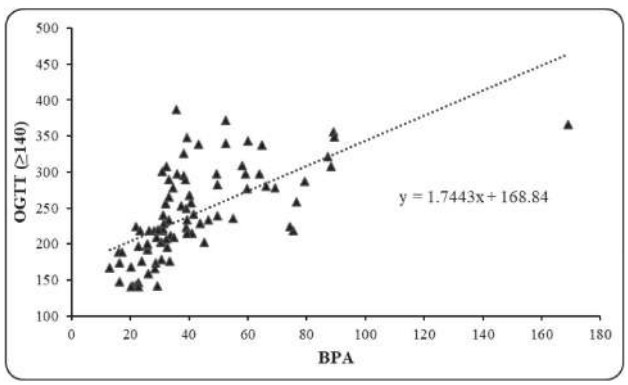
Keywords
Environmental factors (viruses, nutrients, toxins) • Other hormones • Pathogenic mechanisms / complications

Background and Aims
Gestational Diabetes Mellitus (GDM) is a prevalent pregnancy complication with significant implications for maternal and fetal health. Increasing evidence suggests that environmental factors, such as exposure to Bisphenol A (BPA) may contribute to GDM. This study aims to evaluate the association between BPA exposure and GDM in an Indian population.
Materials and methods
This observational cross-sectional study was conducted at S.N. Medical College, Agra and RML Hospital, Lucknow over one year. The study included 161 pregnant women divided into two groups: those with GDM and those with normal oral glucose tolerance tests (OGTT). Participant's urinary BPA levels were measured and statistical analyses were performed to determine correlations between BPA levels and OGTT results.
Results
The mean urinary BPA level was significantly higher in the GDM group (41.17 µg/L) compared to the non- GDM group (14.19 µg/L), with a p-value < 0.0001. Correlation analysis showed a strong positive association between BPA levels and OGTT results in the GDM group. The correlation graph formula y=1.7443x+168.84y = 1.7443x + 168.84y=1.7443x+168.84 can predict urinary BPA levels based on blood glucose levels (Table 1). The study's findings align with global research linking higher BPA exposure to increased risk of GDM.
Discussion: The study emphasize the significant association between elevated BPA levels and GDM, suggesting that BPA may be a risk factor for this condition. Compared to previous studies our study highlights the specific impact of BPA on GDM in the Indian context. The results advocate for reducing BPA exposure to mitigate the risk of GDM and related metabolic disorders.
Graph/Table :



Conclusion
BPA exposure is positively correlated with gestational diabetes mellitus. This study highlights the need for public health strategies to limit BPA exposure and further study to explore its endocrine-disrupting effects and broader implications for metabolic health.

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Survey To Understand Practices and Preferences Among Indian Clinicians Regarding SMBG In T2DM Patients

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Keywords
- Health care delivery

Background and Aims
SMBG is a simple and practical method to understand glucose levels and is a vital component of management. SMBG enables tailoring of therapy as per individual's glycemic profile for effective management. The optimal frequency and timing of SMBG depends on various factors. This study aimed to explore the practices and perceptions of Indian clinicians regarding SMBG in type 2 diabetes mellitus (T2DM) patients.
Materials and methods
A cross-sectional survey was conducted among clinicians across India from January 2024 to April 2024. Data was analyzed using descriptive statistics.
Results
The survey involved 310 clinicians, with most of them (72.26%) being in the 30–50 year age group, with 80% having a postgraduate degree in medicine and 62.9% being involved in private practice. Around 20% of doctors recommend majority (>80%) of their T2DM patients managed on oral drugs to perform SMBG. Around 33.5% of clinicians recommend >80% of their T2DM patients managed on insulin to perform SMBG. Daily 2-point SMBG (1 pre-prandial and post-prandial) and weekly 7-point SMBG (7 points conducted over a week) schedules were observed to have maximum patient compliance as opined by 26.45% and 21.29% clinicians, respectively.
For majority (>50%) T2DM patients managed on oral antihyperglycemic drugs, the two time-points most recommended by clinicians to perform SMBG were: fasting blood glucose [FBG] (75.48%) and post breakfast blood glucose [PBBG] (58.39%). These two time-points were consistently most recommended in T2DM patients managed on various insulin types as well. The '2 hours (120 minutes) post meal' was the most recommended time-point to perform post meal SMBG in majority (>50%) of T2DM patients on oral drugs as well as those on insulin therapy by 68.06% and 69.03% clinicians, respectively. The second most recommended time point for post meal SMBG was 1.5 hours (90 minutes) for T2DM patients on oral/ insulin therapy.
Conclusion
The study reveals that in T2DM management, there is widespread clinician recommendation for SMBG, especially in patients on insulin therapy but also in patients on oral therapy. Better patient compliance was observed with less intensive SMBG regimens like daily 2-point SMBG and weekly 7-point SMBG schedules highlighting one way to encourage SMBG. FBG, the most recommended time-point to perform SMBG, indicates the perception and practice of prioritizing management of fasting glucose levels in Indian practice. Furthermore, the

most recommended '2 hours post meal' time point reveals the enduring practice of time point based post prandial glucose estimation instead of evaluating the dynamic post prandial state as a continuum, which probably can be attributed to the inherent limitation of technology commonly used for SMBG.

P87

Insulin-Sparing Effects of Oral Semaglutide: An Analysis of PIONEER 8

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Keywords

- Incretin based therapies 43 Novel agents

Background and Aims
The PIONEER 8 (NCT03021187) trial demonstrated significant glucose-lowering efficacy of oral semaglutide vs placebo (pbo) in patients (pts) with T2D inadequately controlled with insulin. Additionally, those assigned to oral semaglutide (7 or 14 mg daily) had a lower total daily insulin dose at end of treatment (week 52) relative to baseline, vs those treated with pbo, suggesting an insulin-sparing effect.
Materials and methods
This post-hoc analysis of PIONEER 8 aimed to characterize the transition of adding a GLP-1RA to insulin therapy and to quantify reductions in total insulin dose seen with the addition of oral semaglutide.
A 20% reduction in total daily insulin dose was recommended at randomization up to week 8. Total daily insulin was not to exceed pre-randomization dose between weeks 8 and 26 but was freely adjustable at the investigator's discretion from week 26 to 52.
Results
For all doses of oral semaglutide, a greater proportion of pts were able to maintain a greater level of insulin dose reduction vs pbo at week 26. Greater proportions of pts on oral semaglutide 3, 7, and 14 mg achieved ≥20% reductions in insulin vs those in the pbo group at both weeks 26 and 52 (Treatment policy estimand; 27.5%, 28.9%, 31.2% vs 12.4% and 19.5%, 25.0%, 32.0% vs 5.7%, respectively; P<0.001 for all).
Conclusion
Addition of oral semaglutide in pts with T2D permits a significant reduction in insulin dose, which may provide benefits (e.g. lower risk of hypoglycemia and weight gain) long-term.

P88

Efficacy and safety of insulin icodec in Indian cohorts with diabetes: Findings from ONWARDS 1, 4 and 6 studies

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Keywords

- Insulin therapy

Background and Aims
The efficacy and safety of once-weekly insulin icodec (icodec) were demonstrated in the global ONWARDS phase 3a development programme. This subgroup analyses explored the efficacy and safety of icodec in Indian participants with type 1 and 2 diabetes (T1D/T2D) and compared the findings with global population.
Materials and methods
ONWARDS 1, 4 and 6 included Indian participants. All 3 studies were randomised, treat-to-target and open-label but differing in population, once-daily comparator and treatment period; ONWARDS 1: insulin-naïve T2D, glargine U100 and 78-week, (wk, 52-wk main phase + 26-wk extension phase); ONWARDS 4: T2D on basal-bolus insulin regimen, glargine U100 and 26-wk; and ONWARDS 6: T1D on basal-bolus insulin regimen, degludec and 52-wk (26-wk main phase + 26-wk extension phase) (Table). Both arms in ONWARDS 4 and 6 received insulin aspart (2-4 daily injections). Primary objective was to compare HbA1c change between icodec and once-daily comparators from baseline to wk-52 (ONWARDS 1) and wk-26 (ONWARDS 4 and 6), respectively. Efficacy data for all 3 studies were from the main phase while safety data were from throughout the trials.
Results
The baseline mean age was 50, 56 and 30 years; diabetes duration was 8, 15, and 13 years; HbA1c was 8.97%, 8.70%, and 7.86%, respectively for ONWARDS 1, 4 and 6. The estimated treatment difference (95% confidence interval) for change in HbA1c in icodec vs. once-daily comparator was: 0.04% [-0.46; 0.54]; -0.04% [-0.41; 0.32], 0.08% [-0.67; 0.82] in ONWARDS 1, 4 and 6, respectively. Participants on icodec spent comparable percentage of time in glycaemic range of 70-180 mg/dL from wk 48-52 in ONWARDS 1 (56% vs 54%), wk 22-26 in ONWARDS 4 (61% vs 59%) and in ONWARDS 6 (56% vs 59%), respectively vs. once-daily comparators.
Clinically significant (blood glucose <54 mg/dL) or severe hypoglycaemia (requiring external assistance for recovery) rates were comparable between icodec and once-daily comparators in ONWARDS 1, 4 and 6. No new safety concerns were identified for icodec in Indian participants. Further efficacy and safety data from the Indian cohort and the global cohort can be found in the table.
Graph/Table :

Table: Efficacy and safety outcomes of insulin icodec vs once-daily comparators in global and Indian cohorts from ONWARDS 1, 4 and 6 studies

	ONWARDS 1 Icodec vs glargine U100		ONWARDS 4 Icodec vs glargine U100		ONWARDS 6 Icodec vs degludec	
	Global (N=984) (Icodec, n=492 vs glargine U100, n=492)[1]	India (N=88) (Icodec, n=42 vs glargine U100, n=46)	Global (N=582) (Icodec, n=291 vs glargine U100, n=291)[2]	India (N=83) (Icodec, n=44 vs glargine U100, n=39)	Global (N=582) (Icodec, n=290 vs degludec, n=292)[3]	India (N=36) (Icodec, n=16 vs degludec, n=20)
Population, treatment period	T2D, insulin-naive, 78 wk (52-wk main phase + 26-wk extension phase)		T2D, basal-bolus insulin regimen, 26 wk		T1D, basal-bolus insulin regimen , 52 wk (26-wk main phase + 26-wk extension phase)	
Estimated mean change from baseline in HbA_{1c}, %-points*	-1.55 vs -1.55 [ETD: -0.19, 95% CI: -0.36 to -0.03]	-1.78 vs -1.82 [ETD: 0.04, 95% CI: -0.46 to 0.54]	-1.16 vs -1.18 [ETD: 0.02, 95% CI: -0.17 to 0.15]	-1.39 vs -1.35 [ETD: -0.04, 95% CI: -0.41 to 0.32]	-0.47 vs -0.51 [ETD: 0.05, 95% CI: -0.13 to 0.23]	-0.99% vs -1.01% [ETD: 0.08, 95% CI: -0.67 to 0.82]
Observed mean time in target glycaemic range of 70-180 mg/dL*, %	71.9% vs 66.9% [ETD: 4.27, 95% CI: 1.92 to 6.62]	55.5% vs 54.1% [ETD: 1.36, 95% CI: -6.59 to 9.37]	66.9% vs 66.4% [ETD: 0.29, 95% CI: -2.52 to 3.09]	60.5% vs 59.1% [ETD: 0.67, 95% CI: -6.95 to 8.29]	59.1% vs 60.9% [ETD: -2.00, 95% CI: -4.38 to 0.38]	55.6% vs 59.3% [ETD: -1.21, 95% CI: -10.93 to 8.50]
Estimated % of participants reaching HbA_{1c}<7%*	57.6% vs 45.4% [EOR: 1.63, 95% CI: 1.24 to 2.14]	36.60% vs 46.46% [EOR: 0.67, 95% CI: 0.27 to 1.66]	48.69% vs 45.48% [EOR: 0.82, 95% CI: 0.58 to 1.17]	51.13% vs 52.83% [EOR: 0.93, 95% CI: 0.39 to 2.25]	49.20% vs 45.72% [EOR: 0.80, 95% CI: 0.55 to 1.19]	74.58% vs 82.06% [EOR: 0.64, 95% CI: 0.10 to 4.01]
Estimated change in FPG (mg/dL)*	-60.32 vs -40.88 [ETD: -0.24, 95% CI: -8.89 to -6.41]	-59.22 vs -68.46 [ETD: 9.24,95% CI: -5.59 to 24.06]	-21.54 vs -29.04 [ETD: -2.48, 95% CI: -10.00 to 5.03]	-23.41 vs -15.83 [ETD: -7.59, 95% CI: -31.04 to 15.86]	-15.08 vs -33.64 [ETD: 19, 95% CI: 9 to 29]	-67.34 vs -44.27 [ETD: -3.11, 95% CI: -45.51 to 39.29]
Estimated average total insulin dose (U/week), last 2 weeks of treatment*	224 vs 234 [ETR: 0.96, 95% CI: 0.87 to 1.04]	209 vs 210 [ETR: 1.00, 95% CI: 0.76 to 1.31]	514 vs 539 [ETR: 0.92, 95% CI: 0.85 to 0.99]	497 vs 580 [ETR: 0.86, 95% CI: 0.70 to 1.06]	310 vs 329 [ETR: 0.94, 95% CI: 0.88 to 1.01]	351 vs 390 [ETR: 0.90, 95% CI: 0.71 to 1.14]
Clinically significant or severe hypoglycaemia (rate per person-year of exposure)	0.30 vs 0.16 [ERR: 1.63, 95% CI: 1.02 to 2.61]	0.20 vs 0.23 [ERR: 0.88, 95% CI: 0.26 to 2.98]	5.64 vs 5.62 [ERR: 0.99, 95% CI: 0.73 to 1.33]	5.54 vs 8.88 [ERR: 0.62, 95% CI: 0.38 to 1.01]	17.00 vs 9.16 [ERR: 1.80, 95% CI: 1.48 to 2.18]	16.83 vs 10.94 [ERR: 1.62, 95% CI: 0.70 to 3.79]

For ONWARDS 1 and 6, efficacy endpoints were included from the main phase, while safety endpoints were from throughout the trials. All the efficacy endpoints were summarised using full analysis set and the in-trial period. Safety endpoints were evaluated using the on-treatment period with descriptive statistics based on safety analysis set while statistical analyses were based on the full analysis set unless otherwise specified. *Data from main phase of the trial. Data from wk 74-78 in ONWARDS 1, wk 24-26 in ONWARDS 4 and wk 50-52 in ONWARDS 6. Time in target range is defined as 100 times the number of recorded measurements in glycaemic target range 70–180 mg/dL, both inclusive, divided by the total number of recorded measurements.
FAS included all randomly assigned participants; SAS included all randomly assigned participants who received at least one treatment dose. Efficacy endpoints were analysed with the use of the full analysis set and data from the "in-trial" period (i.e., from randomisation to last contact, withdrawal, or death). Safety end points were assessed with the use of the safety analysis set (descriptive statistics). Clinically significant hypoglycaemia (level 2): Plasma glucose value <54 mg/dL. Severe hypoglycaemia (level 3): Hypoglycaemia with severe cognitive impairment requiring external assistance for recovery.
ETD, estimated treatment difference; ETR, estimated treatment ratio; EOR, estimated odds ratio; ERR, estimated rate ratio; FAS, full analysis set; FPG, fasting plasma glucose; SAS, safety analysis set; wk, week.
1. Rosenstock J et al. N Engl J Med 2023;389:297-308. 2. Mathieu C et al. 3. Russell-Jones D et al. Lancet. 2023;402(10411):1630-1647.

Conclusion
The efficacy and safety findings in the Indian participants were broadly consistent with those from global ONWARDS 1 and 4 (T2D) and ONWARDS 6 (T1D) studies.

P89

Practices and Perceptions of Postprandial Glucose Monitoring Among Indian Clinicians in Managing Type 2 Diabetes Mellitus

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Keywords

- Health care delivery

Background and Aims
Postprandial glucose (PPG) is a significant contributor to A1C levels especially in Asian patients with T2DM. The recent IDF position statement is a testament to the importance of appropriate PPG monitoring. This study aimed to explore the practices and perceptions of Indian clinicians regarding PPG monitoring in Type 2 Diabetes Mellitus (T2DM) patients.
Materials and methods
A cross-sectional survey was conducted among clinicians across India from January 2024 to April 2024. Data were analyzed using descriptive statistics.
Results
A total of 310 clinicians participated in the survey. The majority of participants (72.26%) were of the age 31-50 years, with 68.7% holding postgraduate degrees in medicine (MD) and 62.9% practicing in a private setup. Most clinicians (76.45%) reported that for majority (>50%) of their T2DM patients, lab- based PPG testing was done ≥4 times/year. Around half of the clinicians (49.03%) opined that >60% of their patients are recommended to undergo lab-based PPG testing at every visit, whereas 24.52% clinicians recommended the same to 41%-60% of their patients. For majority (>50%) of patients, the most common timepoint for lab-based PPG testing was 2 hours post-meal, which was true for those on oral antihyperglycemic agents (OHAs) (73.23%) and those on insulin (72.58%). The second most recommended timepoint for lab-based PPG testing was 1.5 hours post-meal according to 20.97% clinicians for patients managed on OHAs and 21.29% clinicians for patients managed with insulin. For post-meal self-monitoring blood glucose (SMBG), the most recommended timepoint was 2 hours post-meal as opined by 68.06% clinicians for majority of patients on OHAs and by 69.03% clinicians for majority of patients on insulin. The second most recommended timepoint for post-meal SMBG in majority (>50%) of patients was 1.5 hours post-meal as opined by 23.55% clinicians for patients on OHAs and 21.61% clinicians for patients on insulin.
Conclusion
The study reveals that Indian clinicians consider PPG monitoring a significant parameter for T2DM management. Most clinicians recommend lab-based PPG testing at least 4 times/year, with the 2-hour post-meal interval being the preferred timepoint for PPG testing done via lab or SMBG, in patients on OADs as well as those on insulin therapy.

P90

Efficacy and Safety of Once-Weekly Insulin ICODEC vs. Once Daily Basal Insulin in Type 2 Diabetes according to Baseline GLP-1RA Use ONWARDS 1-5

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Keywords

- Insulin therapy

Background and Aims
To assess the treatment effects of once-weekly (OW) insulin icodec (icodec) vs once-daily (OD) basal insulin comparators ± concomitant glucagon-like peptide-1 receptor agonist (GLP-1 RA) use in ONWARDS 1-5
Materials and methods
A post hoc analysis by trial of insulin-naïve (ONWARDS 1, 3, 5) and insulin-experienced (ONWARDS 2, 4) adults with type 2 diabetes (T2D)
Results
Participants on icodec vs OD comparators had larger or similar A1C reductions from baseline (BL) to end of treatment (EOT) irrespective of GLP-1 RA use; there was no statistically significant treatment by subgroup interaction in A1C changes (Table). Overall rates of clinically significant or severe hypoglycemia were low (<1 event/patient-year of exposure) across arms among ONWARDS 1-3 and 5 subgroups, with numerically lower rates among GLP-1 RA users vs non-users; in ONWARDS 4 (basal- bolus trial), the hypoglycemia rate was similar among GLP-1 RA users vs non-users in the icodec arm (Table). There was no statistically significant treatment by subgroup interaction in any trial for the attainment of A1C <7% without clinically significant or severe hypoglycemia, nor body weight change from BL to EOT
Conclusion
The efficacy and safety of icodec vs OD comparators was generally consistent among adults with T2D, irrespective of baseline GLP-1 RA use

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Diabetic distress and its correlation in children & adolescents with Type 1 diabetes mellitus and their caregivers from lower socio economic background

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Keywords

- Psychological aspects • Diabetes in childhood

Background and Aims
Type 1 Diabetes management (T1DM) involves regular checking of blood sugar levels ,tracking food intake ,giving insulin injections and adjusting treatment based on food and exercise.Cost of managing T1DM are burdensome on families from low socio economic background (SEB).

