

Diabetes Current Awareness Bulletin

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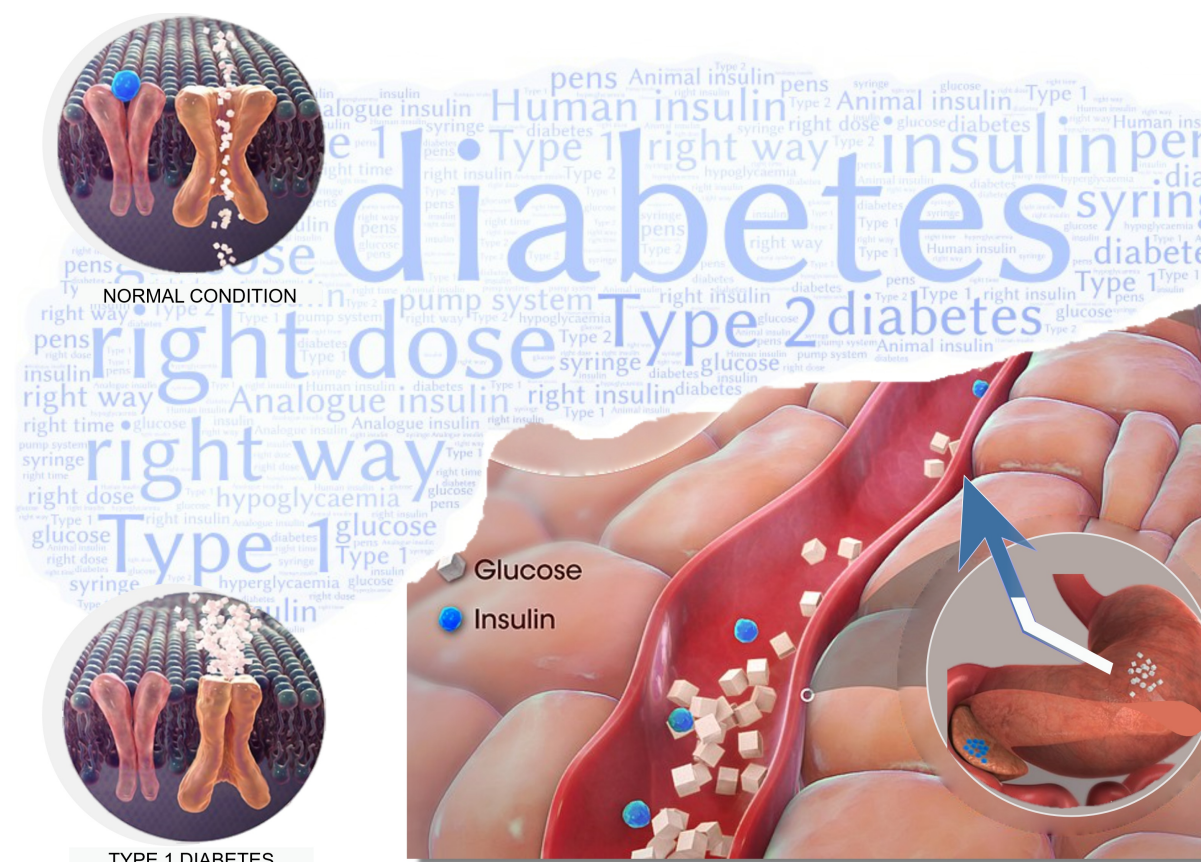
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General

Articles

Title: Bidirectional temporal relationship between obesity and hyperinsulinemia: longitudinal observation from a Chinese cohort

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e002059

Author(s): Xu C., et al.

Introduction: Although obesity and hyperinsulinemia are closely intercorrelated, their temporal sequence is still uncertain. This study aims to investigate the temporal relationship patterns between obesity measures and hyperinsulinemia in Chinese adults.

Freely available online

Title: Development and validation of a diabetes mellitus treatment adherence scale

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108629.

Author(s): Hou G., et al.

Aims: The aim of this study was to develop a Diabetes Mellitus Treatment Adherence Scale (DMTAS) to fill the gap in the internationally accepted comprehensive scale.

Title: Diabetes, metabolic disease, and telomere length

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), pp.117-126.

Author(s): Cheng F., et al.