We aimed to evaluate the self perception of Diabetes -specific distress among children and adolescents with T1DM from the lower SEB ,using the 28 point Type 1Diabetes distress scale (T1DDS) and their subscale scores.
Evaluate the self -perception of Diabetes specific distress using 20 point parent diabetes distress scale among the primary caregivers of the child /adolescents with T1DM and the correlation betweeen the PDDS and T1DDS .
Materials and methods
Children and adolescents with T1DM between 8 -20 years of age from the Type 1 Diabetes Initiative (T1DI) cohort of our hospital was included .
T1DDS questionnaire includes 28 items with six options (scored 1 to 6 each with increasing severity of distress).Final score is the average of all the items in the scale. Scores between 1.0 and 1.9 reflect little or no distress;scores between 2.0 and 2.9 reflect moderate distress and scores > 3.0 reflect high distress. Any score beyond 2.0 is considered significant distress . The seven specific areas of distress are : Feeling of powerlessness (FP);Management distress (MD) ;Hypoglycemia distress (HD);Negative social perception distress (NSPD);Eating distress(ED); Physician distress (PD) and Family-friend distress (FFD) PDDS has 4 subscale of Personal distress (PD) ,Teen management distress (TMD),Teen parent relationship (PTRD) and healthcare team distress (HTD) .
Results
200 children (114 girls,57%) were included in the observational study . 99 (49.5%)59(29.5%) &42(21%) had mild,moderate and severe distress respectively . 109 (54.5%) ,90(45%), 83(41.5%) 79(39.5%) 103(51.5%) 50(25%),86(46%) had significant distress regarding FP,MD,HD,NSPD,ED,PD,FFD respectively. 9(4.5%),16(8%) &175(87.5%) caregivers had mild,moderate and severe distress respectively
Lower family income (p=0.016) ,higher number of hospitalisation(p=0.01) & DKA episodes(p=0.047) significantly associated with higher total distress score.
Graph/Table:

TABLE1

TIDDS	CORELATION COEFFICIENT	PDDS TOTAL SCORE	PD	TMD	PTRD	HTD
TOTALSCORE	r	**0.552**	**0.52**	**0.529**	0.505	0.163
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.0209
FP	r	0.444	0.467	0.465	0.526	0.094
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.1841
MD	r	0.499	0.415	0.461	**0.546**	**0.147**
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.0379
HD	r	0.489	0.513	0.49	**0.543**	**0.2**
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.0047
NSPD	r	**0.357**	**0.36**	**0.332**	**0.374**	
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.232
ED	r	**0.507**	0.432	0.44	**0.526**	**0.115**
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.1039
PhyD	r	0.46	0.416	0.443	0.479	**0.33**
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
FFD	r	**0.418**	**0.366**	**0.344**	**0.344**	0.054
	P VALUE	<0.0001	<0.0001	<0.0001	<0.0001	0.3701

Correlation between the TIDDS and PDDS and their subscales are shown in Table 1

Correlation between the TlDDS and PDDS and their subscales are shown in Table 1
Conclusion
Around 50% children and adolescents with T1DM from the lower SEB have moderate to severe distress, especially more than half experiencing moderate to severe distress with regards to FP and ED.Lower gross family income is significantly associated with higher total distress scores and all components of T1DDS except HD (p=0.092) and PD (p=0.083) .

P92

Safety and effectiveness of insulin faster aspart in patients with diabetes mellitus in routine clinical practice in India

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Keywords
● Insulin action ● Insulin therapy

Background and Aims
Faster-acting insulin aspart (faster aspart) is an ultra rapid insulin analog available in India for the treatment of DM in children >1 year, adolescents and adults including elderly. This study was a post- authorization safety study (PASS) to evaluate the safety and effectiveness of faster aspart in patients with DM requiring prandial insulin therapy in routine clinical practice in India.
Materials and methods
This was a multi-center, prospective, single-arm, non-interventional, PASS of 6 months duration. The study included patients diagnosed with DM scheduled to start treatment with faster aspart based on the clinical judgement of their treating physician. Data collection was done at baseline (Visit 1), between 1-21 weeks, usually at week 12 (Visit 2) and finally after 26 weeks (Visit 3). The primary endpoint was to collect the incidence of treatment emergent adverse events (AEs) during 6 months of treatment with faster aspart. The secondary safety endpoints included serious adverse events (SAEs), serious adverse drug reactions (SADRs), adverse drug reactions (ADRs), patient reported Severe hypoglycemia, patient reported Blood Glucose (BG) confirmed hypoglycemia (<56 mg/dL), patient reported Severe or BG confirmed hypoglycaemia. The secondary effectiveness endpoint included change in HbA1c from baseline to end of study.
Results
A total of 302 patients with DM were enrolled, which included 259 T2D (85.7%), 35 T1D patients (11.6%), and 8 patients with other types of diabetes (2.6%). Of the 302 patients, 294 were adults and 8 were of the age group between ≥1 to <18 years. There were 170 male patients and 132 female patients. In the 6 month study period, there were 50 AEs reported by 26 (8.6%) patients. The most common AE was 31 events of Severe or BG confirmed hypoglycemia seen in 14 (4.6%) patients (0.2296 events per PYE), of which 7 were unlikely to be related, 9 were possibly related, and 15 were probably related to the drug. There were 27 episodes of severe hypoglycemia in 12 (4.0%) subjects & 7 episodes of BG confirmed hypoglycemia in 4 (1.3%) subjects. There were 4 SAEs (2 events of chronic pancreatitis, 1 event of flank pain, 1 event of Guillain- Barre syndrome) in 3 (1%) patients, all of which were unlikely related to the drug and resolved. There were no SADRs or deaths reported in this study. HbA1c reduced -1.4 ±1.88% from baseline (mean 9.6±2.07%) to end of study (mean 8.3±1.47%)

Graph/Table :

Table

Safety Endpoints	No. of patients, n(%)	No. of Events, E
• Total AE	26 (8.6)	50
• SAE	3 (1)	4
• SADR	0 (0)	0
• Clinically significant (<56mg/dL) or Severe Hypoglycemia	14 (4.6)	31
Effectiveness Endpoints	HbA1c %	ETD from baseline
• Baseline (visit 1)	9.6 (±2.07)	
• Standard routine visit (visit 2)	8.6 (±1.58)	-1.1 (±1.60)
• End of study (visit 3)	8.3 (±1.47)	-1.4 (±1.88)

Conclusion
This study demonstrates the safety and effectiveness of faster aspart in routine Indian clinical practice. There were no new safety concerns observed with faster aspart use.

P93

Efficacy, Safety, and Tolerability of Imeglimin SR 1000 mg in Inadequately Controlled Type 2 Diabetes Mellitus: A Phase III, Randomized, Double-Blind Study in India

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Keywords
- Oral therapies: secretagogues

Background and Aims
Management of Type 2 Diabetes Mellitus (T2DM) focuses on achieving target HbA1c levels, primarily starting with metformin and lifestyle changes. Despite multiple oral hypoglycemic drugs, many Indian patients still experience poor glycemic control. To evaluate the efficacy, safety, and tolerability of imeglimin hydrochloride sustained release (SR) tablets in participants with T2DM inadequately controlled with diet and exercise.
Materials and methods
This phase III, prospective, randomized, double-blind, active-controlled, multicentric clinical study was conducted between January 2023 and July 2023 in India for 16 weeks (CTRI/2022/12/048611). Treatment naïve participants (18-65 years) with T2DM, and inadequately controlled with diet and exercise for three months prior to screening were randomized (1:1) to either imeglimin or metformin SR 1000 mg once daily. Efficacy outcomes were mean change in glycated haemoglobin (HbA1c), fasting plasma glucose (FPG), and 2-hr postprandial glucose (PPG) from baseline to week 16. Adverse events were recorded.
Results
Of the 216 randomized participants, 210 completed the study, with 106 having received imeglimin and 104 having received metformin. The mean (SD) age of participants was 46.18 (9.30) years in imeglimin arm and 46.67 (8.57) years in the metformin arm. The least mean square (LSM) in HbA1c, FPG and 2- hour PPG were comparable in both arms. The LSM change in HbA1c from baseline to week 16 was -0.70% in the imeglimin group and -0.67% in the metformin group, with a difference of -0.03% (95% CI: -0.19, 0.13; p=0.6994). At week 16, the LSM change from baseline in FPG was -17.88 mg/dL for imeglimin and -16.32 mg/dL for metformin, with a difference of -1.56 mg/dL (95% CI: -6.63, 3.51; p=0.5471). The LSM change in 2-hour PPG was -26.96 mg/dL for imeglimin and -24.32 mg/dL for metformin, with a difference of -2.63 mg/dL (95% CI: -11.88, 6.61; p=0.5763). The proportion of participants i) achieving therapeutic glycemic response was relatively higher (38.89% vs 37.03%; p=0.7792) and ii) requiring rescue medications (6.48% vs 7.41%; p=0.7890) was relatively smaller, in imeglimin treatment. Safety and tolerability parameters were comparable in both arms. Laboratory parameters, 12-lead ECG, vital signs, and physical examinations of participants receiving both treatments were comparable from baseline to week 16.
Conclusion
Imeglimin monotherapy (1000 mg once daily) proved non-inferior to metformin in improving glycemic control in Indian T2DM patients, with better safety and tolerability. It may serve as a potential alternative for those inadequately controlled by diet and exercise.

P94

Role of Fibroblast Growth Factor 21 (FGF21) in Non Alcoholic Fatty Liver Disease(NAFLD) with Type 2 Diabetes Mellitus

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Keywords
- Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
Non Alcoholic Fatty Liver Disease(NAFLD) is an escalating public health issue, increasingly recognized as a leading cause of chronic liver disease. It is a hepatic manifestation of metabolic syndrome and its coexistence with T2DM significantly increases liver-related mortality. FGF21 plays a crucial role as a metabolic regulator, enhancing insulin sensitivity through adiponectin and exhibiting beneficial effects on liver steatosis, inflammation and fibrosis. Due to the limited data on FGF21 in NAFLD among Indian populations, our study aimed to fill this gap.
Materials and methods
We investigated 95 NAFLD patients and 30 controls, dividing the NAFLD group based on Fibroscan CAP (Controlled Attenuation Parameter) and LSM (Liver Stiffness Measurement) values into steatosis and fibrosis subgroups. We analysed anthropometic parameters like BMI, W/H ratio, biochemical parameters like liver enzymes, HOMA-IR, FIB 4, NFS scores and FGF21 levels between these groups.
Results
Our findings revealed markedly higher FGF21 levels in NAFLD patients compared to controls and elevated levels in the fibrosis group comapred to steatosis group. This suggests that FGF21 levels correlate with disease severity. Specifically, higher FGF21 levels were associated with more severe liver steatosis and advanced fibrosis. FGF21 levels showed significant positive correlations with BMI, waist circumference, HOMA IR linking FGF21 with broader metabolic dysfunction. At a cutoff of >436 pg/ml, FGF21 demonstrated 69.47% sensitivity and 86.67% specificity for distinguishing NAFLD from controls, with an AUC of 0.869. Logistic regression confirmed FGF21 as a strong independent predictor of NAFLD, even after adjusting for BMI, waist circumference, and insulin resistance.

Conclusion
Our research provides crucial data on the role of FGF21 in NAFLD among T2DM patients in India, highlighting its potential as both a diagnostic biomarker and a therapeutic target.

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CORRELATION OF INTERARM AND INTERLEG SYSTOLIC BLOOD PRESSURE DIFFERENCE WITH ALBUMINURIA IN DIABETIC ADULTS

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Keywords

• Nephropathy • Other complications

Background and Aims
Interarm difference of Systolic blood pressure has historically been considered as a normal variant. However, recent studies have found that Systolic blood pressure (SBP) difference of 10 mm Hg between the arms is associated with cardiovascular disease, peripheral vascular disease and mortality. Although there are few studies suggesting the association of interarm systolic bp difference (IASBPD) with vascular diseases, data on relationship between IASBPD and inter-leg systolic bp difference (ILSBPD) with albuminuria is scarce. The aim of the study was to evaluate their association with albuminuria using urinary albumin creatinine ratio (UACR) in patients with diabetes mellitus
Materials and methods
Blood pressure was measured in 115 adult patients with type 2 diabetes, and IASBPD & ILSBPD calculated. Spearman rank correlation coefficient was used for correlation. Univariate and multivariate linear regression was used to find out significant factors affecting IASBPD & ILSBPD difference. Receiver operating characteristic curve was used to assess sensitivity, specificity of IASBPD & ILSBPD for predicting albuminuria.
Results
The mean age was 54.72±9.9 years with mean duration of diabetes as 5.23±4.26 years. The IASBPD & ILSBPD were 9.57±5.32 mm Hg and 8.47±5.47 mm Hg respectively. The mean fasting blood sugar, post prandial blood sugar and HbA1c were 153.63±31.78 mg/dl, 212.3±44.39 mg/dl and 7.93±1.34 respectively. Significant weak positive correlation was seen between UACR and IASBPD & ILSBPD with correlation coefficient of 0.289 (p=0.002) & 0.3 (p=0.001) respectively. The prevalence of albuminuria was markedly higher in IASBPD difference≥ 5 group compared to <5mm Hg group with 87.80% vs 54.55% (p < 0.0001; OR= 5.787(2.249 to 14.89), ≥ 10 mm Hg group compared to <10mm Hg group with 90% vs 60% (p=0.0001; OR= 5.702 (2.167-15.005), ≥ 15 mm Hg group compared to <15 mm Hg group with 100% vs 75% (p=0.039; OR=10.492 (0.547-201.22). Similarly, a significant difference in albuminuria prevalence was observed when comparing the ILSBPD ≥5 group with < 5mm Hg group with 90.67% vs 55% (p value < 0.0001; OR= 7.505(2.794 to 20.156), ≥ 10 mm Hg group compared to <10mm Hg group with 93.62% vs 67.65% (p=0.001; OR= 6.133 (1.831-20.546), Difference was non-significant in ≥ 15 mm Hg group compared to <15 mm Hg group. Discriminatory power of IASBPD (AUC 0.77; 95%CI:0.683-0.844) and ILSBPD (AUC 0.773; 95% CI:0.686-0.846) were acceptable. Inter-arm and inter leg systolic blood pressure difference had sensitivity of 70% & 75.56% respectively for prediction of albuminuria. Both IASBPD & ILSBPD had specificity of 72% for albuminuria prediction.
Conclusion
A difference in SBP between arms and legs has shown significant sensitivity and specificity and could be a novel predictor of albuminuria in patients with diabetes mellitus.

P96

Interesting case of Fibrocalculous pancreatic diabetes: original research article

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Keywords

• Other complications

Background and Aims
Fibrocalculous pancreatic diabetes (FCPD) is a form of diabetes linked to chronic pancreatitis, characterized by the presence of pancreatic calcifications and dysfunction. Predominantly seen in tropical regions, especially India, FCPD poses unique challenges in diagnosis and management. This study aims to elucidate the clinical features, management strategies, and outcomes associated with FCPD.
Materials and methods
A retrospective analysis was conducted on patients diagnosed with FCPD at a tertiary care center over five years. Clinical data, including demographic information, pancreatic imaging, laboratory results, and treatment regimens, were collected. Statistical analysis was performed to determine correlations between clinical features and treatment outcomes
Results
A total of 150 patients with FCPD were analyzed. The cohort demonstrated a mean age of 45 years, with a higher prevalence in males. Common symptoms included abdominal pain and weight loss. Imaging revealed significant pancreatic calcifications in 80% of cases. Patients were primarily managed with insulin therapy, supplemented by dietary modifications. A notable proportion (60%) achieved glycemic control within six months. Complications such as neuropathy and retinopathy were prevalent but manageable.
Conclusion
FCPD is a significant clinical entity that requires tailored management approaches. Early diagnosis and a combination of insulin therapy and lifestyle modifications can lead to improved outcomes. Further research is needed to explore long-term complications and potential novel treatment strategies.

P97

Impact of Osteocalcin on Glycemic Regulation and Insulin Sensitivity in Type 2 Diabetes

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Keywords

Prevention of type 2 diabetes • Weight regulation and obesity • Education • Other complications

Background and Aims Background:
Type 2 diabetes mellitus (T2DM) is a global health concern affecting millions of people. In the last few years, bone has been recognized as an endocrine organ that modulates glucose metabolism by secretion of osteocalcin, an osteoblast-specific hormone, that influences fat deposition and blood sugar levels. Osteocalcin has been implicated in insulin sensitivity and glucose regulation. However, limited studies have investigated the relationship between osteocalcin and glycemic control parameters in T2DM patients
Objective:
The aim of the study is to assess the relationship of circulating osteocalcin levels with glycemic control parameters and insulin resistance in T2DM patients.
Materials and methods
A total of 234 subjects were recruited, including T2DM patients (n=117) and age-sex-matched controls(n=117). Fasting blood samples were collected to measure fasting blood sugar (FBS), insulin, HbA1c, and osteocalcin levels. Osteocalcin levels were determined using an enzyme-linked immunosorbent assay (ELISA). Insulin resistance was calculated using the Homeostatic Model Assessment for Insulin Resistance (HOMA-IR).
Results
Osteocalcin levels were significantly lower in T2DM patients (7.07 ± 3.80 ng/mL) compared to healthy controls (20.41 ± 13.50 ng/mL, $p < 0.0001$). A strong inverse correlation was observed between osteocalcin and HbA1c ($r = -0.710$, $p < 0.01$), as well as between osteocalcin and FBS ($r = -0.676$, $p < 0.01$). T2DM patients also exhibited significantly higher insulin resistance, with elevated HOMA-IR scores (4.39 ± 1.95 vs. 3.62 ± 1.82, $p = 0.002$). While osteocalcin was inversely correlated with HOMA-IR ($r = -0.324$, $p = 0.0001$
Conclusion
This study demonstrates that osteocalcin levels are significantly reduced in T2DM patients and are negatively correlated with HbA1c and FBS and insulin resistance.

P98

Efficacy and safety of once-weekly insulin icodec versus once-daily basal insulin in type 2 diabetes according to baseline SGLT2i use: ONWARDS 1-5

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Keywords

- Insulin action • SGLT inhibitors • Insulin therapy

Background and Aims
To assess the treatment effects of once-weekly insulin icodec (icodec) vs once-daily basal insulin comparators ± concomitant sodium-glucose cotransporter-2 inhibitor (SGLT2i) use in ONWARDS 1–5.
Materials and methods
A post hoc analysis by trial of insulin-naïve (ONWARDS 1, 3, 5) and insulin-experienced (ONWARDS 2, 4) adults with type 2 diabetes (T2D).
Results
Participants on icodec vs once-daily comparators had greater or comparable HbA_{1C} reductions from baseline to end of treatment irrespective of SGLT2i use; there was no statistically significant treatment by subgroup interaction in HbA_{1C} changes (Table). Among subgroups in ONWARDS 1–3 and 5, overall rates of clinically significant or severe hypoglycaemia were low (<1 event/patient-year of exposure) across arms, with a numerically higher rate with icodec; in all trials, the overall hypoglycaemia rates were lower or similar among SGLT2i users vs non-users across arms (Table). There was no statistically significant treatment by subgroup interaction in terms of attainment of HbA_{1C} <7% without clinically significant or severe hypoglycaemia in any trial ($p \geq 0.31$ for all trials).
Graph/Table :

Table. Outcomes for icodec versus once-daily comparators according to baseline SGLT2i use in ONWARDS 1–5.

Trial	Participants, n (with/ without SGLT2i)	Outcome	With SGLT2i use at baseline			Without SGLT2i use at baseline			p value for test of subgroup interaction
			Icodec	Once-daily comparator	ETD* (95% CI)	Icodec	Once-daily comparator	ETD* (95% CI)	
ONWARDS 1† (insulin-naïve)	Icodec: 187 / 305	LS mean change (SEM) in HbA_{1c} from baseline to EOT, %-points	-1.48 (0.08)	-1.40 (0.06)	-0.09 (-0.29, 0.09)	-1.59 (0.05)	-1.46 (0.03)	-0.13 (-0.27, -0.01)	p = 0.72
	Once-daily comparator: 172 / 325	Clinically significant or severe hypoglycaemia, event/PYE	0.29	0.15	-	0.30	0.16	-	-
ONWARDS 3‡ (insulin-naïve)	Icodec: 119 / 175	LS mean change (SEM) in HbA_{1c} from baseline to EOT, %-points	-1.53 (0.07)	-1.36 (0.06)	-0.17 (-0.38, 0.04)	-1.80 (0.06)	-1.36 (0.08)	-0.24 (-0.40, -0.07)	p = 0.62
	Once-daily comparator: 95 / 199	Clinically significant or severe hypoglycaemia, event/PYE	0.13	0.11	-	0.44	0.16	-	-
ONWARDS 5§ (insulin-naïve)	Icodec: 234 / 308	LS mean change (SEM) in HbA_{1c} from baseline to EOT, %-points	-1.65 (0.10)	-1.22 (0.15)	-0.43 (-0.78, -0.08)	-1.71 (0.11)	-1.38 (0.13)	-0.33 (-0.65, -0.01)	p = 0.58
	Once-daily comparator: 249 / 303	Clinically significant or severe hypoglycaemia, event/PYE	0.13	0.07	-	0.23	0.21	-	-
ONWARDS 2¶ (basal-bolus†, insulin-experienced)	Icodec: 89 / 174	LS mean change (SEM) in HbA_{1c} from baseline to EOT, %-points	-0.85 (0.08)	-0.75 (0.10)	-0.20 (-0.45, 0.04)	-0.82 (0.06)	-0.69 (0.08)	-0.23 (-0.41, -0.06)	p = 0.83
	Once-daily comparator: 84 / 179	Clinically significant or severe hypoglycaemia, event/PYE	0.36	0.27	-	0.91	0.28	-	-
ONWARDS 4# (basal-bolus, insulin-experienced)	Icodec: 82 / 209	LS mean change (SEM) in HbA_{1c} from baseline to EOT, %-points	-1.20 (0.09)	-1.24 (0.09)	0.04 (-0.21, 0.29)	-1.14 (0.05)	-1.15 (0.08)	0.01 (-0.16, 0.17)	p = 0.88
	Once-daily comparator: 66 / 200	Clinically significant or severe hypoglycaemia, event/PYE	3.21	4.34	-	0.59	0.16	-	-

*Icodec - once-daily comparator. †76-week trial. icodec vs glargine U100. ‡26-week trial. icodec + once-daily placebo vs degludec + once-weekly placebo. §52-week trial with real-world elements, icodec with dosing guide app vs once-daily basal analogues. ¶26-week trial. icodec vs degludec. #26-week trial. icodec + aspart vs glargine U100 + aspart. EOT, end of treatment; ETD, estimated treatment difference; LS, least-squares; PYE, patient-year of exposure; SGLT2i, sodium-glucose cotransporter-2 inhibitor

Conclusion
The efficacy and safety of icodec vs once-daily comparators was generally consistent among adults with T2D, irrespective of baseline SGLT2i use.

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Efficacy and Safety of Once Weekly Insulin Icodec vs Once Daily Basal Insulin in T2D by Ethnicity and Race: ONWARDS 1-5

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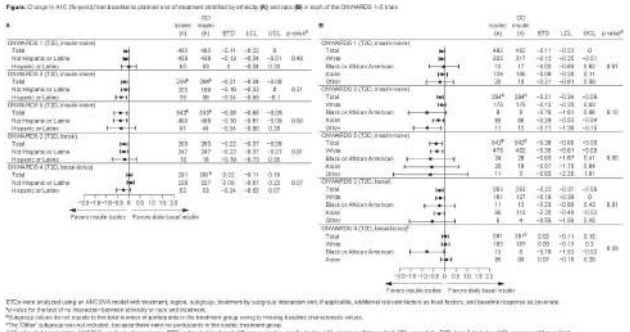
Keywords

- Insulin action • Insulin therapy

Background and Aims
To assess, post hoc, the impact of ethnicity and race on the efficacy and hypoglycemia rates with once- weekly (OW) insulin icodec (icodec) vs once-daily (OD) basal insulin in adults with T2D.
Materials and methods
Efficacy and safety outcomes were assessed within each trial across ethnic (Hispanic/Latino vs non- Hispanic/Latino) and race (Asian, Black/African American, White, Other) subgroups in insulin-naïve (ONWARDS [ON] 1, 3, 5) and insulin-treated (ON 2, 4) adults with T2D.

Results
Across all trials, no statistically significant interaction between treatment and subgroup for improvements in A1C were seen with icodec vs OD insulin (baseline to planned end of treatment) (**Figure**). Hypoglycemia rates were low in both treatment groups across ethnicities and races, precluding statistical analysis. A greater proportion of individuals in most ethnic and racial subgroups across trials achieved A1C < 7% without clinically significant or severe hypoglycemia with icodec vs OD insulin (no statistically significant treatment by subgroup interaction).
Graph/Table:



Conclusion
A1C and hypoglycemia endpoints were consistent for OW icodec vs OD insulin, irrespective of ethnicity or race.

P100

Prevalence and pattern of cognitive dysfunction in young adults and middle- aged patients with type-2 diabetes- An Eastern Indian perspective

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Keywords
- Psychological aspects • Cognitive dysfunction and Alzheimer Disease

Background and Aims
With world's aging population, the twin epidemics of type-2 diabetes (T2D) and dementia will likely to take a great toll on healthcare burden. T2D carries 2-3 times greater risk of developing CI than control. Early identification of CI is important as it impairs diabetes self-management, makes patients more prone to complications. However, study about assessment of CI in T2D using a comprehensive cognitive battery is sparse in India. This study was undertaken to estimate the prevalence and pattern of CI among young and middle-aged patients with T2D.
Materials and methods
A cross-sectional observational study, conducted in diabetic clinic of a tertiary care teaching hospital in Kolkata (2022 to 2024). Bengali speaking T2D patients with formal education at least up to class IV, aged between 20 to 60 years were included. Patients having other potential confounders to cause CI were excluded. 125 T2DM patients and 57 control were recruited. Cognitive evaluation was done by clinical dementia rating scale, Mini-mental status examination (MMSE), Montreal cognitive assessment (MoCA), and Addenbrooke's cognitive examination (ACE)-III. Statistical analyses were done by JASP v.0.19 with appropriate tests (Chi-squared test, Mann–Whitney U test, Spearman correlation statistics and logistic regression). P value <0.05 was considered significant.
Results
Patients had median age of 47 (+15) years with disease duration of 8 (+9) years and median HbA1c of 7.30 (+2.30). T2D patients had more subjective sensation of forgetfulness compared to control (p=0.001). MMSE was insufficient screening tool to distinguish between these two groups. On MoCA and ACE-III, there was significant difference of total scores between case and control groups (MoCA, p=0.012 and ACE-III, p<0.001). Based on ACE-III, 59.20% T2D patients had CI (p<0.001) and odds of having CI in T2D was 3.72 times higher than control (95% CI: 1.89-7.33, p<0.001). There was significant impairment of memory (p<0.001), fluency (p=0.020) and visuospatial ability (p=0.032). Females (p=0.010), less education (p<0.001), lower socioeconomic status (p<0.001), BMI <23 kg/m^2 (p=0.049), peripheral neuropathy (p=0.001), hypothyroidism (p=0.007), anxiety (p<0.001) and depression (p<0.001) were significantly associated with CI in diabetes.
Conclusion
This is the first study from Eastern India using a comprehensive cognitive scale validated in local vernacular. CI is present in a sizable portion of middle-aged educated T2D. MMSE and MoCA are insensitive to pick up CI in this group, and ACE-III for this purpose is advocated. Cognitive assessment should be an integral part of diabetes care from the beginning, and modifiable factors should be taken care of accordingly.

P101

Achievement of Near Normal Hba1c with Early intiation of Oral Semaglutide: An Exploratory Subgroup Analysis of PIONEER 1

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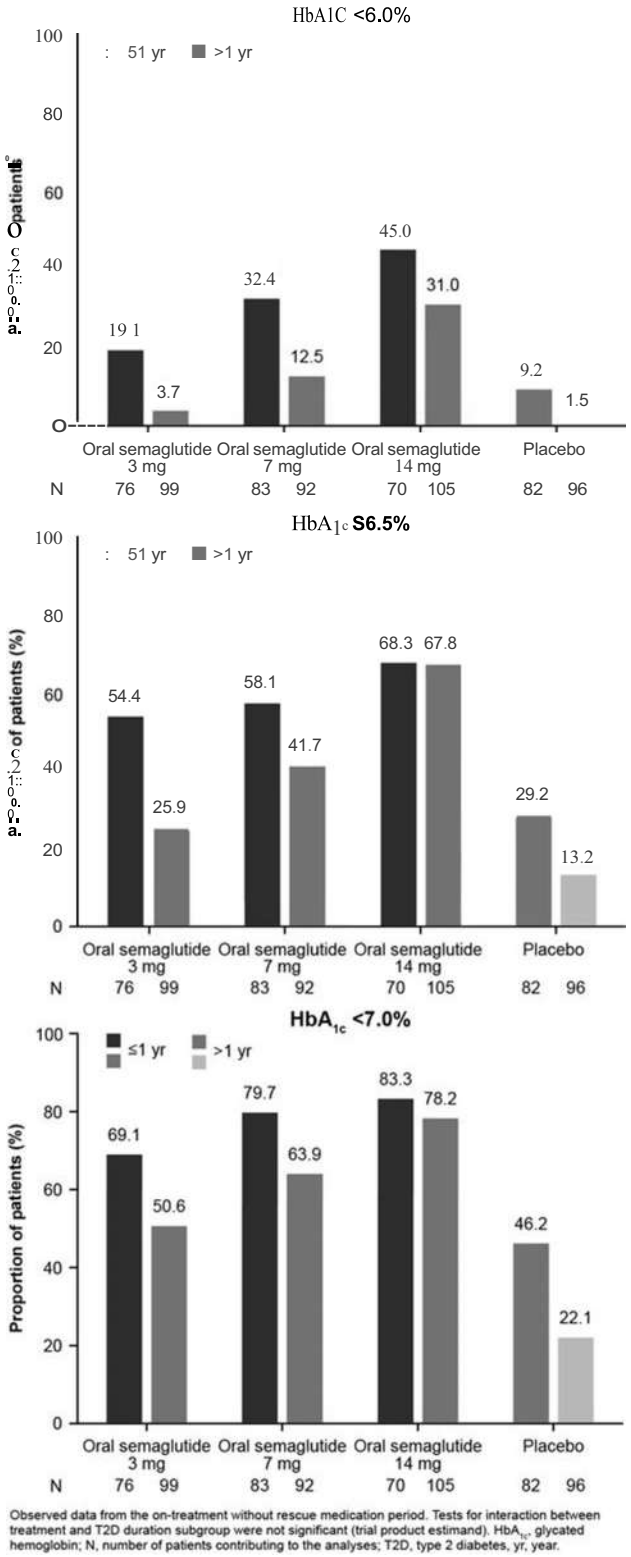
Keywords
- Weight regulation and obesity • Incretin based therapies 43 Novel agents • Cardiac complications

Background and Aims
•Early achievement of near-normal HbA is associated with a reduced risk of future complications in type 2diabetes (T2D) and may help motivate patients (pts) to maintain treatment.
•The objective of this post-hoc analysis was to evaluate the impact of early initiation of oral semaglutide on glycaemic efficacy, body weight, and achievement of targets in the PIONEER 1 trial.
Materials and methods
Randomized, double-blind, placebo-controlled, parallel-group phase 3a trial, Conducted at 93 sites in nine countries between, September 2016 and December 2017. Adults* diagnosed with T2D and managed with diet/exercise for ≥30 days before screening. HbA1c 7.0–9.5% inclusive
We conducted a post-hoc analysis of the PIONEER 1 study to look at the impact of early initiation of oral semaglutide (sema) on glycemic efficacy, body weight (BW), and achievement of targets. Pts on diet and exercise were randomized to oral sema 3, 7, or14 mg once daily, or placebo (pbo). HbA and BW reduction, and achievement of HbA1c targets (<7%, ≤6.5%, <6%) were assessed at 26 weeks in pts with T2D duration ≤1 year and >1 year for comparison.
Results
Greater HbA1c and BW reductions were seen for oral sema 14 mg vs. pbo for both duration ≤1 year (-1.6% vs. -0.4%; -4.3 kgs. -1.6 kg) and >1 year (-1.4% vs. 0.2%; -4.0 kg vs. -1.4 kg); the subgroup interaction (≤1 vs. >1 year) was significant for HbA1c (p=0.04) but not BW. A high proportion of pts initiating oral sema within ≤1 year of T2Ddiagnosis reached glycemic targets, including HbA <6.0% in 45% of pts on oral sema 14 mg (vs. 31% in the>1-year group; subgroup interactions were not significant

Graph/Table :
Figure. Proportions of patients with diabetes duration 1 year and >1 year in PIONEER 1 who achieved HbA_1c <6.0%, 6.5 and <7.0 after 26 weeks of treatment with oral semaglutide 3, 7 and 14 mg, and placebo.



Observed data from the on-treatment without rescue medication period. Tests for interaction between treatment and T2D duration subgroup were not significant (trial product estimand). HbA_{1c}, glycated hemoglobin; N, number of patients contributing to the analyses; T2D, type 2 diabetes, yr, year.

Conclusion
In conclusion, initiation of oral sema in pts within ≤1 year of T2D diagnosis resulted in robust HbA1c and BW reductions, and attainment of glycemic targets, including near-normal HbA. These observations support early initiation of therapy and further study.

P102

Assessing the disease burden, clinical care gap, and intent to prescribe a diabetes polypill to Indian patients with type 2 diabetes

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Keywords
Prevention of type 2 diabetes • Health care delivery • Cardiac complications

Background and Aims
Type 2 diabetes (T2D) is often accompanied by co-morbidities of hypertension and/or dyslipidemia. Optimum control of all the risk factors is known to reduce cardiovascular (CV) events in patients with T2D. Polypharmacy in people with T2D is known to impact adherence and compliance to therapy. Adherence and treatment outcomes can be improved with fixed dose polypill strategies. Market research was conducted in India among healthcare professionals (HCPs) (general practitioners [GPs], diabetologists, and endocrinologists) to assess the T2D disease burden, clinical care gaps, and intent to prescribe a polypill to treatment naïve T2D patients.
Materials and methods
This study included two phases: phase 1 quantitative online and/or in-person surveys to assess patient load, proportion of treatment naïve patients, initiated and current treatment, patients achieving glycemic goals, and intent to prescribe a polypill; and phase 2 quantitative telephonic aided online surveys to evaluate factors impacting treatment choice, validating the concept of polypill, and intention to prescribe.
Results
Phase 1 included 5000 respondents (3000 GPs, 1500 diabetologists, and 500 endocrinologists) and phase 2 included 500 respondents (300 GPs, 150 diabetologists, and 50 endocrinologists). Total number of patients were 321/HCP/month, among which 24% were newly diagnosed with T2D while ~26% resisted treatment. Most HCPs (92%) stated concern on treatment adherence for all the three risk factors (hyperglycemia: 84%, hypertension: 87%, dyslipidemia: 86%). Coronary artery disease was reported in 24% patients. Patients achieving treatment goals were 67%, 58%, and 52% for hyperglycemia, hypertension, and dyslipidemia, respectively. Most preferred pharmacological approach was combination therapy (65%) and 84% HCPs preferred fixed dose combination therapy. Around 79% HCPs believed that the benefits of a polypill were superior to other products; 85%, 83%, and 78% stated that it would improve adherence, fulfil unmet needs, and improve treatment outcomes, respectively. Around 86% HCPs expressed a high intention to prescribe a polypill, and anticipated prescribing it to 46% of treatment naïve patients.
Conclusion
Majority of HCPs agreed that adherence is a serious challenge across patients with T2D; HCPs believed that an affordable and efficacious diabetes polypill that simultaneously lowers the main CV risk factors will provide an opportunity to address this challenge, and a great majority expressed intent to prescribe a diabetes polypill to treatment naïve T2D patients.

P103

Group Counselling model in Management and alleviation of Diabetes and some NCD Patients.

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Keywords
Prevention of type 2 diabetes • Exercise physiology • Nutrition and diet • Health care delivery

Background and Aims
Diabetes Mellitus is a serious metabolic disease,affecting people of all geographic, ethnic or racial origin and its prevalence is increasing globally. Group counselling therapy may bring significant contribution in Preventive and theraputic role in Diabetes and some other NCDs.
Aim & Objective- To assess the effectiveness of group counselling for Diabetic and some other NCDs.
Materials and methods
To study the impact of group counselling ,a pre and post test experimental design applied. The subject were randomised into two groups, those who were willing to attend group counselling with periodic follow up (Experimental group),and those who were not willing to attend (Control group) . A total of 64 T2DM patients from Medicine OPD of GMC & H Purnea ,in the age group of 30-70 yrs were regisrered in the study and randomised into above mentioned two groups. Experimental group received a 10 wks educational program ,while the control group did not. A structured and pretest questionnaire was administered to elicit information from the subjects.Outcome of counselling was assessed by measuring selected anthropometric parameters and symptoms of Diabetes and statistically analyzed.Pre and Post test Blood Sugar reading were taken from Lab report.
Results
The 10 week counselling program brought significant reduction in various parameters .Group counselling proved to be effective as there was significant improvement in symptoms of hyperglycemia,polyurea, polydipsia pattern,high B.P, Mental stress and tiredness among experimental group.(Result Data attached in Table form)
Graph/Table :

Knowledge (0 TO 100 MARKS)	Study group	Pre Counseling (Mean ± SD)	Post Counseling (Mean ± SD)	(Comparison of mean) T-TEST
Knowledge about Diabetes Symptoms	Experimental group	37.18± 11.84	51.37±15.27	Difference 14.19 Significance level P= 0.0001
	Control group	40.0±12.44	40.95±12.0	Difference 0.93 Significance level P= 0.7619
Knowledge about Diabetes Complications	Experimental group	39.43± 12.34	53.0±13.24	Difference 13.57 Significance level P= 0.0001
	Control group	42.13±13.13	44.2±14.39	Difference 2.07 Significance level P= 0.6600
Knowledge about Diabetes diet plan	Experimental group	60.23± 21.33	81.39±18.26	Difference 21.16 Significance level P= 0.0001
	Control group	65.0±18.44	67.93±17.23	Difference 2.93 Significance level P= 0.6138
Knowledge about Exercise	Experimental group	84.13±23.17	95.2±24.32	Difference 11.07 Significance level P= 0.0670
	Control group	87.53± 22.33	88.39±34.20	Difference 0.86 Significance level P= 0.9056

Conclusion
In culmination it may be seen that patient Group Counselling certainly upgrades the patients ability to cope with their disease and ultimately manage the disease . Group counselling can improve management stength in Diabetic and other CNDs. This may be implemented by Community Medicine Department/ Medicine Department in Govt Medical college .Similar Setup for Group counselling shoud be adopted in private set up.

P104

Effectiveness of sitagliptin in Indian patients with T2DM from a real-world retrospective EMR based study

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Keywords
• Oral therapies: secretagogues

Background and Aims
We conducted a real-world, retrospective, observational, electronic medical records (EMR) based study to understand the effectiveness of sitagliptin and sitagliptin + metformin fixed-dose combination (FDC) in Indian patients with type 2 diabetes mellitus (T2DM). The data here presents a subgroup analysis of patients who received only sitagliptin.
Materials and methods
EMR data of adults (age ≥18 years) male and female patients having T2DM, who were prescribed with sitagliptin or sitagliptin + metformin FDC, with or without other oral anti-diabetic medicines and had data available for at-least 1 follow-up visit at 3 months between 2017 and 2023 was retrieved. Patients who were on insulin or any other injectable antidiabetic medication like GLP-1 agonists were excluded. This study assessed real world effectiveness of sitagliptin on glycosylated haemoglobin (HbA1c), fasting (FBG) and postprandial blood glucose (PPBG) in patients who had HbA1c ≥ 7 % at baseline.
Results
Of the EMR data, a total of 2,794 patients who received sitagliptin; 1,008 had HbA1c ≥ 7% at baseline and 3 months follow-up data. Mean change from baseline (CFB) in HbA1c at 3 months was statistically significant (8.62 ± 1.46 to 7.70 ± 1.16, CFB: -0.92 ± 1.58, $p<0.001$). Mean change in FBG (n=914) from baseline to 3 months was statistically significant (156.77 ± 53.63 to 135.40 ± 38.98; CFB: -21.37 ± 58.76, $p<0.001$). Similarly, CFB to 3 months in PPBG (n= 790) was significant (232.24 ± 81.71 to 193.65 ± 61.77; CFB: -38.59 ± 88.16, $p<0.001$). Proportion of patients achieving HbA1c < 7% at 3 months was 25.79 % (n=260/1008).
Conclusion
This EMR-based study in India demonstrates effectiveness of Sitagliptin, in significantly improving glycemic parameters (HbA1c, FBG and PPBG) in patients with T2DM having HbA1c ≥ 7% at baseline in a real-world setting.

P105

TITLE: PREVALENCE OF PHIMOSIS AND BALANITIS IN DIABETIC MALES: A PROSPECTIVE STUDY

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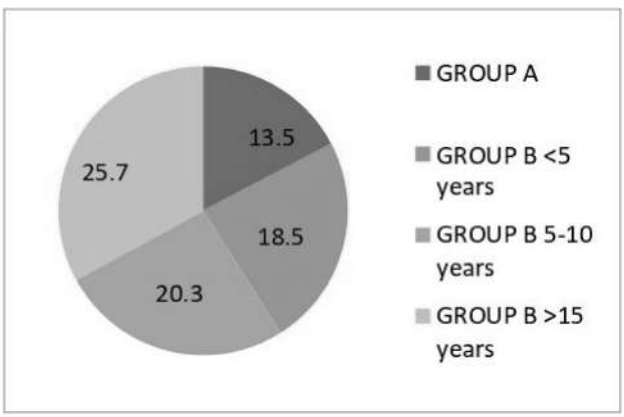
Keywords
Diabetes epigenetics

Background and Aims
Background: Phimosis with or without balanitis is a notable complication in diabetic males and is frequently associated with poor glycemic control [1].Diabetes affects skin elasticity and immune response, increasing the risk of phimosis [2].Moresoever, there is an increasing use of SGLT2i which are known to further increase the risk.This study evaluates the prevalence of balanitis and phimosis in newly diagnosed and long-standing diabetes mellitus (DM) patients.
Aims and Objectives:
1. To compare the prevalence of phimosis and balanitis among newly diagnosed and long-standing DM patients.
Population Studied: A total of 3,123 male DM patients attending the OPD at RIMS Hospital were screened for balanitis and phimosis between Dec 2022 and Jun 2024.
Group A: Newly Diagnosed DM Patients (n=516).
Group B: Long-Term DM Patients, subdivided by duration: <5 years (n=1026),5-10 years (n=1,038),15 years (n=543).
Materials and methods
Methodology: Patients were routinely screened for phimosis and balanitis.Data collected included blood glucose levels,HbA1c,urine glucose levels,duration of diabetes and medication use (including SGLT2i).Chi-square tests were used to analyze the significance of differences between groups.
Results
Results:

1. In the Group A,69 patients had balanitis and/or phimosis.
2. In the Group B: <5 years-189 patients,5-10 years -210 patients,>15 years- 139 patients had balanitis and phimosis.

The data indicated that the prevalence of balanitis and phimosis increased with the duration of diabetes.Notably,among long-standing DM patients on SGLT2i,there was an observed increase in the incidence of balanitis.
Graph/Table :



Conclusion
Conclusion:

The study found a higher prevalence of phimosis and balanitis with longer durations of DM,with the highest rates in patients with DM lasting>10 years.This regular screening and patient education are essential for managing and preventing these complications effectively.