Abstract: Telomeres are regions of repetitive nucleotide sequences at the ends of chromosomes. Telomere length is a marker of DNA damage, which is often considered a biomarker for biological ageing, and has also been linked with cardiovascular disease, diabetes, and cancer. Emerging studies have highlighted the role of genetic and environmental factors, and explored the effect of modulating telomere length. We provide an overview of studies to date on diabetes and telomere length, and compare different methods and assays for evaluating telomere length and telomerase activity. We highlight the limitations of current studies and areas that warrant further research to unravel the link between diabetes and telomere length. The value of adding telomere length to clinical risk factors to improve risk prediction of diabetes and related complications also merits further investigation.

Title: Frailty measurement, prevalence, incidence, and clinical implications in people with diabetes: a systematic review and study-level meta-analysis.

Citation: *The Lancet Healthy Longevity* 2020;1(3):E106-E116.

Author(s): Hanlon P.

Abstract: Frailty, a state of increased vulnerability to adverse health outcomes, is important in diabetes management. We aimed to quantify the prevalence of frailty in people with diabetes, and to summarise the association between frailty and generic outcomes (eg, mortality) and diabetes-specific outcomes (eg, hypoglycaemia).

Freely available online

Title: The impact of periodontal treatment on healthcare costs in newly diagnosed diabetes patients: Evidence from a German claims database

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108641.

Author(s): Blaschke K., et al.

Aims: There is sufficient scientific evidence for the bidirectional association between periodontal diseases and diabetes. In this context, we hypothesized that periodontal treatment leads to lower healthcare costs in newly diagnosed diabetes patients by promoting a milder disease course.

Title: Incretin based therapies and SGLT-2 inhibitors in kidney transplant recipients with diabetes: A systematic review and meta-analysis

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108604.

Author(s): Oikonomaki D., et al.

Aims: We aimed to conduct a systematic review and meta-analysis regarding the use of incretin-based therapies including dipeptidyl peptidase-4 (DPP-4) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists as well as sodium-glucose co-transporter-2 (SGLT2) inhibitors in persons with posttransplantation diabetes mellitus (PTDM) so as to assess both their efficacy and safety.

Title: The International Diabetes Federation's guide for diabetes epidemiological studies

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108630.

Author(s): Aschner P., et al.

Abstract: The global prevalence of diabetes mellitus has been increasing steadily for over 50 years and has now reached pandemic proportions. The prevalence of both diagnosed and undiagnosed diabetes was estimated to be 9.3% (463 million people) in 2019, and is projected to rise to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045 [1]. The rising prevalence of diabetes is related to aging populations and wider adoption of unhealthy life-styles, resulting in a higher

prevalence of obesity [2] . In 2006, the United Nations Resolution 61/225 encouraged all nations to develop national policies for the prevention, care and treatment of diabetes to reduce the growing threat from the pandemic [3] . A pre-requisite to achieving this common goal, and to be able to demonstrate the impact of new policies, is the capability to measure the distribution of diabetes (prevalence and incidence) and its determinants (risk factors), as well as its consequences including complications, premature mortality, reduced quality of life and increased health expenditure.

Title: Management of patients with diabetes and obesity in the COVID-19 era: Experiences and learnings from South and East Europe, the Middle East, and Africa

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108617.

Author(s): Giorgino F., et al.

Abstract: The COVID-19 pandemic has had a major effect on healthcare during 2020. Current evidence suggests that, while individuals with diabetes and obesity are no more prone to SARS-CoV-2 infection than those without, the risk of hospitalisation if someone has diabetes or obesity and then contracts COVID-19 is three times higher – and 4.5 times higher if they have diabetes and obesity. We assembled a panel of experts from South and East Europe, the Middle East, and Africa to discuss the challenges to management of diabetes and obesity during and post the COVID-19 pandemic. The experience and learnings of this panel cover a heterogeneous patient population, wide range of clinical settings, healthcare organisations, disease management strategies, and social factors. We discuss the importance of timely and effective disease management via telemedicine, providing reassurance and guidance for patients unable or unwilling to visit healthcare settings at this time. We address the use of novel therapies and their role in managing diabetes and obesity during the pandemic, as well as the importance of controlling hypoglycaemia and preventing cardiovascular complications, particularly in vulnerable people. Finally, we consider post-COVID-19 management of diabetes and obesity, and how these learnings and experiences should impact upon future clinical guidelines.

Title: New-Onset Diabetes in COVID-19: Time to Frame Its Fearful Symmetry

Citation: *Diabetes Therapy* 2021, 12(2):461-464.

Author(s): Papachristou S., et al.