P106

Experimental Study on the Acute Effects of High-Fat Meals on Inflammatory Response and Blood Glucose Levels in Obese Adults

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Keywords

- Other hormones • Lipid metabolism • Nutrition and diet

Background and Aims
Background: High-fat meals are known to impact metabolic health, particularly in obese individuals. Understanding the acute effects of such meals on inflammatory response and blood glucose levels is crucial for developing dietary recommendations and interventions.
Aim: To examine the acute impacts of high-fat meals on inflammatory response and blood glucose levels in obese adults.
Materials and methods
Methods: This experimental study involved 50 obese adults aged 25-50 years and Body Mass Index (BMI) ≥30 kg/m². Participants were provided with a standardized high-fat meal containing 60% of total calories from fat. Blood sample was collected at initial, and at 1-, 2-, and 4-hours post-meal to measure blood glucose levels and inflammatory markers, including interleukin-6 (IL-6), C-reactive protein (CRP), and tumor necrosis factor-alpha (TNF-α). Statistical analyses were accomplished to assess changes in blood glucose and inflammatory markers over time.
Results
Results: The study found significant increases in blood glucose levels following the high-fat meal, with peak levels observed at 1-hour post-meal (mean increase of 45 mg/dL, $p<0.01$) and a gradual return to baseline by 4 hours. Inflammatory markers also showed notable elevations; CRP levels raised by 25% ($p<0.05$), IL-6 by 30% ($p<0.01$), and TNF-α by 20% ($p<0.05$) at 2 hours post-meal. These inflammatory responses were correlated with the peak blood glucose levels, indicating a link between acute glucose spikes and inflammation.
Conclusion
Conclusion: High-fat meals acutely elevate blood glucose levels and trigger inflammatory responses in obese adults. These findings highlight the metabolic stress imposed by high-fat diets and underscore the need for dietary strategies to mitigate these effects.

P107

Screening tool for frozen shoulder in people with type 2 diabetes mellitus: An expert opinion

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Keywords

• Exercise physiology • Other complications

Background and Aims
Frozen shoulder (FS) affects 12-29% of type 2 diabetes mellitus (T2DM) patients and is the commonest Musculo-skeletal comorbidity of diabetes. T2DM has been associated with shoulder fibrosis, and this may lead to reduced mobility, which may worsen ability to perform physical activity, thus potentially impacting diabetes management. Despite this impairment, FS is among the lesser discussed comorbidities of T2DM. Therefore, early diagnosis and timely intervention for FS will be beneficial in T2DM. The aim is to develop a concise and easy to implement questionnaire, tailored to screen FS in people with T2DM in the office practice setting,
Materials and methods
Followed by a detailed literature review, expert meetings with leading diabetes specialists were conducted to develop a screening questionnaire.
Results
This exercise resulted in a six-question concise, patient-administered self-assessment tool focussing on shoulder pain, tenderness, impact on daily activities, sleep, and exercise. Responses were graded on a binary (yes/no) or 3-point scale, with a score of ≥6 indicating a higher FS risk, prompting the need for medical consultation.
Conclusion
FS needs to be detected and managed early in T2DM patients, thus benefiting both FS and T2DM management. This screening questionnaire is designed to facilitate early FS detection in routine diabetes care, aiming to improve health outcomes and quality of life in T2DM patients.

P108

SMBG-having glucometer, doing blood glucose is not enough, record keeping is very important-real world study

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Keywords
Epidemiology • Health care delivery • Pathogenic mechanisms / complications

Background and Aims Background
Type 2 diabetes mellitus [T2DM] is increasing globally and India is the "diabetes capital of the world". World health organization [WHO] estimates that 22 lacs died from diabetic complications and 15 lacs deaths from DM [1]. ICMR-INDIAB study showed 69% patients had not achieved glycated haemoglobin [HBA1C] of less than7% [2].
Why people are not achieving target A1C?. Poor adherence to treatment or nonadherence to the treatment & not monitoring the blood glucose are the answers and we know multi point self-monitoring of blood glucose [SMBG] is very important.
Aim
How many patients are having glucometers and doing SMBG and keeping a record?
Materials and methods Material and methods
Indore Madhya-Pradesh central part of the country Bharat, we carried out a simple observational study of first 100 patients who are coming to super speciality clinic in a sequence at random without any bias during the study. They were registered if they are having diabetes, irrespective of new or old DM, type or duration of DM or associated comorbidities. They were asked three questions-

1. Do they have glucometer?
2. Are they doing blood glucose?
3. Are they keeping a record [asked to show the chart] of their blood glucose.

Results Results
Interesting findings were observed Out of100 patients-64 % patients were having glucometers [41 male and 23 female] 42% patients were doing blood glucose, frequency of blood glucose was occasional fasting and post lunch 15% patients were keeping a record [13 male and 2 females]
Surprisingly male predominance in keeping glucometer [41/23] and doing blood glucose as well as keeping record [13/2]. Age range of the patients was 29 to 82 years two of them were T1DM and 4 were new onset DM and rest were T2DM.
Conclusion Conclusion
SMBG is a very important tool for glycemic control and to prevent various complications and comobidities associated with uncontrolled glycemia.

- In our study 64% Having glucometer, 42% doing blood glucose and only 15% were keeping a record. Reaction to the blood glucose values or seeking consultation is not practiced. Only 2% are doing multi point SMBG.
- We found males are more conscious about having, doing and recording of blood glucose compared to females or you may conclude saying females are more ignorant about their disease.

  Large epidemiological, observational studies and surveys are required to have more data about having, doing and record keeping of the blood glucose and to know the factors affecting record keeping.

Importance of doing SMBG and implementation will require lot of educational efforts. Social media Platforms like Meta, Facebook (core platform), WhatsApp, Facebook Messenger and Instagram (6) have huge acceptability and can be used as weapon to fight with DM and prevention of DM and its complications.

P109

Left Ventricular Function in Asymptomatic Type 2 Diabetes Mellitus Patients by 2D Echocardiography-Correlation with Body Mass Index

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Keywords

- Cardiac complications

Background and Aims

Diabetes mellitus (DM) represents by itself a major risk factor for cardiovascular events and the coexistence of obesity with consequent left ventricular volumetric overload could be responsible for further damages on left ventricular function.

Diabetes mellitus (DM) represents by itself a major risk factor for cardiovascular events and the coexistence of obesity with consequent left ventricular volumetric overload could be responsible for further damages on left ventricular function.

Materials and methods

We evaluated 100 stable asymptomatic type 2 diabetes patients with 100 matched controls 2ith < 24 BMI.

By 2D echocardiography Evaluated: left ventricular dimensions (LVIDd; PWTd; IVSd), Left Ventricular Volumes (EDV, ESV), EF, Left Ventricular Mass, peak mitral annular velocity at septal and lateral levels (Sm and Sl). Global longitudinal strain (GLS).

Results

Evaluated 100 asymptomatic type 2 diabetes patients (68 males, 32 females; mean age: 47 +/− 10 years; BMI: 25.9 +/− 2.8) on medical treatment and 100 healthy controls (C) (35 females; mean age: 49 +/− 10 years; BMI: 23.5 +/− 1.5). Diabetes patients divided into two groups according to BMI: BMI <27 kg/ m^2 (A: 44 patients; 30 Male, 14 females; mean age: 45 +/− 6 years; BMI: 25.3 +/− 1.6; Diabetes duration: 8.9 +/− 3.8 years); BMI >27 kg/m^2 (B: 56 patients; 41 males, 16 females; mean age: 49.2 +/− 8.1 years; BMI: 27.5 +/− 1.7; Diabetes duration: 8.4 +/− 6.2 years).

Groups A, B comparable for diabetes duration, HbA1C, hypertension, lipid profile. EF was similar in all three groups, (A: 61 +/− 8%; B: 64 +/− 5%; C: 62 +/−7%; P= NS). LVMass was higher in A and B in comparison with C (A: 42.2 +/− 6.1 g/$m^{2.7}$; B: 43.1 +/− 6.6 g/$m^{2.7}$; C: 38.5 +/− 5.9 g/$m^{2.7}$; $P < 0.05$). The stroke volume index (SVi) was lower in B vs A (B: 36.3 +/− 6.7 ml/m^2; A: 40.0 +/5.1 ml/m^2; $P = 0.033$). GLS was lower in group B respect A and C. LA size was normal in all three groups. DD was seen in 14, 20 and 5 patients in group A, B and C respectively. LVH was seen in 9, 14 and 3 patients in group A, B and C respectively.

Conclusion

In asymptomatic Type 2 DM patients, obesity affect left ventricular function and remodeling. Echocardiographic parameters- EF and the TDI are not so sensitive to identify the early LV dysfunction - GLS by Speckle Tracking echocardiography. Early dectection is important to initiate appropriate management.

P110

Observational Study on the Association Between Visceral Fat and Inflammatory Biomarkers in Urban Indian Populations with Type 2 Diabetes

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Keywords

Prevention of type 2 diabetes • Inflammation in type 2 diabetes

Background and Aims

Background: Visceral fat is a major variable in the progression of metabolic disorders and is particularly associated with Type 2 diabetes mellitus (T2DM). Understanding the relationship between visceral fat and inflammatory biomarkers can provide insights into the pathophysiology of T2DM, especially in urban Indian populations where the prevalence of both conditions is increasing.

Aim: To examine the relationship among visceral fat and inflammatory biomarkers in urban Indian populations with Type 2 diabetes.

Materials and methods

Methods: The study comprised 200 urban Indian adults diagnosed with T2DM. Participants underwent abdominal imaging using computed tomography (CT) to quantify visceral fat area (VFA). To evaluate inflammatory biomarkers, such as tumour necrosis factor-alpha (TNF-α), interleukin-6 (IL-6), and C- reactive protein (CRP), blood samples were obtained. To investigate the relationship among VFA and inflammatory indicators, statistical studies were carried out, including multivariate regression and Pearson correlation.

Results

Results: The study found a substantial positive relation among visceral fat and inflammatory biomarkers. Elevated levels of CRP ($r=0.45$, $p<0.001$), IL-6 ($r=0.40$, $p<0.001$), and TNF-α ($r=0.38$, $p<0.001$) were linked with higher VFA. Once age, sex, BMI, and length of diabetes were taken into account, multivariate regression analysis demonstrated that VFA was an independent predictor of higher levels of these inflammatory markers (CRP: $\beta=0.35$, $p<0.001$; IL-6: $\beta=0.32$, $p<0.001$; TNF-α: $\beta=0.30$, $p<0.001$). These results imply that in urban Indian populations with type 2 diabetes, visceral fat plays a major role in contributing to systemic inflammation.

Conclusion

Conclusion: Visceral fat is strongly associated with elevated inflammatory biomarkers in urban Indian adults with Type 2 diabetes. This relationship underscores the importance of targeting visceral adiposity in managing inflammation and associated complications in T2DM. Further research is needed to explore potential interventions to reduce visceral fat and its inflammatory effects, improving overall metabolic health in this population.

P111

Weight reduction efficacy with tirzepatide by obesity-related complications: a post hoc analysis from the SURMOUNT 1-4

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Keywords

- Weight regulation and obesity

Background and Aims

Tirzepatide (TZP) is a once weekly GIP and GLP-1 receptor agonist with efficacy for management of type 2 diabetes (T2D) and obesity.

In the SURMOUNT clinical trial program, TZP treatment resulted in mean body weight (BW) reductions of 13-26% in people with obesity (body mass index [BMI] ≥30 kg/m^2) or overweight (BMI ≥27 kg/m^2), with or without T2D. Whether multiple obesity-related complications (ORCs) may impair obesity treatment response is unknown. This post hoc analysis assessed the association between baseline obesity-related multimorbidity and the weight-reduction efficacy of TZP.
Materials and methods
Participants from SURMOUNT 1-4 randomized to TZP (SURMOUNT-1 and -2: 10 or 15 mg; SURMOUNT-3 and -4: maximum tolerated dose [MTD] of 10 or 15 mg) or placebo were included in this analysis. History of ORCs was self-reported by participants at baseline; 10 ORCs were evaluated, excluding prediabetes. Participants with diabetes were excluded from SURMOUNT-1, -3 and -4, so T2D was not included as an ORC for these trials. For SURMOUNT-2, T2D was included as an additional ORC. Participants were grouped by number of baseline ORCs (0, 1 and ≥2). Percent change in BW from baseline was assessed using mixed model repeated measure using the efficacy estimand.
Results
Overall, TZP treatment resulted in significant BW reductions, irrespective of number of baseline ORC. In SURMOUNT-1, for participants with 0, 1, and ≥2 ORCs, TZP treatment resulted in mean percent BW reductions of 23.1%, 21.3%, and 19.6% with 10 mg and 22.9%, 21.8% and 22.5% with 15 mg, compared to 2.7%, 2.9% and 1.8% with placebo, respectively. In SURMOUNT-2, all participants had T2D, therefore all had at least 1 ORC at baseline. For participants with 1 and ≥2 ORCs, TZP treatment resulted in mean percent BW reductions of 13.0% and 13.4% with 10 mg, and 17.6% and 15.4% with 15 mg, compared to 3.5% and 3.3% with placebo, respectively. In SURMOUNT-3, following a 12-week intensive lifestyle intervention lead-in period, participants with 0, 1 and ≥2 ORCs achieved additional mean percent BW reductions of 20.2%, 21.3% and 22.0% with TZP (MTD) as compared to mean percent BW increases of 1.3%, 4.7% and 4.0%, respectively, with placebo. In SURMOUNT-4, following a 36-week lead-in period with TZP treatment, participants with 0, 1 and ≥2 ORCs had additional mean percent BW reductions of 8.4%, 6.0% and 6.0% with continued TZP treatment (MTD) versus mean percent BW increases of 15.1%, 14.9% and 14.3%, respectively, with placebo.
Conclusion
In the SURMOUNT clinical trial program, TZP treatment in people with obesity or overweight resulted in greater reductions in body weight across the trials in the program compared to placebo, irrespective of the presence of obesity-related multimorbidity. These data are consistent with the overall results from each study.

P112

Glycemic variability among patients with Type 1 diabetes mellitus

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Keywords
- Devices

Background and Aims
Glycemic variability (GV) is thought to induce oxidative stress and interfere with normal endothelial function by overproduction of reactive oxygen species, which results in diabetic complications through several molecular mechanisms. GV becomes a bigger problem in type 1 diabetes mellitus (T1DM), where alternating hyperglycemia, normoglycemia and hypoglycemia are linked to an absolute insulin deficiency, erratic absorption of exogenous insulin, incomplete suppression of hepatic glucose production and altered hormonal counter regulation. The development of new technologies for diabetes monitoring, particularly in T1DM, has made it possible to identify GV as a target for improving overall diabetes treatment, by calculating the indices from continuous or flash glucose monitoring. We thereby intended to assess the glycemic control and glycemic variability in T1DM.
Materials and methods
A prospective observational study was carried out in the outpatient clinic and wards of department of Endocrinology, Sri Venkateswara Institute of Medical Sciences, Tirupati. Institutional ethics committee clearance was obtained (IEC No: 1204; Roc No: AS/11/IEC/SVIMS/2017) for conducting the study between September 2021 and October 2022. Those with T1DM above 8 years of age who consented were enrolled in the study. Those with stage 4 chronic kidney disease or higher, anemia (hemoglobin <4 g/dL), proliferative diabetic retinopathy, uncontrolled hypothyroidism or inability to monitor due to physical or mental or visual impairment were excluded. After baseline investigations, all participants were explained the need for self monitoring of blood glucose (SMBG). After 3 months of satisfactory SMBG, they were put on Freestyle Libre and GV indices were calculated and subject to statistical analysis using SPSS v22.0.
Results
We included 30 participants and complete follow up data of 28 was available. Median age was 18 years (interquartile range IQR-8.5 years). Twenty one of them were females. Median duration after diagnosis was 6.5 years. Median BMI was 20 kg/m2. Glycemic management indicator was 8.65 %. Standard deviation was 103.7 mg/dl. Coefficient of variance was 51.8 %. Mean amplitude of glycemic excursions was 187.1 mg/dl. Continuous overlapping net glycemic action (CONGA) was 55.7 mg/dl. Mean of daily differences was 77.3 mg/dl. Glycemic control assessed by HbA1c correlated with SD (ρ= 0.615, p value <0.001) and CONGA (ρ= 0.537, p value 0.003). Males had significantly higher CONGA and there was no significant difference in other variability indices between males and females. There was no relationship between age and GV. There was no significant difference in glycemic control and glycemic variability indices between groups using different insulin regimens.
Conclusion
GV data in T1DM is presented. Greater usage of analogue insulins and a larger sample size with matched controls could have yielded stronger data, but could not be done due to economic constraints.

P113

Herpes Zoster Vaccine Hesitancy in Type 2 Diabetes Patients: A Mixed- Methods Study on Barriers and Health Outcomes

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Keywords
- Other complications

Background and Aims
Herpes zoster (HZ) poses a higher risk of severe complications, including post-herpetic neuralgia (PHN), among individuals with Type 2 diabetes (T2D). Despite the availability of an effective herpes zoster vaccine (HZV), uptake remains low within this population due to multiple barriers. This study aimed to investigate the extent of vaccine hesitancy among T2D patients and the contributing factors, while also documenting the clinical outcomes of non-vaccinated patients.

Materials and methods
A total of 987 T2D patients were counseled on the importance of the HZV. A mixed-methods approach was employed, using quantitative data from a structured survey and qualitative insights from patient interviews. One year after counseling, vaccine uptake rates were recorded, a mixed-methods approach was employed, using quantitative data from a structured survey and qualitative insights from patient interviews and reasons for hesitancy were analyzed. Clinical outcomes, including HZ and PHN incidence, were documented for non-vaccinated patients.
Results
Out of 987 patients, only 102 (10.3%) received the HZV. The most common reasons for hesitancy were the high cost of the vaccine (98.9%), fear of side effects (56%), beliefs that HZ is easily manageable (34%), and perceptions of HZ as a rare disease (43%). Additional factors contributing to hesitancy included concerns over vaccine efficacy and safety. Among the 885 non-vaccinated patients, 7 developed HZ, with 6 progressing to PHN. Three patients experienced herpes zoster ophthalmicus, and 1 had mild symptoms. Treatment for PHN involved Gabapentin (300-900 mg) for 3 patients, Pregabalin (75 mg) for 2 patients, and a combination of Gabapentin 400 mg and Nortriptyline 10 mg for 1 patient over varying durations.
Conclusion
Vaccine hesitancy among T2D patients is predominantly driven by cost concerns, fear of side effects, and misconceptions about HZ. The considerable burden of PHN and other severe complications in non-vaccinated patients highlights the importance of targeted interventions to overcome these barriers.

P114

Fixed-Dose Glargine and Lixisenatide: A Practical Option to Minimize Hypoglycemia and Weight Gain in Type 2 Diabetes

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Keywords

- Incretin based therapies 43 Novel agents

Background and Aims
Optimal management of type 2 diabetes (T2D) frequently involves the use of oral glucose-lowering agents (OGLAs), but many patients fail to achieve adequate glycemic control. A fixed-dose combination of insulin glargine and lixisenatide (iGlarLixi) offers a therapeutic option, combining the basal insulin effect of glargine with the glucagon-like peptide-1 (GLP-1) receptor agonist action of lixisenatide. This study evaluates the real-world effectiveness and safety profile of iGlarLixi in T2D patients inadequately controlled with OGLAs alone.
Materials and methods
This prospective, observational study included adults with T2D on at least three OGLAs (including sulfonylurea and metformin) at optimal doses, but with HbA1c >7.5%. Patients with type 1 diabetes, pancreatitis history, or significant renal impairment were excluded. Participants transitioned from OGLAs to iGlarLixi, with dosing individualized based on baseline HbA1c and clinical needs. Monthly follow-ups were conducted over 3 months, measuring changes in fasting and postprandial plasma glucose, HbA1c, body weight, and adverse events, including hypoglycemic episodes.
Results
Out of 93 patients, 8 discontinued therapy within the first month (5 due to cost, 3 due to gastrointestinal side effects). By month 3, mean fasting and postprandial plasma glucose levels reduced by 52.53 mg/dL and 91.90 mg/dL, respectively. The mean HbA1c decreased by 1.73%, and participants achieved a mean weight reduction of 3.62 kg. Among the 85 patients who completed the study, 4 experienced nausea and vomiting, 2 had mild acid peptic disorders, 2 reported non-specific gastrointestinal discomfort, and 1 had mild injection site itching. Two patients experienced documented mild hypoglycemia, with one episode each.
Conclusion
iGlarLixi effectively improves glycemic control in T2D patients who have failed OGLA therapy, with a manageable safety profile and minimal risk of severe hypoglycemia. These findings support the use of iGlarLixi as a practical option for therapeutic intensification in T2D management.

P115

Prevalence of Diabetes Mellitus and Its Correlations with BMI, Neck Circumference, and Obstructive Sleep Apnea Risk

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Keywords

- Cardiac complications

Background and Aims
Diabetes mellitus is a rising global health concern, particularly Type 2 Diabetes Mellitus (T2DM), often linked with obesity (high BMI). In India, urban settings like Kolkata face increasing diabetes prevalence due to rapid urbanization, lifestyle changes, and associated risk factors like obesity and obstructive sleep apnea (OSA). This study aims to assess the prevalence of diabetes in Kolkata adults and examine correlations with BMI, neck circumference, and OSA risk.
Materials and methods
A cross-sectional study of 1016 adults (aged 41-70) in Kolkata was conducted from November 11-14, 2023. Participants were divided into age groups to assess trends. BMI was categorized by WHO Asian-Pacific standards, and neck circumference was measured. OSA risk levels were classified using a standard tool. Statistical analysis included descriptive statistics, t-tests, and correlation analysis ($p<0.05$).
Results
The overall diabetes prevalence was 12.98% in males and 13.01% in females. The highest prevalence (18.42%) was found in the 51-60 age group. A significant correlation was found between BMI and diabetes, with higher rates in overweight (12.64%) and obese (5.36%) participants. Diabetics had a larger neck circumference (39.2 cm) than non-diabetics (37.8 cm), and a strong positive correlation ($r=0.52$, $p<0.01$) was found between neck circumference and diabetes. OSA risk was also correlated with diabetes, with higher prevalence in those at greater OSA risk.
Conclusion
This study highlights the strong correlation between diabetes and factors like BMI, neck circumference, and OSA risk in urban Kolkata adults. Public health interventions focusing on lifestyle modifications, targeted screening, and management of obesity and sleep disorders are crucial for reducing diabetes prevalence.

P116

Therapeutic inertia to insulin: Is it patient related?

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Keywords
Epidemiology • Health care delivery

Background and Aims
Around 85% population of Himachal lives in rural area much like rest of India. Majority of patients are managed by peripheral health care professionals and 70% diabetic patients never attend a tertiary care setting. **Clinical inertia**, is a lack of timely initiation or adjustment to therapy when a patient's treatment goals are not met. Prevalence of therapeutic inertia in diabetic patients is recorded as high as 50% which is even higher for insulin.
Causes are postulated as **provider related patient related** and **system related**. 40% of cases are attributed to patient related factors with **fear of lifelong insulin dependence** and **fear of needles** being top contributors. However, many studies are conducted suggesting that provider related factors are overlooked and in fact "**CLINICIAN'S** Inertia" is the chief patron.
Materials and methods
Primary care physicians were contacted and inquired about root cause; **lack of knowledge** regarding insulin initiation and intensification as well as **fear of hypoglycaemia** were the key attributing factors.
In our study, after identifying patients with uncontrolled diabetes, we introduced an insulin initiation model aimed at addressing therapeutic inertia in the peripheral setups. This model emphasized a multifaceted approach, including **patients' insight, professional support & reinforcement**. Social media platforms like Whatsapp were also used. Firstly, we conducted **individual sessions** for patients to enhance their understanding of disease, debunk myths, and address misconceptions. By improving their knowledge and confidence in insulin initiation, we aimed to mitigate apprehensions surrounding its use. **Diabetic booklets** were tailor made in native language and information about disease, dietary options and follow up charts were provided. Insulin was initiated in OPD after demonstrating proper use of device. **Separate OPD days** were kept for diabetic patients. Addressing patient concerns and fostering a collaborative decision-making process encouraged **acceptance and adherence** to insulin therapy.
Secondly, we implemented simplified insulin initiation protocols tailored for the peripheral healthcare setting. These protocols emphasized the use of basal insulin analogs, flexible dosing regimens, and accessible monitoring tools (**subcentres and ASHA workers**). Patients were explained about their reports in each meeting and positively reinforced to achieve the desired targets. Through regular follow-up and support, we observed **improvements in glycaemic control among participants**, indicative of the effectiveness of our approach.
Results
Out 0f 208 patients,142 patients **never** advised insulin therapy.37 patients advised insulin therapy, took a **second opinion** and not advised.11 patients denied due to **fear of needles.**8 patients denied due to miscellaneous reasons.
Conclusion
In conclusion, therapeutic inertia regarding insulin initiation persists as a notable barrier to optimal diabetes management in peripheral healthcare institutes. Our study underscores the importance of targeted interventions, including patient counselling and positive reinforcement, in addressing this challenge. By embracing an insulin initiation model tailored for peripheral setups and **training peripheral HCP** we can enhance access to timely and effective diabetes care, ultimately improving patient outcomes and reducing the burden of diabetes-related complications.

P117

Medication Errors in persons with diabetes simultaneously being treated by multiple specialty health care professionals at one time

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Keywords
• Health care delivery **Background and Aims** Background:

Diabetes is a lifestyle disorder that involves a complex interplay of hormones affecting multiple organs in a human body. Today is an era of specialisation with medical experts providing specialised care for different therapy areas. For diabetes being a multi-organ involvement, there is clear need of a multi- specialty expert team – ranging from a diabetologist, cardiologist, nephrologist, ophthalmologist, etc that may be consulted from time to time. With multiple doctor exposures, there comes polypharmacy, and it is quite common to see a miss or an overlap in recommended medications for the patient. These can sometimes have very intense untoward consequences.
Aim:
To assess and perform a need-gap analysis in real-life diabetes cases being treated by more than one multi-specialty healthcare professional (HCP) with an intent to revisit strategies to avoid medication errors and ensure delivery of quality patient care.
Materials and methods
Methods:
We collected 13 specific cases of diabetes from diabetologists where multiple specialists were being consulted by the same patient for specialised and focused care. In other words, these patients were following up with more than one doctor at one time and following more than one prescription for their daily medications for diabetes and other associated comorbidities.
Results
Results:
Amidst the samples selected, 62% suffered severe hypoglycaemia, with 54% patients needing hospitalization; off which 15% suffered fractures needing surgical intervention – these were in lieu of a fainting attack followed by fall due to hypoglycaemia. Other critical consequences included severe ketosis, acute kidney injury and hyperkalaemia. The commonest error encountered in this analysis was a drug repetition by partner specialist unaware of the existing drug prescription being followed by the patient. Fortunately, there was no sentinel event captured in any patient.
Conclusion
Conclusion:
Diabetes many-a-times demands multi-specialty team approach and polypharmacy for holistic management. Medication errors rank as the most frequent and avoidable source of patient harm. For optimal patient outcomes, HCPs must work as partners. Through this small exercise, the need for reinforcing good clinical practices while treating persons with diabetes comes to the forefront – focusing on checking all HCP partner prescriptions to ensure taking all ongoing drugs into consideration while prescribing new medicines.

P118

Serum C peptide and Coronary Artery Disease in middle-aged patients with Type 2 Diabetes Mellitus: A cross-sectional study.

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Keywords

- Insulin sensitivity and resistance • Cardiac complications

Background and Aims
Coronary artery disease (CAD) is a major cause of morbidity and mortality in Type 2 diabetes mellitus. The prevalence of CAD is increasing among middle-aged populations. C-peptide is a better marker of insulin synthesis and its level depend on both insulin synthesis and insulin resistance. Insulin resistance is considered as an important factor for CAD. The association between C-peptide levels and CAD is not yet clearly established and there are only very limited studies. This study was conducted to find the association between serum fasting C-peptide (FCP) levels and CAD in middle-aged patients with Type 2 diabetes mellitus and to determine a cut-off value for FCP in predicting CAD.
Materials and methods
This cross-sectional analytical study was done in Government Medical College Kannur Kerala. Type 2 diabetic patients attending the medicine OPD aged 41-60 years were included. Patients on insulin, with critical illnesses and eGFR less than 45 ml/min/1.73 m² were excluded. After a detailed clinical evaluation blood samples were collected for FPG, FCP and other biochemical tests. Chemiluminescent immunoassay was used for measuring C-peptide levels
Results
229 patients were included; among them 52% were male and 48% were female. The mean age and duration of diabetes was 51.17 ± 5.66 years and 8.30 ± 1.84 years respectively. The mean FPG, HbA1c, and BMI of the study group were 143.59 ± 32.09 mg/dL, 8.19 ± 1.26%, and 25.36 ± 2.96 kg/m², respectively. 21.83% (50/229) of patients had evidence of CAD of which 82% (41/50) were coronary angiography proven CAD. On independent sample t-test to find the association; the mean FCP levels of patients with CAD (2.36 ± 0.80 ng/ml) were significantly higher than those without CAD (1.86 ± 0.58 ng/ ml), with a p-value of < 0.001.A binary logistic regression analysis was performed to determine the effects of risk factors and FCP on the likelihood of developing CAD. Male sex, systemic hypertension, dyslipidemia, smoking, and fasting C peptide were associated with higher odds of developing CAD. The association with FCP was significant (p = 0.001), with the odds of developing CAD increasing by 2.89 times for each unit increase in FCP levels indicating a strong association (Table -1). ROC curve showed that FCP has a good predictive ability to distinguish CAD from non-CAD subjects, with an AUC of 0.71 (95% CI: 0.61–0.81). Using a cut-off value of FCP > 2.13 ng/ml, the sensitivity and specificity for predicting CAD were 70% and 69% respectively.
Graph/Table :

LOGISTIC REGRESSION ANALYSIS				
	B	Wald	Exp (B)	Sign
Male Sex	1.106	5.133	3.021	0.023
T2DM Dura	-0.130	1.002	0.879	0.317
HTN	1.578	8.206	4.847	0.004
DLP	1.878	5.737	6.541	0.017
Smoking	1.383	6.477	3.987	0.011
BMI	-0.132	2.407	0.876	0.121
GFR	-0.023	2.647	0.977	0.104
FCP	1.060	10.599	2.886	0.001

Conclusion
A significant association was observed between CAD and fasting serum C-peptide levels in middle-aged diabetic patients. The odds of developing CAD increase nearly threefold for each unit rise in fasting C- peptide levels. Measuring serum C-peptide levels may serve as a valuable marker for early identification of patients at risk of CAD.

P119

Serum Cystatin C in the diagnosis of Early Diabetic Nephropathy and its comparison with UACR(Urinary Albumin-to-Creatinine Ratio).

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Keywords

- Nephropathy

Background and Aims
BACKGROUND: In India, DN constitutes approximately 46% of chronic renal diseases in the elderly population and is associated with elevated cardiovascular morbidity and mortality. The prevalence of DN has surged among Indian diabetic patients, becoming the primary cause of end-stage renal disease.
AIM: To study serum Cystatin C as a Biomarker of Early Diabetic Nephropathy in comparison to Urinary Albumin-to-Creatinine Ratio.
Materials and methods
This Cross-sectional Observational Study was conducted in Department of General Medicine of ESIC Medical College & Hospital, Faridabad from 2021 to 2024 after obtaining clearance from our institutional ethical committee. The duration for the sample collection was 1 year. A total of 50 consenting diabetic patients who fulfilled the inclusion and exclusion criteria within the study period were included in the study and proper written informed consent was taken from patients.
Results
Among 50 patients, 68% of the patients were aged between 41 to 50 years. The mean age was 43.06 ± 6.9 years. Among total subjects 52.00% were males and 48.00% were females. The most common complaints were polyuria (56.00%), fatigue (56.00%), polydipsia (38.00%), and weight loss (34.00%). 62% of patients had diabetes duration of 0 to 5 years. Serum Cystatin C levels were elevated in 78.00% of cases. Serum Cystatin C level and GFR were significantly associated with Mogensen classification and UACR. Also, a significant difference in mean serum Cystatin C level and GFR according to stages of Mogensen classification was observed. Serum Cystatin C levels showed a significant positive correlation with UACR.
Conclusion
This study suggests that serum cystatin C is a valuable biomarker for early detection of DN and its rise before the onset of microalbuminuria highlights its utility in clinical practice.

P120

Clinical profile of non diabetic kidney disease in the renal biopsies of diabetes mellitus patients

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Keywords
Epidemiology • Nephropathy • Other complications

Background and Aims
Diabetic nephropathy is the leading cause of end-stage kidney disease worldwide. Diabetic nephropathy is not the only form of renal disease in patients with diabetes mellitus, but other non-diabetic renal diseases can occur.
The timely diagnosis of non-diabetic renal disease is of great importance for early and appropriate treatment of patients, which can significantly slow down the progression to chronic kidney disease.
Materials and methods
This is a retrospective study in which we collected the clinical profile of patients who had type 2 diabetes mellitus and underwent renal biopsy for conventional indications from January 2023 to August 2024. We collected the clinical data of 72 patients who were biopsied during this period.
Results

1. Out of the 72 patients who underwent renal biopsy, 47 patients (65.2%) were males with age of presentation being 49.29 ± 10.19 years.
2. Mean of the duration of diabetes mellitus in the study population was 6.77± 4.05 years.
3. Coexistence of hypertension was present in almost 56 patients (77.77%) the mean duration of hypertension in these patients were 3.04 ±3.82 years.
4. New onset hypertension was present in 16 patients (22.22%). Diabetic neuropathy was present 27 patients (37.5%) which was confirmed by clinical examination and nerve conduction tests.
5. Diabetic retinopathy (27.77%)-non proliferative diabetic retinopathy was present in 12 patients (16.66%); proliferative diabetic retinopathy was present in 8 patients (11.11%) 26 patients (36.11%) had infection related glomerulonephritis(IRGN),out of which 1 patient had IgA dominant IRGN,and 1 patient had Thrombotic microangiopathy with patchy cortical necrosis with IRGN.16 patients (22.22%) had isolated diabetic nephropathy.7 patients (0.1%) had acute interstitial nephritis (AIN). 4 patients (0.055%) had membranous nephropathy, out of which 2 patients had PLA2R (phospholipase A2 receptor antibody) positive membranous nephropathy.

Out of these 16 patients , who had diabetic nephropathy 12 patients are dialysis dependant. All 4 patients with global glomerulosclerosis with severe IFTA are dialysis dependant.
Totally, out of 72 patients ,34 (47%) patients are dialysis dependant.
Conclusion
Non diabetic kidney disease accounts for two-thirds of patients with diabetes mellitus. Immunosuppressive therapy in patients with Lupus nephritis, Membranous nephropathy, Focal segmental glomerulosclerosis was successful and resulted in partial or complete disease remission.

P121

A Real-world study on drug utilization of fixed dose combination of Sitagliptin and Metformin in Type 2 Diabetes mellitus (T2DM) patients across India

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Keywords

- Oral therapies: metformin, sensitizers and other non- secretagogues • Cardiac complications

Background and Aims
Guidelines suggest that managing T2DM should include disease-modifying agents to attain glycemic targets and hence, assessing their utility is essential. Dual drug therapy is a common strategy adopted for effective glycemic control. This study was undertaken to understand the utilization pattern of Sitagliptin + Metformin FDC in Indian T2DM patients.
Materials and methods
Cross-sectional, multicentric, observational study was conducted to evaluate clinical use of Sitagliptin + Metformin in T2DM patients from 494 clinics across India. With approval from Independent ethics committee, patient data was collected from medical records using predesigned structured proforma in Electronic Case Report Form (eCRF) from October to December 2023. This data included patients' demographics, glycemic and other laboratory parameters, co-morbidities and concomitant medications.
Results
Data of 2477 patients was available for analysis. Among these patients, 20.06% of individuals were pre- treated, and 79.93% were treatment naïve. 45.4% patients had existing comorbidities with dyslipidemia (52.2%) and cardiovascular disorders (17.8%) being the most common. The mean HbA1C was 7.70 ± 1.22%. The laboratory parameters are mentioned in Table 1. The transition from monotherapy occurred in 76.05% cases, followed by 22.27% patients switching from a dual therapies and 1.2% from triple drug therapies. The most common switch from monotherapy occurred in patients with biguanides (30.18%), DPP4 inhibitors (25.5%) followed by Sulfonylureas (11.6%).
Graph/Table :

Table 1: Laboratory parameters of the patients of the study

Parameters	Number (N)	Mean (x̄ ± SD)	Range
Fasting Blood Glucose (FBG) mg/dL	1013	162.91 ± 48.62	75.00-375.00
Post-prandial blood Glucose (PPG) (mg/dl)	1020	250.79 ± 57.03	90.00- 502.00
HbA1C (%)	1358	7.70 ± 1.22	4.00-15.00
Serum creatinine (mg/dl)	133	1.95 ± 5.85	0.08-68.00
Serum albumin (g/dl)	123	4.52 ± 2.93	0.96-33.40
eGFR	127	111.38 ± 24.91	70.00- 171.00
Blood Urea Nitrogen (BUN) (mg/dL)	122	29.43 ± 19.42	10.00- 90.00
Sr. total cholesterol (mg/dl)	132	208.56 ± 52.28	100.00 ± 365.00
LDL cholesterol (mg/dl)	135	116.68 ± 33.91	72.00- 232.00
HDL cholesterol (mg/dl)	132	81.26 ± 12.32	60.00- 140.00
Sr. triglycerides (mg/dl)	131	140.06 ± 42.14	50.00- 265.00

Conclusion
This real-world analysis sheds light on utilization pattern of the Sitagliptin + Metformin FDC in T2DM patients. This FDC is preferably used in T2DM patients who are treatment-naïve and in those with CV comorbidities.

P122

Exploring Retino-Renal Dissociation in Type 2 Diabetes Mellitus: Implications for clinical practice.

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Keywords

- Insulin sensitivity and resistance • Inflammation in type 2 diabetes • Retinopathy • Pathogenic mechanisms / complications

Background and Aims
India has more than 77 million people with diabetes and is expected to rise to 134 million by 2045.
The association between retinopathy and nephropathy is well reported in type 1 diabetes however for type 2 diabetes there is paucity of data and most is from retrospective studies lacking quantified standards. It has been shown by a study that 47.5% of people with nephropathy did not have retinopathy.
Hence our study is important for comprehensively reviewing the data on the prevalance of discordance of retinopathy with nephropathy and also dissociation of retinopathy among biopsy proven diabetic nephropathy patients.
AIMS-

1) To study the presence of retinopathy in patients with new onset and diagnosed cases of type 2 diabetes.
2) To study the dissociation between retinopathy and nephropathy in type 2 diabetes.

Materials and methods
The study was done on a total of 110 patients of type 2 diabetes mellitus at Department of Medicine, Sir Sayajirao General Hospital. This is a Prospective Observational study, analysed using descriptive statistics and analysed using EPI INFO software.
Results
The prevalence of diabetes and microvascular complications was found highest in age group of 50-70 years with frequency more in men. Both genders experience similar symptoms, weight loss and slower healing being more specific for males and chest pain for females.
Our study had 30% positive family history for diabetes along with higher prevalence for microvascular complications, p=0.022
Our study found significant association between tobacco use and presence of nephropathy (p= 0.028) as well as higher BMI with microvascular complications like retinopathy (p=0.000018) and neuropathy (p=0.03).
Our study showed overall trend of progression and statistical significance in severity of complications with increasing duration of diabetes (p= 0.00039) and between HbA1c >10.4 and presence of retinopathy.
Dissociation of Diabetic kidney disease with retinopathy- In our study nephropathy was present in 55.45%, and retinopathy in 21.81% of patients. Our study showed that 41.81% of patients have diabetic nephropathy without retinopathy, (p= 0.432) which is non significant and indicates that both don't strongly co-occur.
Conclusion
A significant number of patients exhibited nephropathy without retinopathy and vice-versa indicating discordance.
Retino-renal dissociation has important therapeutic implications-

a. The presence or severity of one does not predict the presence of another indicating different alterative pathways of pathophysiology.
b. Necessitates independent and routine screening for both retino and nephropathy.
c. Opens up new therapeutic avenues for prevention and treatment and develop individualised treatment plans.

P123

Retrospective Observational Study on Effectiveness, Safety and Usage of FDC of Pregabalin and Duloxetine in Indian Patients with Neuropathic Pain: BLUE FEATHER

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Keywords

- Neuropathy: somatic

Background and Aims
Neuropathic pain is very challenging to manage and is often associated with conditions like diabetes and post herpetic neuralgia. Pregabalin and duloxetine are commonly used as first line therapies. Fixed dose combination (FDC) of pregabalin and duloxetine is frequently prescribed for neuropathic pain. Despite its widespread use, real-world data on the efficacy and safety of this FDC in Indian patients is limited. The aim of this study is to evaluate the effectiveness, safety, and usage patterns of FDCs of pregabalin and duloxetine in Indian patients with neuropathic pain
Materials and methods
This was a retrospective, observational, multicentre study conducted across 317 sites in India from August 2023 to August 2024. The study involved adult patients (≥18 years) diagnosed with neuropathic pain who were treated with FDCs of pregabalin and duloxetine. The effectiveness of the treatment was evaluated at week 7 using the Numeric Pain Rating Scale (NPRS) and the Clinical Global Impression of Improvement (CGI-I) scale. Safety was assessed by recording and analysing adverse events reported during the treatment period. Descriptive statistics and frequencies with percentages, were used to analyse the data.
Results
A total of 7528 patients with a mean age of 56.4 years were analysed in this study, including 35.9% elderly patients (>60 years) and 68.7% males. Most patients (76.7%) had experienced neuropathic pain for up to 6 months. 75.2% of patients were treated for diabetic peripheral neuropathic pain and 23.7% for post herpetic neuralgia. Common prior treatments included pregabalin (54.6%), gabapentin (28.0%), nortriptyline (15.6%), and a combination of pregabalin and methylcobalamin (14.6%).
After 7 weeks of FDC treatment, there was improvement seen in **NPRS score in all intensities of pain** [shown in graph].
On clinical global impression of improvement (CGI-I) for efficacy, 53.8% patients reported much improved (41.4%) to very much improved (12.4%).The FDCs were well tolerated, with no significant safety concerns.
Conclusion
This large-scale real-world study in Indian patients demonstrated that the FDCs of pregabalin and duloxetine are effective and well-tolerated

treatment options for managing severe to mild neuropathic pain, particularly in patients with diabetic peripheral neuropathy and postherpetic neuralgia. The FDCs are beneficial across the adult population including elderly who did not achieve adequate pain relief with pregabalin, gabapentin, nortriptyline, or a combination of pregabalin and methylcobalamin.