Abstract: There is increasing evidence that coronavirus disease 2019 (COVID-19) may lead to new-onset diabetes mellitus (DM). This may occur even in patients without predisposing factors for impaired glucose metabolism. Both impaired pancreatic insulin secretion and insulin resistance have been implicated as underlying mechanisms. Importantly, new-onset hyperglycaemia is associated with worse prognosis in patients with COVID-19. Indeed, its prognosis may be even more sinister than in patients with pre-existing DM. More research data and knowledge are currently being collected to improve our insights into this constellation and to guide therapies in clinical reality.
Freely available online

Title: Observational research on severe COVID-19 in diabetes

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), pp.56-57.

Author(s): Stehouwer CDA.

Abstract: Older age is by far the strongest risk factor for severe COVID-19, followed by deprivation, non-white ethnicity, male sex, and chronic medical conditions. 1 Such information can guide protection and vaccination strategies, and can provide leads for causal inference and development of novel treatments.

Title: Prevalence of diabetes and pre-diabetes in Greece. Results of the First National Survey of Morbidity and Risk Factors (EMENO) study

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108646.

Author(s): Makrilakis K., et al.

Aims: To report the results of the first national Health Examination Survey (HES) on the prevalence of diabetes, its pharmacologic treatment and level of control, as well as pre-diabetes in Greece.

Title: Prevalence of diabetes, management and outcomes among Covid-19 adult patients admitted in a specialized tertiary hospital in Riyadh, Saudi Arabia

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108538.

Author(s): Sheshah E., et al.

Abstract: This retrospective study aimed to characterize comorbidities and associated with mortality among hospitalized adults with Covid-19 managed as per the Saudi Ministry of Health protocol in a specialized tertiary hospital in Riyadh, Saudi Arabia. Medical records of 300 adult patients with PCR-confirmed SARS-CoV2 infection and admitted in King Salman Hospital (KSH) from May 1 to July 31, 2020 were included. Medical history, management and outcomes were noted. Males significantly outnumber females (259 versus 41). South Asians comprise 41% of all admitted patients. Mortality rate was 10% and highest among Saudi males (28.9%). Type 2 diabetes mellitus (T2DM) was the most common comorbidity (45.7%). Almost all patients (99%) had pneumonia. Patients > 50 years were three times more likely to die (confidence interval, CI 1.3–6.9; $p = 0.01$) from Covid-19. Congestive heart failure (odds ratio OR 19.4, CI-1.5–260.0; $p = 0.02$) and acute kidney injury (OR 11.7, CI-4.7–28.6; $p < 0.001$) were significantly associated with higher mortality. Dexamethasone use significantly improved the final outcome based on net reclassification improvement (NRI) and integrated discrimination improvement (IDI) ($p < 0.05$). In this single-center study, T2DM was very common among hospitalized Covid-19 patients. Patients > 50 years, those with congestive heart failure and acute kidney injury are at higher risk for worse Covid-19 outcome.

Title: Ramadan fasting and diabetes 2019: The year in review

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108593.

Author(s): Beshyah SA., et al.

Introduction: The literature on health aspects of Ramadan fasting is widely spread in many journals making it not readily available to those interested in the subject.

Materials and Methods: A narrative, non-systematic review of the international literature from two major online databases (viz. Scopus, PubMed) in one year (2019). The search term “Ramadan fasting AND Diabetes” was used, and relevant literature was narrated in a concise thematic account.

Results: Research design included qualitative, quantitative, and mixed methods. Articles included controlled trials, critical appraisals, literature narrations, and systematic reviews, and meta-analyses. The publications spanned a vast array of topics related to Ramadan fasting, including assessments of current safety and efficacy profiles of newer diabetes therapies, modes of insulin delivery, and utilization of advanced technology for the treatment and monitoring of blood glucose during Ramadan fasting. Increased interest was particularly evident in capturing the experience element manifested by perceptions, attitudes, and practices of both patients and healthcare professionals during Ramadan. The current literature consolidates previous data on the safety of fasting practices amongst the well-controlled. On the other hand, it emphasizes the need for more aggressive interventions for high-risk patients, promoting the usage of newer anti-diabetic agents and advanced glucose monitoring technology for safer fasting practices.

Conclusions: The volume of global literature production related to Ramadan fasting and Diabetes remains modest. Observational studies of small size prevail. Greater improvements in both quality and quantity of research on Ramadan are needed.

Title: Risks of and risk factors for COVID-19 disease in people with diabetes: a cohort study of the total population of Scotland

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), pp.82-93.

Author(s): McGurnaghan SJ., et al.