P124

Vomiting – Characteristic presenting symptom of DKA in patients with Type 1 Diabetes mellitus

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Keywords
- Diabetes in childhood

Background and Aims
The incidence of type 1 diabetes mellitus (T1DM) is increasing worldwide. Diabetic ketoacidosis (DKA), which is caused by absolute insulin deficiency, is the most serious life-threatening acute complication of T1DM. The incidence of DKA at the time of T1DM diagnosis ranges from 15% to 67% depending on the geographic region. Between 10% and 70% of these diagnosed children present with diabetic ketoacidosis, a metabolic derangement characterized by the triad of hyperglycemia, acidosis, and ketonuria. Aim of this study was to know the clinical characteristics of diabetic ketoacidosis in type 1 diabetes mellitus in Indian children and adolescents.
Materials and methods
This retrospective observational study was conducted in rural hospital in India from January 2022-March 2024. The inclusion criteria comprised patients of type 1 diabetes or undiagnosed cases (first presentation) presenting with DKA in the emergency department. DKA was defined as a biochemical trial of ketonemia, acidosis, and hyperglycemia. Microsoft Excel was used for statistical analysis.
Results
The clinical presentation of all 37 individuals with DKA was diverse and some individuals had one or more symptoms. The most prominent symptom of each patient was taken into consideration. 68.26% presented with severe vomiting, 17.83% with abdominal pain, 8.92% with fever, and 4.99% presented with altered consciousness. New-onset T1DM was also found to be a common cause of DKA (23%).
Conclusion
Our study reported vomiting as the first presenting symptom of DKA in patients with Type 1 diabetes. Ketone bodies have been reported to directly activate the vomiting center located in the medulla oblongata[1]. This study potentially informs both our understanding of the disease as well as the development of patient and population-based interventions to reduce the proportion of children presenting with diabetic ketoacidosis. Awareness among caregivers of patients with type 1 diabetes and physicians regarding presenting symptoms of diabetic ketoacidosis is necessary, as it may help in early diagnosis and timely treatment of this potentially fatal complication.

P125

Albuminuria Reversal in Diabetic Nephropathy: Finerenone's Lasting Impact

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Keywords
- Nephropathy

Background and Aims
About 700 million people, or 9% of the world's population, have CKD, of whom nearly four million patients require kidney replacement therapy. Diabetic nephropathy carries high morbidity and mortality Microalbuminuria is an independent risk factor for cardiovascular mortality. The majority of patients die from end-stage renal disease. In addition, diabetic retinopathy is associated with diabetic nephropathy. Finerenone, a novel selective, nonsteroidal mineralocorticoid receptor antagonist, a reduces cardiovascular disease and kidney disease progression over a broad range of chronic kidney disease in patients with type 2 diabetes. An observational study to evaluate the efficacy of Finerenone in reducing albuminuria in diabetic nephropathy patients and assess the persistence of benefits after discontinuation.
Materials and methods
In this observational study, a total of 100 patients (mean age 53 ± 6 years) with diabetic nephropathy and proteinuria [64 (21 females) with microalbuminuria and 36 (12 females) with macroalbuminuria] were enrolled. All patients received Finerenone at a dose of 20 mg once daily for a duration of one year. Albuminuria levels (by spot urine collection) and the Urinary Albumin Creatinine Ratio (UACR) was calculated once every 3 months. and after a year in all those achieving a normoalbuminuric status, the medication was discontinued. These patients were then monitored for albuminuria for an additional six months. All of them were receiving the standard care for diabetes throughout.
Results
After one year of Finerenone treatment, a significant reduction in albuminuria was observed in all patients. Out of the 100 patients, the data of 12 patients was excluded as they failed to follow up on time. 79% became normoalbuminuric, and the remaining 21% had > 50% reduction in their levels of albuminuria from baseline. Following discontinuation of Finerenone in all those who had become normoalbuminuric 86% remained so even after six months.
Conclusion
Finerenone demonstrated significant efficacy in reducing albuminuria in diabetic nephropathy patients, with most achieving normoalbuminuria. Importantly, the therapeutic benefits persisted for six months after discontinuation, indicating a sustained effect on kidney function. Larger studies are needed to explore the long-term outcomes and potential mechanisms behind the prolonged benefit of Finerenone.

P126

Impact of Total Lab Automation on Glycated Hemoglobin (HbA1c) Testing Accuracy and Efficiency in Diabetic Patients

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Keywords
- Devices

Background and Aims
Glycated hemoglobin (HbA1c) testing is a cornerstone in the diagnosis and management of diabetes, providing a reliable measure of long-term glycemic control. Total laboratory automation (TLA) has

the potential to enhance the accuracy, efficiency, and consistency of HbA1c testing. This study aims to evaluate the impact of TLA on HbA1c testing accuracy, turnaround time, and operational efficiency in diabetic patients.
Materials and methods
A retrospective study was conducted in a SMART Lab utilizing total laboratory automation for clinical chemistry. HbA1c results from 1,000 diabetic patients over a 12-month period were analyzed. Key performance metrics, including testing accuracy, coefficient of variation (CV) and turnaround time (TAT) were analyzed. The accuracy of HbA1c results was validated using internal quality controls, while efficiency improvements were measured through TAT and laboratory workload data.
Results
The implementation of TLA resulted in a 10% reduction in HbA1c testing turnaround time as compared to target TAT. The coefficient of variation (CV) for HbA1c measurements decreased to 2.1% from standard CV of 5%, indicating improved precision. Automation also streamlined pre- analytical and post-analytical phases, reducing human intervention and ensuring better compliance with quality control protocols.
Conclusion
Total laboratory automation significantly enhances the accuracy, efficiency, and precision of HbA1c testing in diabetic patients. By reducing turnaround time and improving workflow efficiency, TLA contributes to better clinical decision-making and patient care, making it a valuable tool in managing the growing demand for diabetes diagnostics.

P127

CORRELATION OF SYNTAX SCORE WITH SOME CARDIAC PARAMETERS IN THE PATIENTS OF CORONARY ARTERY DISEASE WITH OR WITHOUT TYPE 2 DIABETES MELLITUS

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Keywords
Background and Aims

The pathophysiological relation between CAD and T2DM is not well established. Furthermore, the phenotype of T2DM is also changing. So SYNTAX is used for prediction of prognosis.
Materials and methods
Following the Declaration of Helsinki, and registered by our Ethics Committee, 200 patients diagnosed with T2DM (WHO diagnostic criteria, 1999) and suspected with coronary artery disease were enrolled in this study. Age and sex matched individuals without history of diabetes mellitus and coronary artery disease were recruited as normal control group A (n=40). Based on angiography, patients were divided into group B (without cardiovascular complications, n=76) group C (non-CAD,
Results
The Multiple Linear Correlation Analysis between SYNTAX Scores and Relative Factors in Group C showed that the SYNTAX scores were significantly correlated with CRP, MAGE, and HbA1c in group C (
Graph/Table :
RESULTS

Table.! :Linear correction analysis SYNTAX scores and relative factors in group C

SYN-TAX	**Age"'**	**Bl\.ll"'**	**SBP"'**	**DBP"'**	**CD,..**	**CRP"**	**ma.ls,..**
(year)	**(Kg,Lrn2)**	**(mmHg)**	**(mmHg)**	**(year)**	**(mg/I.)**	(%)	
R	-0.115	0.046	0.551	-0.015	-0.298	0.435	0.488
p	0.602	0.836	0.006	0.947	0.167	0.038	0.018
SYN-TAX	**MAGE"'**	**HOMA-IR..-**	**HBCI"'**	**Bnk._c_..**	**Lll,l.-c"'**	**TC"'**	**TG"'**
(mmol/1.)	(mmol/L)	(mmol/L)	(mmol/L)	(mmol/1.)	(mmol/L)		
R	0.518	-0.199	-0.040	0.329	0 . 1 8 3		
-0.069	-0.059						
p	0.011	0.363	0.855	0.125	0.403	0.754	
0.789							

CD • c.ource of disease_ .- corr c1ion analysis • correction analysis
The Multiple Linear Correlation Analysis between SYNTAX Scores and Relative Factors ia Group C showed that the S'{NTAX scores were significantly correlated with CRP, MAGE, and HbA!c in group C (P< 0.05) and were significantly correlated with SBP (P< 0.01) (Table I).

Table.2: Correction analysis between SYNTAX scores and the bloood glucose excursion of different time sessions in group C.
SYNTAX 0.00-3.00 (mmol/1.) 3.00-6.00 (mmol/1.} 6.00-8.00 (mmol/L) 8.00-11.00 (mmol/1.)

R	-0.442	-0.208	0.678	0.115
p	0.035	0.340	0.000	0.600
SYNTAX 11.00-13.00 (mmol/L)	**13.00-17.00** (m.mol/1.)	**17.00-19.00 (mmol/L) 19.00-24.00 (mmol/L)**		
R	*o.5n*	0.257	0.158	-0.018
p	0.011	0.237	0.094	**0.933**

Pe:rosn correction analysis: in 0:00-_3 :00 and spearman's correction analysis was used in other's ti:m.e sessions
The Correlation Analysis between SYNTAX Scores and the Blood Glucose Excmsion of different Time Sessions in Group C showed that significant correlations were found ia 6:00-8:00 *(P*< 0.01) and 11:00-13:00 *(P*< 0.05) between the SYNTA,'(scores and blood glucose excursion in group C (Table 2).
Conclusion
The SYNTAX scores in this study were significantly correlated with CRP, MAGE, and HbA1c in group C (

P128

Bariatric Surgery vs. Oral Semaglutide, The Future of Weight Loss - Who Will Win, A Real - World Evidence

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Keywords

- Weight regulation and obesity • Incretin based therapies 43 Novel agents

Background and Aims
Managing T2DM in India is challenging, especially with the added burden of obesity. India is among top three most obese nations. A Lancet study published in March 2024 says that in India, the obesity

rate increased from 1.2% in 1990 to 9.8% in 2022 for women and 0.5% to 5.4% in 2022 for men. Oral Semaglutide offers a novel, non-injectable option that may improve treatment adherence and outcomes in this population.
This observational real world study reveals the outcomes of oral Semaglutide use in Indian People with type 2 diabetes (PWD), and its impact on glycaemic control and weight management.
Materials and methods
The study included 60 adult PWD (mean BMI 34.1), (39 females) from my center, who were prescribed oral Semaglutide. Mean age 36.2 ± 3.6 for males and 34.4 ± 2.8 for females. The mean duration of Diabetes detection was 1.5 ± 1.2 years. Outcomes such as HbA1c reduction, weight loss, and side effects were monitored over a period of one year. The SOC for glycaemic management as per ADA criteria was followed.
Results
The study found significant reductions in both HbA1c (mean 1.98 %) and weight loss (mean 15.9 %) by the end of the study. Side effects were mild and included nausea and anorexia for the initial 3 to 4 weeks of starting therapy. The adverse effects were well managed with supportive therapy without any dropouts.
Conclusion
Oral Semaglutide shows promising results in significantly improving glycaemic control and reducing weight in Indian PWD. Its favourable safety profile and ease of use could make it a strong contender for Bariatric surgery in the management of Obesity and Diabetes.

P129

From Needle to Pill: Dulaglutide to Oral Semaglutide Switch over Study

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Keywords
- Incretin based therapies 43 Novel agents

Background and Aims
To observe in a real-world setting about the efficacy and tolerability of switching from once-weekly injectable Dulaglutide 1.5 mg to daily oral Semaglutide 14 mg in people with type 2 diabetes mellitus (PWD).
Materials and methods
Four PWD (3 males and 1 female), mean age 42.2 ± 4years and mean BMI 31.6 ± 3.4, previously on once-weekly injection of Dulaglutide 1.5 mg for at least a period of six months, were switched over to once daily oral Semaglutide 14 mg. Glycaemic control and body weight were monitored for the succeeding six-months. The first follow up after switch over was at the end of 3 months and the second follow up was at the end of six months (study end period). The results of changes in blood glucose levels (FBS, PPBS and HbA1c) and body weight were compared at the initiation of oral Semaglutide with that at the end of the observation period of six months. Any issue regarding intolerability to the switched over oral GLP 1RA was also recorded. All the PWD were also continued with their regular Standard of Care (SOC) in the ongoing management of T2DM (namely anti-hypertensives, statins,other oral anti- hypergycaemic medications – SGLT2 and Metfomin). No titration in the dosage of the SOC was done during the observation period.
Results
After six months of treatment with oral Semaglutide, patients demonstrated a sustained and further improvements in both glycaemic control (The mean baseline HbA1c of 7.8 % reduced by 1.2 %) and a mean progressive weight loss of 8.6 % was observed in comparison to the weight at baseline when they were switched over from Dulaglutide. Both blood glucose levels and body weight reduction significantly improved with oral Semaglutide. Without any issues of intolerance being reported by any of the PWD during the observational study period.
Conclusion
This small real-world observational study shows that switching from once-weekly injectable Dulaglutide 1.5 mg to daily oral Semaglutide 14 mg may lead to additional benefits in glycaemic control and weight loss for PWD. Though switch over was well-tolerated, with promising results, larger studies are needed to confirm these findings further.

P130

RETROSPECTIVE STUDY CORRELATING SELF MONITORING BLOOD GLUCOSE(SMBG) VALUES WITH HBA1C

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Keywords
- Devices

Background and Aims
Self-monitoring of blood glucose (SMBG) plays an important role in the management of Type I Diabetes.
SMBG has many proven benefits in Type 1 diabetics such as, minimizing glucose variability, helping to predict severe hypoglycemia and aiding the achievement of hemoglobin A1c (HbA1c) targets Aim- Correlating HbA1c with multiple SMBG values in persons with Type 1 DM.
Materials and methods
Retrospective analysis of 10 persons' SMBG values with Type I DM above the age of 18,who were measuring their pre-meal and bedtime sugars regularly (more than 20 times per week) was done. SMBG values between 70 to 180mg/dl were considered Points In Range (PIR). The mean HbA1c values of these persons were observed and correlated with SMBG data.
Results
The SMBG values were more than 70% in range in 2 out of 10 persons. The mean HbA1c of these persons was 6.9%. 4 persons with 65% to 70% PIR had mean HbA1c of 7.2%, 2 persons with 60 to 65% PIR had mean HbA1c of 7.5%, 1 persons with 55 to 60% PIR had mean HbA1c of 8.1% and 1 persons with 45 to 50% PIR had mean HbA1c of 8.4%.
Conclusion
PIR correlates well with HbA1c in persons with Type I DM who measure their blood glucose more than 3 times in a day.

P131

Role of continuous glucose monitoring (CGM) in glycemic control of diabetes patients in primary care: A study conducted in the Coalfield area of Asansol- Raniganj.

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Keywords
- Devices

Background and Aims Introduction:
Continuous glucose monitoring (CGM) systems have emerged as a valuable tool for managing diabetes, providing real-time glucose data and trends that facilitate better glycemic control. This study examines the effectiveness of CGM systems in improving glycemic control among patients with diabetes in primary care settings
Materials and methods Methods:
A randomized controlled trial was conducted involving 100 patients with type 1 and type 2 diabetes across ten primary care clinics. Participants were randomly assigned to either a CGM group or a control group using traditional self-monitoring of blood glucose (SMBG). Baseline measurements included HbA1c levels, frequency of hypoglycemic episodes, and patient-reported outcomes on quality of life. Follow-up assessments were conducted at 3, 6, and 12 months.
Results Results:
Patients in the CGM group showed a significant reduction in HbA1c levels compared to the SMBG group (mean reduction of 1.2% vs. 0.6%, $p < 0.01$). The CGM group also experienced fewer hypoglycemic episodes (average 1.8 episodes per month) compared to the SMBG group (average 3.2 episodes per month, $p < 0.05$). Additionally, patient-reported outcomes indicated higher satisfaction and improved quality of life among CGM users.
Conclusion Conclusion:
The study demonstrates that CGM systems significantly improve glycemic control and reduce hypoglycemic episodes in primary care settings. CGM users also reported greater satisfaction with their diabetes management. These findings suggest that integrating CGM into primary care practices can enhance diabetes management and improve patient outcomes, making it a beneficial tool for broader implementation in primary care settings.

P132

Screening T2DM patients for MASLD using FIB-4 score

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Keywords

- Non-alcoholic fatty liver disease (NAFLD)

Background and Aims
MASLD (Metabolic Dysfunction Associated Steatotic Liver Disease) is the most common (38%) cause of chronic liver disease globally. About 14% of individuals with MASLD develop a more aggressive form of the disease known as MASH (Metabolic Dysfunction Associated Steatohepatitis), which can progress to advanced liver fibrosis, cirrhosis, or cancer. The risk of MASH is 2-3 times in persons with T2DM (Type 2 Diabetes Mellitus). Therefore, screening for MASLD is now recommended for all patients with T2DM. This cross-sectional study aimed to use the FIB-4(Fibrosis-4) score to screen and risk-stratify T2DM patients for MASLD.
Materials and methods
Data was collected from 500 T2DM patients, aged between 35 & 65 years, who received treatment from a tertiary care diabetes specialty hospital from 1st February 2023 to 30th April 2023 by examining the hospital records of their routine clinical visits. Patients with known liver disease, those previously diagnosed or treated for MASLD, pregnant women, and alcoholics were excluded from the study. The cut- off values of FIB-4 score used were: <1.3(Low(L) risk), 1.3-2.67(Indeterminate(I) risk) and >2.67(High(H) risk). From the data, the mean and SD were calculated for the continuous variables (Age, duration of T2DM, HbA1c, BMI, daily calorie intake, and FIB-4 score) and % by composition was calculated for the categorical variables (Gender, BMI groups - Underweight (Uwt), Normal (N), Overweight (Owt) & Obese; and FIB-4 Risk groups - L, I & H).
Results
Among the 500 T2DM patients (279 males (55.8%) & 221 females (44.2%)), the mean with SD for age was 52.8±7.28 years, duration of disease(T2DM) 10.9±8.01 years, HbA1c 8.51±2.05%, BMI 27.5±4.57 kg/m^2, daily calorie intake 1486+309.64 kcals, and FIB-4 score 1.11±0.55. The mean duration of T2DM with SD in the H-, I-, and L-risk groups were 17.56 ± 6.64, 12.85 ± 8.10, and 10.18 ± 5.97 years respectively. The mean with SD for HbA1c in all three risk groups were: H-8.97%±2.56, I-8.23%±2.18 & L-9.13%±2.40.
The no. of persons in the FIB-4 risk groups: L-76.0% (n=380); I-22.4%(n=112); & H- 1.6%(n=8) and those in the Uwt, N, Owt & Obese groups were 3(0.6%), 62(12.4%), 76(15.2%), and 359(71.8%). Of the 8 persons with H risk, 3(37.5%) had normal BMI, and 5(62.5%) were obese. I and L-risk persons were distributed across the BMI groups thus – Uwt(0; 3-0.79%), N(17- 15.18%; 43-11.32%), Owt(16-14.29%; 61-16.05%) & Obese(79-70.53%; 273-71.84%).
Dyslipidemia (DLP) prevalence was 94.8% (Tot=474; H - 8(1.69%), I -104(21.94%) & L- 362(76.37%)). Among those without DLP (n=26, 5.2%), 8(30.77%) and 18(69.23%) carried I and L risk respectively.
Conclusion
In this study, it was found that patients with T2DM, although mostly obese/overweight and associated with Dyslipidemia, despite suboptimal glycemic control, did not have high Fib 4 scores. Only 22.4% had Indeterminate risk and 1.6% had High risk, warranting further investigation. However, a trend of worsening risk of MASLD was noted with increasing duration of T2DM.

P133

PRESENTATION TITLE- MANAGEMENT OF DIABETES MELLITUS IN THE ELDERLY PATIENTS

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Keywords

- Oral therapies: metformin, sensitizers and other non- secretagogues • Hypoglycaemia • Cognitive dysfunction and Alzheimer Disease

Background and Aims
Managing diabetes in elderly patients presents significant challenges due to several factors:

1. The complexity of patients' past medical histories
2. Increased frailty
3. Alterations in pharmacokinetics (such as renal elimination) and pharmacodynamics (such as drug sensitivity) in older adults

To address these issues, I initiated a Quality Improvement Project at Airedale NHS Hospital, a 350-bed facility, with the goal of enhancing diabetes management for elderly patients. This project was supervised by Dr. Bailey, the Consultant in Elderly Medicine, and supported by diabetes nurse Mrs. Ahir
Objective:

1. Alleviate the strain on healthcare systems caused by frequent hospital admissions due to diabetes- related complications.

2. Decrease the incidence of complications among the elderly resulting from poorly managed HbA1c levels.

Materials and methods
Methodology: The study involved collecting data from patients aged 70 and above, diagnosed with Type 2 Diabetes Mellitus and currently on hypoglycemic medications. The frailty score of each patient was considered, as target HbA1c levels vary with frailty. The study assessed whether the patients' most recent HbA1c levels, taken within the last 3 months, were within the target range.
A total of 60 patients were included. Data collection was split into two phases. After the initial data collection, an educational event was held for doctors, focusing on diabetes management guidelines and best practices. Data collection resumed 3 weeks later.
Results
Results: Initially, only 13 patients had their HbA1c levels checked within the recommended 3-month period. Following the educational event, the re-evaluation showed a 20% improvement in patients having their HbA1c levels checked within the recommended time frame leading to an increase of diabetes medications.
Conclusion
Conclusion: Diabetes management in the elderly is often underestimated and requires different approaches compared to younger populations due to various factors such as frailty and the specific management needs of older adults.
Recommendations:

1. Educate doctors about the unique aspects of managing diabetes in the elderly.
2. Emphasize the importance of considering frailty, appropriate HbA1c targets, and medication types to prevent complications in the elderly population.

AUTHOR OF THE ASTRACT-
Dr Lakshey Mahajan [F3, Medicine]

P134

Relationships between osteoporosis, bone mineral density, and trabecular bone score in women with a history of gestational diabetes

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Keywords
- Pregnancy

Background and Aims
Poor bone microarchitecture causes increased fracture risk in T2DM even in patients with higher bone mineral density (BMD). According to recent research, bone health may be impacted early in the natural history of diabetes. Women who have previously had gestational diabetes mellitus (GDM) would be a prime candidate demographic for this kind of research since they have exact knowledge of their glycemic status in the recent past. This cross-sectional study set out to evaluate bone microarchitecture (TBS), bone mineral density (BMD), and bone turnover (osteocalcin) in women who had previously experienced maternal diabetes mellitus.
Materials and methods
An extensive anthropometric, biochemical, and hormone evaluation, which included measurements of insulin and osteocalcin, was performed on study participants. BMD was measured at lumbar spine, femur neck and total hip using DXA and TBS derived from lumbar spine DXA images using TBS iNsight software.
Results
A total of 160 women were examined; their mean age was 32.9 ± 4.8 years, and their median postpartum period was 34 [interquartile range: 12.7-56.2] months. 76 (47.5%) and 25 (15.6%) women, respectively, had prediabetes and diabetes at the time of the present visit. Compared to women with normoglycemia, those with dysglycemia (diabetes or prediabetes) exhibited greater BMDs at all three sites; however, the difference was not statistically significant. The TBS was substantially lower in women with dysglycemia (1.31 ± 0.07 vs. 1.36 ± 0.08; p =.043). The odds ratio for the relationship between low TBS and diabetes in the fully adjusted model was 2.95 (95% confidence interval: 1.25, 7.09; p =.021). Serum osteocalcin levels were considerably lower in women with dysglycemia (18.4 ± 7.8 ng/ml vs. 22.3 ± 8.9 ng/ml; p=.021). Serum osteocalcin levels showed a negative correlation with HOMA-IR (r = -.279, p <.001) and a positive correlation with Matsuda index (r =.269, p <.001) and disposition index (r =.172, p <.019).
Conclusion
Early in the natural history of diabetes, bone health is impacted and is linked to a general state of reduced bone turnover.

P135

Correlation study between coronary artery disease and left ventricular function in presence of glycemic control as effect modifier using CT coronary angiography

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Keywords
Epidemiology • Inflammation in type 2 diabetes • Health care delivery • Cardiac complications

Background and Aims
The correlation between coronary artery disease and left ventricular function in the presence of diabetes is critical, as diabetes significantly exacerbates cardiac complications. CAD can lead to LV dysfunction, manifesting as both systolic and diastolic impairment. Diabetes accelerates atherosclerosis which further compromises LV function. This study correlates how factors like glycemic control, calcified coronary plaque, number of coronary vessel involvement affect the correlation between degree of coronary stenosis and left ventricular function.
Materials and methods
500 patients were taken from PACS of CT coronary angiography retrospectively and correlation between degree of coronary artery stenosis (Gensini Score) and left ventricular functional parameters. Various independent disease factors like calcium score of coronary vessels, number of vessels involved as well as glycemic control were taken into consideration and strength of correlation of degree of Stenosis and left ventricular functional parameters in presence of these factors were determined.
Results
Negative correlation between degree of coronary artery stenosis and ejection fraction was established. The strength of correlation between these two increased when HbA1c was on higher side (p value <0.001). the correlation coefficient for group 1, 2 & 3 were -0.324, -0.634, -0.689 respectively. Multivessel disease shows more worsening of ejection fraction than single or no vessel disease (p value <0.001). Patients with higher calcium score (Agatston stage 2, >10<100 and stage 3, >100<400) show higher degree of negative

correlation. This study also shows negative correlation between degree of coronary artery stenosis and diastolic function with stronger correlation with higher HbA1c and multivessel involvement. However, calcium score shows non-significant effect.
Conclusion
Poor glycemic control adversely effects left ventricular function in patients of coronary artery disease. Other independent variables like calcium score and number of vessels involved also increases strength of negative correlation between degree of coronary artery stenosis and left ventricular function.

P136

Prevalence of Sarcopenia in Diabetic and Nondiabetic older adults - An observational study

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Keywords
Prevention of type 2 diabetes • Nutrition and diet • Education • Other complications

Background and Aims
The life expectancy of patients with diabetes is increasing. With aging, there is increase in body fat percentage and decrease in muscle mass. Loss of muscle mass, strength and/or function with aging is called sarcopenia. Sarcopenia is accelerated when diabetes is present. Aim of this study was to compare prevalence of sarcopenia in old age type 2 diabetics and non-diabetic healthy controls. Risk factors for sarcopenia were also evaluated in the study.
Materials and methods
256 participants (128 diabetics and 128 non-diabetics), aged ≥ 60 years, were enrolled in the study. Sarcopenia was assessed based on 2019 AWGS diagnostic criteria.
Results
Our study consisted of participants with mean age of 67.88 years and 69.07 years in cases and controls respectively, most common age group in both groups being 60-69 years. Majority of participants were females in both cases (62.5 %) and controls (57%). Sarcopenia was more prevalent in diabetic population (38.3 %) than in non-diabetic population (22.7 %) and the difference was statistically significant (p = 0.007). Similarly, mean hand grip strength was significantly lower in diabetics (18.83 ± 6.0 kg) as compared to non-diabetics (20.82 ± 7.04 kg) (p = 0.016). However, there was no significant difference in the skeletal muscle index (Cases-6.70±0.93 kg/m^2, Controls-6.55±0.88 kg/m^2, p = 0.184) and gait speed (Cases- 0.70±0.24m/s, Controls-0.74±0.28 m/s, p = 0.187) in the two groups. Risk factors for increased prevalence of sarcopenia: **1) Age**: The prevalence of sarcopenia was increasing with age in both diabetic (31.9% in 60-69 years, 46.4% in 70-79 years) and nondiabetic groups (16.2 % in 60-69 years, 28 % in 70-79 years, 40 % in ≥ 80 years) however, statistical significance couldn't be achieved (p = 0.094 in cases, p = 0.125 in control group). **2) Gender**: The prevalence of Sarcopenia in diabetic males was 66.7% as compared to 21.2% in females and difference was statistically significant (p = <0.001). Similarly, prevalence of Sarcopenia was more in male non-diabetic controls (30.9 %) as compared to females (16.4%), however, it was statistically insignificant. (p = 0.053) 3) **BMI**: The prevalence of sarcopenia increases as BMI decreases in the diabetic (100.0% of Underweight, 83.9% of Normal BMI, 52.6% of Overweight and 14.5% of Obese cases had Sarcopenia, p = <0.001) and non-diabetic group (60% of Underweight, 44.4% of Normal BMI, 7.7% of Overweight and 4% of Obese Controls had Sarcopenia, p =<0.001), which was statistically significant. 4) **Duration of diabetes**: Prevalence of sarcopenia in cases with diabetic duration being <1year, 1-5 years, 6-10 years and >10 years was 0.0%, 27.3 %, 45.2% and 50.0% respectively. There was a statistically significant difference between groups in terms of prevalence of Sarcopenia (p = 0.016). 5) **Control of blood sugar**: We could not establish a significant difference (p = 0.450) in the prevalence of sarcopenia in diabetics with uncontrolled (41.1%) and controlled blood sugars (34.5 %).
Conclusion
Sarcopenia is significantly more prevalent in the diabetic population than in the non-diabetic healthy population. Male gender, low BMI (<18.5Kg/m^2) and longer duration of diabetes were identified as risk factors for sarcopenia in our study.

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Black Sapote Pasta diet prevents oxidative damage in liver and kidney and improves biochemical parameters in type 2 diabetic rats

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Keywords
Prevention of type 2 diabetes • Insulin sensitivity and resistance • Animal models of type 2 diabetes • Nutrition and diet

Background and Aims
In this study, the effects of a black sapote pasta diet on the oxidative damage from type 2 diabetes mellitus (DM) were investigated.
Materials and methods
Formulations containing 25 (F25), 50 (F50), and 75% (F75) of black sapote pasta were prepared and included in a 12-week diet of Wistar rats with alloxan-induced type 1 DM. The effects of these formulations in preventing oxidative damage in kidneys and liver homogenates of rats were evaluated using the TBARS assay (lipid peroxidation in liver) and the DNPH assay (protein oxidation in liver and kidneys). Furthermore, the effects of the formulations on the fasting glycemia, fructosamine levels, renal function (creatinine), liver function (enzymes aspartate aminotransferase [AST] and alanine aminotransferase [ALT]), and lipid profile (total cholesterol and fractions) in the serum of rats were evaluated in addition to the evaluation of the centesimal composition and microbiological analysis of the produced black sapote pasta.
Results
An F75 diet prevented hyperglycemia in diabetic rats ($p < 0.05$) compared to the diabetic rats fed a standard diet (commercial feed). Notably, the protein oxidation in both the liver and kidneys were prevented in diabetic rats on the F50 or F75 diets compared to the control group, whereas the lipid peroxidation was only prevented in the liver ($p < 0.05$). Moreover, all formulations prevented an increase in the amount of triglycerides in the serum of the rats. The F25 and F50 diet prevented the increase of cholesterol, and the F75-based diet of ALT and fructosamine ($p < 0.05$) supported the anti-hyperglycemic effects and the protection against oxidative damage.
Conclusion
The black sapote pasta (F75) diet showed great potential for preventing complications associated with diabetes.

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To assess clinical impact and safety of Stiagliptin and Metformin fixed dose combination in Type 2 Diabetes Mellitus

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Keywords

- Insulin sensitivity and resistance • Oral therapies: metformin, sensitizers and other non- secretagogues • Macrovascular disease

Background and Aims
Background: Diabetes, a prevalent metabolic disorder, demands effective management. The fixed-dose combination of sitagliptin and metformin has shown efficacy in reducing blood glucose levels by employing a dual mechanism, enhancing insulin secretion, and decreasing hepatic glucose production. This retrospective study in Indian patients with Type 2 Diabetes Mellitus provides additional confirmation of the efficacy of the FDC of sitagliptin and metformin in their treatment.
Aim: To assess clinical impact and safety of FDC of Sitagliptin and Metformin in patients with Type 2 Diabetes Mellitus.
Materials and methods
This was a post-approval, observational, retrospective study across PAN India that included 5841 individuals with Type 2 Diabetes Mellitus. Descriptive and analytical statistics was applied for the study endpoints using SPSS ver. 29.0.1.0(171) for level of significance assessed as $p<0.05$.
Results
Per Protocol analysis (n=5841) demonstrated that after 12 weeks, the mean HbA1c decreased by 1.2% (14% reduction), mean PPBG by 62 mg/dl (24% reduction) and mean FBG by 40 mg/dL (23% reduction) with FDC of Sitagliptin and Metformin receiving Metformin or equivalents as 1.5 g/day. The impact of FDC is depicted in Figure 1 and Figure 2.
Conclusion
The fixed dose of Sitagliptin 100mg/Metformin 1000mg XR as intensification therapy was safe and effective in the management of T2DM as an initial add-on strategy.

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EFFECTS OF PULSED ELECTROMAGNETIC FIELD (PEMF) IN DIABETIC NEUROPATHIC PATIENTS

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Keywords

- Neuropathy: somatic

Background and Aims
Background: Diabetic peripheral neuropathy (DPN) poses a significant health concern with substantial impacts on physical well-being and quality of life. This study explores the potential efficacy of Pulsed Electromagnetic Field (PEMF) therapy in managing DPN symptoms
Materials and methods
Methods: Twenty participants diagnosed with type 2 diabetes mellitus and peripheral neuropathy underwent a four-week PEMF therapy regimen. The Diabetic Neuropathy Symptom Score (DNS) and Diabetic Neuropathic Examination (DNE) scale were used for assessments. Statistical analyses were conducted using paired t-tests.
Results
Results: Post-treatment, a significant reduction was observed in mean DNS (3.30 to 0.40) and DNE scale scores (8.10 to 1.50). The decrease indicates an improvement in neuropathic symptoms, muscle strength, reflexes, and sensory perception. Paired t-values (DNS: 16.15, DNE: 11.35) support the observed improvements
Conclusion
Conclusion: PEMF therapy demonstrated promise in managing DPN, showing substantial improvements in symptoms and functional assessments. Despite limitations, including a small sample size, the study provides valuable insights into non-invasive interventions for DPN. Further research with larger samples and randomized controlled trials is warranted to validate findings.

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Retrospective study on Fixed-Dose Combination of Dapagliflozin + Sitagliptin + Metformin in Patients with Type 2 Diabetes in a primary care setting

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Keywords

- Oral therapies: metformin, sensitizers and other non- secretagogues

Background and Aims
Type 2 diabetes is a progressive disease in which the risks of microvascular and macro vascular complications and mortality are strongly associated with hyperglycaemia. Achieving glycaemic control remains the main goal of treatment to prevent these complications. Considering the progressive nature of the disease, many guidelines recommend use of dual or triple drug therapy based on glycated haemoglobin (HbA1c) level. Use of fixed-dose combination (FDC) improves therapy compliance and can provide optimum therapeutic benefits. Mechanisms of action of dipeptidyl peptidase 4 (DPP4) and sodium–glucose cotransporter 2 (SGLT2) inhibitors are complementary to that of metformin with low risk of hypoglycaemia. Studies have shown beneficial effects of adding both DPP4 inhibitors and SGLT2 inhibitors after metformin monotherapy
Materials and methods
This retrospective study we evaluated efficacy and safety of once daily triple drug fixed-dose combination (FDC) DAPA + SITA + MET ER (dapagliflozin (DAPA) + sitagliptin (SITA) + metformin (MET) extended release (ER)) in eleven patients with type 2 diabetes who are either poorly controlled or newly diagnosed at our clinic. Primary endpoint was mean change in HbA1c from baseline to week 16.
Results
Mean baseline HbA1c was approximately 11.27 % in this cohort. At week 16, mean reduction in HbA1c from baseline was 8.14 %. 27 % patients were newly diagnosed and having HbA1c more than 12 %. Overall reduction in HbA1c was more in newly diagnosed patients. All patients were having 81 % patients were having Hypertension as a comorbidity and 72 % patients were having dyslipidaemia. All patients tolerated without any major side effects.
Conclusion
Triple FDC of DAPA + SITA + MET ER tablets once daily was significantly better in achieving glycaemic control in poorly controlled and newly diagnosed type 2 diabetes patients both. The current study provides evidence for considering convenient triple FDC of DAPA + SITA + MET ER with minimal risk of hypoglycaemia and weight gain.

P141

"Diabetes Care at the Grassroots: Initiatives in Indian District, Taluka place "

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Keywords

- Education

Background and Aims
The aim of "Diabetes Care at the Grassroots: Initiatives in Indian District, Taluka " is to explore and analyze the diverse range of initiatives aimed at improving diabetes care within the intricate fabric of India's district healthcare systems. This study seeks to shed light on the innovative approaches, best practices, and challenges encountered in implementing diabetes management strategies at the grassroots level.
Materials and methods

1. **Literature Review:** Conducted a comprehensive literature review to gather existing research, reports, and studies related to diabetes management initiatives in Indian districts. This includes academic journals, government publications, NGO reports, and grey literature.
2. **Data Collection:** Utilized both quantitative and qualitative methods to collect data on district-level diabetes care initiatives. This involved surveys, interviews, focus group discussions, and analysis of program documentation.
3. **Selection Criteria:** Establish criteria for selecting initiatives included in the study, considering factors such as geographical diversity, program scale, duration, and focus areas (e.g., prevention, treatment, education).
4. **Site Visits:** Conducted **field visits** to selected places to gather first-hand information about the implementation of diabetes care initiatives. This involves observing program activities, interviewing healthcare providers, and interacting with program beneficiaries.

Results

1. **Diverse Range of Initiatives**: The study identified a diverse range of initiatives aimed at improving diabetes care in Indian districts, including awareness campaigns, screening programs, treatment clinics, and community-based interventions.
2. **Varied Effectiveness**: The effectiveness of these initiatives varied significantly depending on factors such as program design, implementation quality, community engagement, and resource availability.

Role of Technology: Several initiatives leveraged technology, such as mobile health apps, telemedicine, and remote monitoring devices, to enhance diabetes management at the grassroots level.
Conclusion
Diabetes Care at the Grassroots: Initiatives in Indian Districts" has provided valuable insights into the landscape of diabetes management at the district level in India. Through a comprehensive examination of diverse initiatives, this study has highlighted both achievements and challenges in addressing the complex and growing burden of diabetes in Indian communities.

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A Prescription Trend Analysis of Antihypertensive Pharmacotherapy across Different Specialties in India

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Keywords

- Hypertension • Cardiac complications

Background and Aims
In India, the prevalence of hypertension has displayed an upward trajectory over the last two decades, with recent national estimates reaching up to 36%. Guidelines advocate the use of five major drug classes, namely calcium channel blockers (CCB), angiotensin receptor blockers (ARB), beta-blockers (BB), angiotensin-converting enzyme (ACE) inhibitors, and thiazide/thiazide-like diuretics, either individually or in combination, as the fundamental components of antihypertensive treatment strategies. Clinicians possess a multitude of options for treating hypertension, selecting the most appropriate treatment based on the patient's comorbidities and overall condition. In this context, analyzing prescription trends proves invaluable in evaluating the temporal patterns of antihypertensive pharmacotherapy among Indian clinicians. The study aims to assess the temporal trends in prescription patterns of antihypertensive medications among healthcare practitioners in India.
Materials and methods
The prescription audit data utilized in this study, sourced from IQVIA, originated from a panel of 6000 primary care clinicians practicing within the private sector. These prescriptions encompassed various classes of antihypertensive drugs, namely CCB, ARB, BB, ACE inhibitors, & diuretics along with their combinations. The analysis spanned the period from 2014 to 2022.
Results
In 2023, the highest rate of prescribing antihypertensive drugs was observed among CPs, with a rate of 30%, followed by general practitioners at 27%. Among anti-hypertensive medications, the prescription rates for BBs were highest (32%), followed by ARBs & CCBs (25% & 24% respectively); which remained almost constant throughout the study period. Prescription shares of FDC of two antihypertensive drugs showed a slight decline (36% in 2017 to 34% in 2023) & FDCs of triple-drug exhibited an upward trend (3% in 2017 to 5% in 2023). Among the two drug FDCs, ARB & diuretics were most preferred (25% prescription share) & triple drug FDCs, CCB, ARB & diuretics were most preferred (76% prescription share).
Conclusion
Antihypertensive drugs are the most commonly prescribed medications in Cardiology. Notably, there has been an observed rise in the preference for triple-drug combinations of antihypertensive medications, indicating a trend toward a more aggressive approach to hypertension management among Indian clinicians. Adaptation of a guideline-directed treatment approach in hypertension management further improves patient compliance which may lead to effective BP control.

P143

Diabetic patients education with Mobile Health Applications for Remote Monitoring and Support in Diabetes Management

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Keywords

Background and Aims
Background and Aims: Diabetes management requires continuous monitoring, lifestyle modifications, and adherence to treatment

regimens. Mobile health applications (apps) have emerged as promising tools for remote monitoring and support in diabetes care. This review aims to examine the background and current landscape of mobile health applications for diabetes management, assess their efficacy in improving patient outcomes, and identify areas for future research and development.

Materials and methods

Materials and Methods: A comprehensive search of electronic databases including PubMed, Scopus, and Web of Science was conducted to identify relevant studies published between 2010 and 2024. Keywords such as "diabetes," "mobile health applications," "remote monitoring," and "telemedicine" were used in various combinations. Studies were included if they evaluated the use of mobile health applications for remote monitoring and support in diabetes management. Data extraction was performed to summarize key findings related to app features, usability, effectiveness, and patient outcomes.

Results

Results: The search identified a total of 50 studies meeting the inclusion criteria. These studies evaluated a diverse range of mobile health applications designed to support various aspects of diabetes management, including blood glucose monitoring, medication adherence, diet tracking, and physical activity. Most apps offered features such as data syncing with wearable devices, personalized feedback, educational resources, and remote communication with healthcare providers. Several studies reported positive outcomes associated with the use of mobile health applications, including improvements in glycemic control, medication adherence, and self-management behaviors. However, some studies also highlighted challenges such as low user engagement, technical issues, and concerns regarding data privacy and security.

Conclusion

Conclusion: Mobile health applications show promise as effective tools for remote monitoring and support in diabetes management. By leveraging digital technologies, these apps can empower patients to take an active role in their healthcare and facilitate communication with healthcare providers. However, further research is needed to address challenges related to app usability, data security, and integration with existing healthcare systems. Future developments in mobile health applications should focus on enhancing user engagement, personalization, and interoperability to maximize their impact on patient outcomes and healthcare delivery.

P144

Efficacy Of Basal Bolus Therapy In LADA Patients With Low C-Peptide And GAD-65 Antibody Positive: A Case Series From Mumbai

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Keywords

- Insulin therapy

Background and Aims

Latent Autoimmune Diabetes of Adults (LADA) is a slowly-progressing, hybrid form of diabetes, characterized by a combination of immunogenetic markers of Type 1 Diabetes (TID) and clinical presentation of Type 2 Diabetes (T2D). The heterogeneous presentation of LADA delays the clinical suspicion and diagnosis. The 2020 consensus by ADA (American Diabetes Association) and the EASD (European Association for the Study of Diabetes) recognize the need for a personalized approach to preserve the insulin secretion capacity in LADA patients. They recommend adopting strategies that use multiple insulin therapies with or without oral antidiabetic medications (OADs) adjusted according to the C-peptide levels. Due to the paucity of literature, there are no specific guidelines for the management of LADA. This study presents 15 cases of individuals with LADA, their clinical course and outcome.

Materials and methods

A retrospective study was conducted between 2020 to 2023 among patients presenting with clinical features of LADA and with a medication history of premix insulin and OADs. Demographics, diabetes duration, medication history, clinical and biochemical parameters were retrieved. GAD-65 antibody testing was used for diagnosis. Treatment involved stoppage of oral antidiabetic agents and premix insulin and a switch to basal-bolus insulin as the sole therapy.

Results

The case series included 15 patients with a median age of 46.0 [IQR:36.0 – 54.0] years and with a diabetes duration of 11 [IQR: 10 – 13] years. At admission, the individuals presented with elevated HbA1c levels (15.0% [IQR: 14.0-15.5]) and all patients were on either oral anti-glycaemic agents or premix insulin or both. One-third (5/15) of the individuals had associated autoimmune disorders, primarily hyperthyroidism or hypothyroidism. Their biochemical investigation indicated a median C- peptide level of 0.42 [IQR: 0.12 – 0.62] ng/ml. With a clinical suspicion for LADA, 14 out of 15 individuals tested positive for GAD-65 antibody. All medications were stopped, and the individual was switched to basal-bolus insulin. Post-treatment evaluation indicated a significant improvement in the median HbA1c levels (8.5% [IQR: 8.1 – 9.2]). There was also an associated weight gain among patients post-treatment.

Graph/Table :

Table 1: Demographics and comparison of clinical parameters post-treatment.

Parameters	Values		
N	15		
Age, in years (mean ± SD)	45.9 ± 15.4		
C–peptide levels, in ng/ml (mean ± SD)	0.4 ± 0.3		
Distribution of C – peptide levels, in ng/ml, N(%) <0.3 0.3-0.7 >0.7	 6/15 (40.0%) 6/15 (40.0%) 3/15 (20.0%)		
	Pre	Post	p-value
HbA1c (%)	14.8 ± 1.2	8.8 ± 0.9	<0.0001
Hba1c distribution, N(%) <7 7-10 >10	 0/15 (0.0%) 0/15 (0.0%) 15/15 (100%)	 0/15 (0.0%) 13/15 (86.7%) 2/15 (13.3%)	 <0.0001

Conclusion

The heterogeneous nature of LADA presents diagnostic and therapeutic challenges. The case series highlights the significance of clinical suspicion, the autoimmune testing in confirming the diagnosis of LADA and the assessment of β-cell function. The study findings reveal that a complete switch to basal- bolus insulin therapy and stopping all other oral anti-glycaemic medications and premix insulin regime had been an effective strategy in optimizing glycaemic control among LADA patients. Clinical trials and prospective cohort studies are warranted to establish the relative efficacy of basal-bolus therapy in LADA patients.

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Impact of mySugr® mobile application on HbA1c Reduction and Patient Satisfaction in people with Type 2 Diabetes Mellitus - A real world data analysis from India

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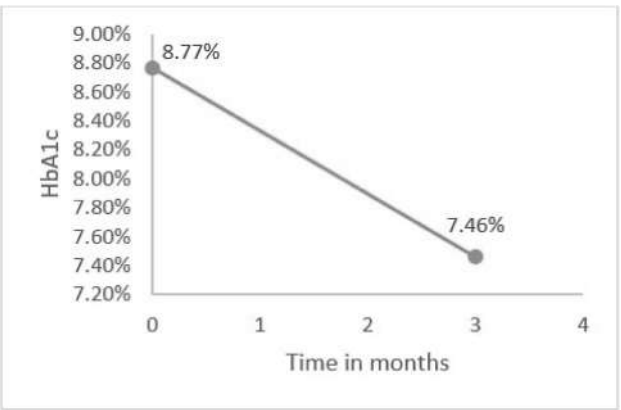
Keywords
Prediction of type 2 diabetes • Health care delivery

Background and Aims
Diabetes, especially Type 2 Diabetes Mellitus (T2DM), is a significant global health issue, impacting approximately 529 million individuals, or 6.1% of the population, with over 90% diagnosed with T2DM. Regular glucose monitoring enables timely medication adjustments, ensuring optimal health outcomes for patients with diabetes (PwD). This study was conducted to evaluate the effectiveness of the mySugr® mobile application in reducing HbA1c levels in individuals with Type 2 Diabetes Mellitus (T2DM) and to assess patient satisfaction with the application's features and usability.
Materials and methods
A retrospective analysis to assess changes in HbA1c over three months in 111 T2DM patients using the mySugr® app, reviewing electronic and paper-based health records. Data was collected from 29 healthcare practitioners (HCPs) in India. Patient satisfaction was evaluated via a 10-question survey.
Results
The baseline mean HbA1c level was 8.77%, which decreased to 7.46% at the end of three months, with a significant mean improvement of 1.31% ($p<0.0001$) (see Figure 1). People with Diabetes (PwD) monitoring blood glucose ≥6 times per week over the entire study duration achieved a greater HbA1c reduction of 1.46% ($p<0.0001$) compared to those monitoring <6 times per week. Insulin-treated patients experienced a notable reduction of 1.6% ($p<0.0001$), nearly double that of non-insulin users (0.8%, $p<0.0001$). A satisfaction survey revealed 50% of participants found the mySugr® app's functions well integrated, while 51% deemed it easy to use. Healthcare professionals valued the app for monitoring insulin dosage and enhancing communication with patients, highlighting its role beyond mere data tracking.
Graph/Table :



Conclusion
The mySugr® mobile application, paired with a connected blood glucose meter, significantly enhances T2DM management, achieving a mean HbA1c reduction of 1.31% over three months. Patients monitoring their glucose six or more times weekly experienced even greater reductions. The app's intuitive design enhances glucose control, boosts patient engagement, and strengthens communication with healthcare providers. These results highlight the critical role of technology in optimizing diabetes management and enhancing overall patient outcomes and quality of life.

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Estimation of miR126-3p Levels in Indian Diabetic Patients : Insights and Implications

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Keywords
Diabetes epigenetics • Pregnancy • Dyslipidaemia, lipoproteins

Background and Aims
Diabetes mellitus (DM) is a chronic condition characterized by impaired glucose regulation, leading to significant vascular complications. MicroRNAs, particularly miR-126, play a vital role in regulating vascular health and are emerging as potential biomarkers for diabetic vascular complications. The primary objective of this study is to **estimate and compare the levels of microRNA-126-3p (miR-126) among T2DM, GDM, prediabetic individuals, and healthy controls** to assess its potential as a biomarker for disease progression and vascular complications.
Materials and methods
An open-label, comparative observational study was conducted at Institute Of Medical Sciences, Banaras Hindu University from March 2023 to July 2024. A total of 100 participants were recruited and categorized into five groups: T2DM with complications (n=20), T2DM without complications (n=20), prediabetic (n=20), Gestational Diabetes Mellitus (n=20), and healthy controls (n=20). Blood samples were analysed for miR-126 expression using quantitative RT-PCR (qPCR). Statistical analyses, including Kruskal-Wallis H-tests and Mann-Whitney U tests, were used to compare miR-126 levels across the groups.
Results
Significant differences were observed in miR-126 levels between the control group and diabetic groups ($p<0.0001$). T2DM patients, particularly those with complications, had elevated miR-126 levels compared to healthy controls and prediabetic individuals. Regression analysis identified triglycerides (TGs) as a significant factor influencing miR-126 levels ($p=0.021$).

Graph/Table:

Statistics	Control	DM	CDM	GDM	Pre-Diabetic
Count	6	6	9	6	5
Mean	1.07	2.28	12.09	50.52	18.18
Standard Error	0.40	0.78	7.67	25.81	7.19
Median	0.67	1.79	6.05	21.31	27.35
Standard Deviation	0.97	1.92	23.00	63.23	16.07
Sample Variance	0.94	3.68	529.10	3998.02	258.18
Kurtosis	-1.85	-1.33	7.87	0.52	-3.17
Skewness	0.74	0.51	2.75	1.26	-0.52
Range	2.15	4.96	71.97	156.16	32.90
Minimum	0.26	0.12	0.07	2.82	0.50
Maximum	2.41	5.08	72.04	158.98	33.40
Sum	6.42	13.69	108.79	303.15	90.89
Confidence Level(95.0%)	1.02	2.01	17.68	66.36	19.95

Conclusion
MiR-126 levels were significantly elevated in diabetic patients, particularly those with vascular complications, suggesting its potential as a biomarker for early detection and disease monitoring. Further studies are warranted to confirm its clinical utility in managing diabetes-related vascular complications.

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IMPACT OF CLIMATE CHANGE ON DIABETES: A NARRATIVE REVIEW

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Keywords
Environmental factors (viruses, nutrients, toxins)

Background and Aims
Climate change poses significant risks to global health, especially for individuals with chronic conditions like diabetes. Elevated temperatures, mining and extreme weather events exacerbate health issues in people with diabetes.
Materials and methods
A systematic literature review was conducted using PubMed and Cochrane databases. Search terms included "diabetes," "climate change," "mining," "temperature change," and "extreme heat."
Results
Heat Stress and Diabetes: People with T2DM have impaired responses to heat stress due to compromised vasodilation, sweating, and related comorbidities like insulin resistance and chronic inflammation.High temperatures increase the risk of dehydration, heat stroke, and hospitalization.**Temperature Extremes and Glycemic Control:** Both high and low temperatures are associated with increased morbidity and mortality in diabetic patients. Higher ambient temperatures have been linked to increased hypoglycemia episodes in children and adolescents with type 1 diabetes due to faster insulin absorption.**Seasonal Variations and Gestational Diabetes Mellitus (GDM):** Seasonal variations influence the prevalence of GDM, with higher rates observed during summer months. Elevated ambient temperatures correlate with increased risk of GDM and adverse maternal glycemic outcomes. **Mining Activities and Environmental Impact:** Communities near mining operations face increased health risks, including higher prevalence of diabetes, due to environmental pollutants and disruption of local ecosystems
Conclusion
Climate change significantly impacts diabetes management by affecting glycemic control, increasing hospitalization risk, and exacerbating complications. These findings highlight the need for tailored prevention and management strategies to mitigate the adverse effects of climate change on diabetic patients. Policymakers and healthcare providers must consider these risks when developing public health interventions and support systems

P148

Impact and feasibility study of Remote Ischemic Preconditiong in prediabeic individuas

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Keywords
Prevention of type 2 diabetes • Insulin sensitivity and resistance

Background and Aims
Type II diabetes mellitus, is preceded by the stage of dysglycemia for many years. This state of dysglycemia is known as Prediabetes. It increases risk of cardiovascular disease. Annual incidence rate of diabetes: Isolated IGT is 4-6%, Isolated IFG is 6-9%, combined IFG and IGT is 10-15%.
Ischaemic preconditioning (IPC) is brief duration of ischemic episodes, followed by periods of reperfusion, which enhance the resistance to further ischemic damage and lead to tolerance of subsequent more severe ischemia. IPC isn't confined to the heart—it's a shield for multiple organs. From lungs to kidneys, brain to intestines, its protective effects are observed far and wide. This broad applicability underscores the universal power of preconditioning. Remote ischemic preconditioning imparts its cytoprotective effect by altering ion channel permeability, post translation modification of proteins, modifying gene expressions and de novo synthesis of proteins involving mTORC1 and autophagy like pathway. Mitochondrial modification, KATP channel permeability and mPTP closure play important role in improving beta cell life span and function.
Primary objective of my study is to assess impact and feasibility of Remote Ischemic Preconditioning (RIPC) in prediabetic individuals.
Materials and methods
Study design: A hospital based prospective single arm interventional study Study population: All the individuals, who were at high risk for developing Diabetes Mellitus, attending medicine OPD of AIIMS, Bhopal and satisfying eligibility criteria
Sample size : Since this is a pilot study, logistically feasible sample size is 100 (considering other parameters like alpha error, power and drop out rate)
Inclusion criteria : All patients with age ≥18 years attending general medicine OPD, satisfying the criteria of high risk for developing

Diabetes Mellitus and Fasting Blood Glucose level between100 mg/dL and 125mg/dL and willing to follow up were included.
Exclusion criteria : Patients with Diabetes Mellitus, uncontrolled hypertension, PVD, CVA, CAD, venous thromboembolism and smokers and alcoholics, and pregnancy.
Results
82% prediabetic individuals were having MetS. VAS is 0-2 (70% cases), 4-5(25% cases) and 6(5% cases). No patients has VAS >6. Changes in FBS value with RIPC sessions show significant changes($p < 0.001$). % of change in mean HbA1C value after 4 sessions of RIPC – 1.12% Complex analysis among operationally defined groups revealed , 51% shows decrease in HbA1C value, 17% didn't show any changes, 2h-OGTT value shows improvement.
Conclusion
It is becoming increasingly evident that RIPC emerges as tempting therapeutic approach for huge number of conditions. In our study, we try to establish the link between pathogenesis of β- cells dysfunction and protective molecular mechanism induced by RIPC that blocks the progression of β- cells dysfunction and hence prevents the advancement of prediabetic state to overt diabetes. RIPC is relatively inexpensive and non-invasive therapy. It requires less professional training as well as handy to use. In our study we use 4×5min arm ischemia/reperfusion preconditioning stimulus. In order to take advantage of its full potential, more studies need to be conducted.

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Hyperinsulinemia before 10 weeks of pregnancy is a better predictor of NCDs in future than disglycemia

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Keywords

- Pregnancy

Background and Aims
In our county India which was once following proper meal plan and hard work have now become more sedentary due to exposure to screens and moving on wheels with refined foods. Those days hyperglycemia in pregnancy (HIP) was once only T1DM passing through pregnancy with gestational diabetes mellitus (GDM) occurring in much later trimester purely due to diabetogenic stress of placental hormones. Now there is a paradigm shift with GDM prevailing right from the first trimester along with pre GDM (More T2DM passing through pregnancy and D detected for the first time during pregnancy) along with type 1 DM. This paradigm shift may be also due to late marriage, further delaying child and early age of occurrence of T2DM along with improper life style. All the above has increased HIP , more metabolic syndromes and non communicable diseases (NCDs) in both the mother and the child in spite of early universal screening and management of HIP. So we want to detect still early the IR and HI which is the root cause for all NCDs by an easy biomarker to prevent all the above.
To show that Hyperinsulinemia (HI) with insulin resistance (IR) due to improper lifestyle in the present adolescent females is an early and easy predictor of future NCDs in both the mother and child than dysglycemia at before 10 weeks of pregnancy.
Materials and methods
We selected 100 consecutive pregnant cases. Their routine height, weight – pre pregnancy & present, BMI, LMP, EDD, months of amenorrhea, family history, gravida, meal pattern, daily activity, etc were recorded. Those with prev GDM, BOH, any co morbidities, > than 10 weeks amenorrhea were excluded. They were all below 10 weeks amenorrhea.
We followed our National guidelines for diagnosing GDM along with C-peptide estimation also. We measured random Cpeptide irrespective of their meal.
Results
To our surprise C peptide was much high in most of the pregnant cases. Out of 100 GDM cases HI was present in 82 cases. There was high C-peptide but with normal BS in some pregnant women.. On following these normal cases without GDM but with hyperinsulinemia, many had some perinatal problems. Irrespective of their height, weight, BMI, majority had hyperinsulinemia mainly in those family history and sedentary lifestyle. Even normal weight with sedentary lifestyle had increased insulin level as denoted by raise in Cpeptide.
Conclusion
Our study clearly showed HI in early weeks may be a better predictor of not only GDM but also perinatal problems, obesity, metabolic syndrome & NCDs in the M& child in the future.

VISION STATEMENT

To be recognized as a global leader for clinical care, education, training, research, advocacy and capacity building in the field of diabetes.

MISSION STATEMENT

1. Promotion of excellence in diabetes care to make India the Diabetes Care Capital
2. Empowerment of persons living with diabetes
3. Support for diabetes research
4. Dissemination of information and knowledge in diabetes care
5. Advocacy for the cause of diabetology

NEW EXECUTIVE COMMITTEE AND OFFICE BEARERS 2023–2024

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TRAINEE GRANTS (Up to 10 grants)

Research Grants upto INR 200000 to support outstanding thesis/ research work by first year MD/DNB/ PHD students/Research fellows from India.

Eligibility Criteria
All Postgraduates in First year MD, DM /DNB from any of the institutions in the country are eligible to apply

How to apply?
Upload your Research proposals on the RSSDI Online Research Grant Platform.

Research proposal should have following proofs-

1. A supporting letter from your guide/ head of department stating that this is a bonafide project for your thesis and also mentioning the dates of you joining the program and expected date of graduation. The guide must also state that he/she will stand guarantee for the work done
2. A detailed budget
3. Thesis proposal approved by the department/appropriate institutional authority
4. Approval by the ethics committee

Selection Process
Proposals will be reviewed by the research committee of the RSSDI.

Disbursement of Grant
20% of the grant amount will be disbursed initially. 30% of payment after receiving your project status report and utilisation of sanctioned amount, 25% on further completion and pending 25% on final submission of your project. All reports must be uploaded on the RSSDI Online Research Grant Platform.

Responsibility:
All grant awardees are expected to present their work at RSSDI Annual Conference during research presentation's session. Failure to file progress reports annually and when requested by the RSSDI and failure to present progress at RSSDI Annual conference may result in the forfeiture of the grant.

All awardees are expected to follow the tenets of responsible and ethical conduct of research. Unethical or fraudulent use of RSSDI research funds will warrant adverse action from the society including forfeiture of grant, black listing in the society's databases and other legal recourses that are available to the society.

Publication
The RSSDI expects that the grant source be acknowledged in all publications and submissions made with regards to the research done with the grant.

All awardees are encouraged to submit their work to the RSDDI Journal IJDDC

CALL for RESEARCH PROPOSALS for GRANTS (up to 5 lacs)

Research proposals are invited from Indian scientists, who are members of RSSDI interested in conducting research in the field of Diabetes, Endocrinology& Metabolism, for funding by RSSDI

The proposals may of clinical or translational research importance. A maximum grant amount of INR 5 Lakhs will be sanctioned. All grants will be reviewed by the research committee.

The detailed proposals should include the following:
Title, names of principal and co investigators, summary, introduction/ background, review of literature, aims, methodology, study design and detailed plan of work & bibliography.

Brief biodata of principal investigator and other co-investigators.

Importance of work
Detailed Budget sought along with full justification/ proposed utilization, of funding sought from RSSDI

Whether the project is being partly funded from any other source? If yes, please mention the source and the amount received.

Ethics Committee clearance of the Institution or other bonafide body.

How to apply
Upload your Research proposals on the RSSDI Online Research Grant Platform.

When to apply
Proposals will be accepted every quarter of a year. The first month will be for the proposal submission, the second month for the scrutiny of the submitted proposals and the third month for the grant disbursement. This cycle will repeat for each quarter.

MAJOR RESEARCH GRANT PROPOSALS- usually not more than one at a given time.

Above 10 Lacs upto a total amount of 50 Lacs will be Granted to RSSDI initiated, owned, multi-centric, clinical or translational research, having long term application of scientific and clinical findings, which can translate into strategies for improving health-care delivery, patient outcomes, and community health in India.

Such research proposals will be carried out in only centres with research capabilities across India.

TRAVEL GRANTS FOR YOUNG DIABETES RESEARCHERS TO ATTEND INTERNATIONAL CONFERENCES

Criteria for the travel grant are as follows:

- Applicant should apply 2 months in advance.
- Travel Grant is open only to the RSSDI members.
- Applicant should submit Oral paper / Poster acceptance document to RSSDI Secretariat.
- Applicant should submit Declaration that he/she has not receiving grant from any other agency / Organization – In case of receiving grant from any other Organization, RSSDI shall pay only the exceeding amount not covered by that agency.

ADVANCED CERTIFICATE COURSE IN DIABETOLOGY

(IN ASSOCIATION WITH JAIPUR NATIONAL UNIVERSITY)

Research Society for the Study of Diabetes in India (RSSDI) was founded by Prof. M.M.S. Ahuja in 1972. RSSDI is the largest body of professional doctors and researchers in Asia, working in the area of Diabetes & is the National Body recognized by IDF (International Diabetes Federation). One of the key areas of focus is to train doctors at all levels to better manage Diabetes and its complications. RSSDI recognizes this problem and runs a well-structured, full time, residential "Advanced Certificate Course in Diabetology". This two-year course is like any other post graduate course and has immensely helped doctors to practice better diabetes care. RSSDI has

List of RSSDI Accredited Centres

Sl. No	Institute Name	Institute Location
1.	Diacon Hospital	Bangalore, Karnataka
2.	North Delhi Diabetes Centre	New Delhi, Delhi
3.	Prithvi Hospital	Tumkur, Karnataka
4.	Total Diabetes Hormone Institute	Indore, Madhya Pradesh
5.	Dia Care - A Complete Diabetes Care Centre	Ahemdabad, Gujarat
6.	Sonal Diabetes Hospital	Surat, Gujarat
7.	Jothydev's Diabetes and Research Center	Trivandrum, Kerala
8.	Advanced Endocrine & Diabetes Hospital	Hyderabad, Telangana
9.	Sunil's Diabetes Care N' Research Centre	Nagpur, Maharashtra
10.	Marwari Hospital and Research Centre	Guwahati, Assam
11.	Down Town Hospital	Guwahati, Assam
12.	St.Theresa's Hospital	Hyderabad, Telangana
13.	Aegle Clinic	Pune, Maharashtra
14.	Lilavati Hospital & Research Centre	Bandra West, Mumbai
15.	Srajan Hospital	Udaipur, Rajasthan
16.	Endeavour Clinics & Dr. Sambit's Centre of Diabetes and Endocrinology	Bhubaneswar, Odisha
17.	ILS Hospital, Salt Lake	Salt Lake City, Kolkata
18.	Belle Vue Clinic	Dr. U N Brahmachari Sreet, Kolkata
19.	Arthur Asirvatham Hospital	Mdurai, Tamil Nadu
20.	M V Hospital for Diabetes	Chennai, Tamilnadu
21.	Sarvodaya Hospital and Research Centre	Faridabad, Uttar Pradesh