Background: We aimed to ascertain the cumulative risk of fatal or critical care unit-treated COVID-19 in people with diabetes and compare it with that of people without diabetes, and to investigate risk factors for and build a cross-validated predictive model of fatal or critical care unit-treated COVID-19 among people with diabetes.

Title: The role of the microbiome in diabetes mellitus

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108645.

Author(s): Zhang S., et al.

Abstract: The microbiome is greatly significant for immune system development and homeostasis. Dysbiosis in gut microbial composition and function is linked to immune responses and the development of metabolic diseases, including diabetes mellitus (DM). However, skin microbiome changes in diabetic patients and their role in DM are poorly elucidated. In this review, we summarize recent findings about the association between the gut and skin microbiota and DM, highlighting their roles in the proinflammatory status of DM. Moreover, although there is evidence that the connection between the gut and skin causes the same activated innate immune response, additional studies are needed to explore the mechanism. These findings might inform future DM prevention, diagnosis and treatment.

Children with diabetes

Articles

Title: Effectiveness and equity of continuous subcutaneous insulin infusions in pediatric type 1 diabetes: A systematic review and meta-analysis of the literature

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108643.

Author(s): Dos Santos T.J., et al.

Aims: We conducted a systematic review and meta-analysis of randomized controlled trials (RCT) and non-randomized studies (NRS) to assess the effectiveness and equity of continuous subcutaneous insulin infusions (CSII) versus multiple-daily injections (MDI) on glycemic outcomes.

Co-morbidities (find here cardiovascular, kidney disease, neuropathy, diabetic retinopathy etc)

Artery Disease

Articles

Title: When diabetes encounters chronic limb-threatening ischemia: Sweet life with a foot left behind?

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107801.

Author(s): Takahara M.

Abstract: Chronic limb-threatening ischemia (CLTI), or formally so-called critical limb ischemia (CLI), is the most advanced form of peripheral artery disease. 1234 Patients with CLTI have an extremely poor prognosis, and a timely revascularization, either surgical reconstruction or endovascular therapy, is often required. Diabetes mellitus is a key comorbidity of CLTI, 5 but there is insufficient evidence as to its impact on clinical outcomes in the population. In this issue of the Journal, Lilja and colleagues report the prognostic impact of diabetes mellitus in CLTI patients undergoing elective endovascular therapy, offering new evidence in this field. 6 The authors used a database of the Swedish National Registry for Vascular Surgery (Swedvasc), one of the largest reliable registries of vascular interventions in the world, and investigated its prognostic impact, adopting the propensity score method.

Cardiovascular Disease

Articles

Title: Does background metformin therapy influence the cardiovascular outcomes with SGLT-2 inhibitors in type 2 diabetes?

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108536.

Author(s): Singh AK., Singh R.

Abstract: Metformin has been recommended as a first-line antidiabetic drug (ADD) for all patients with type 2 diabetes even in the presence of high cardiovascular (CV) risk by American Diabetes Association. In contrast, European Society of Cardiology recommends either a sodium-glucose co-transporter-2 inhibitors (SGLT-2i) or a glucagon-like peptide-1 receptor agonists as a first-line ADD, in presence of high CV risk. While this discordant recommendation has created a debate, we sought to find whether background metformin therapy influences the CV outcomes with SGLT-2i. We pooled the hazard ratio and 95% confidence interval of three-point composite major adverse cardiovascular events (3P-MACE) of 3 CV outcome trials (CVOTs) from the subgroup analysis based on outcomes with or without background metformin therapy. Subsequently, we conducted a meta-analysis by applying the inverse variance-weighted averages of pooled logarithmic hazard ratio, using a random-effects analysis. While this meta-analysis found a significant reduction in 3P-MACE with SGLT-2i without background metformin therapy (N = 7,233; HR 0.79; 95% CI, 0.69–0.90; p < 0.01; I² = 0.0%), no significant reduction in 3P-MACE was observed with SGLT-2i in presence of background metformin therapy (N = 27,081; HR 0.94; 95% CI, 0.86–1.02; p = 0.13; I² = 0.0%) with a significant P heterogeneity of 0.03 between the two groups. Similar finding was observed from the pooled results from 4 CVOTs. This may suggest that background metformin therapy may undermine the 3P-MACE benefit of SGLT-2i. However, no such interaction was observed in a recent meta-analysis of SGLT-2i, with or without background metformin therapy. Future research is warranted to understand the CV interaction of metformin with SGLT-2i.

Diabetic Neuropathy

Articles

Title: A Consideration of the Psychological Aspects to Managing Patients with Painful Diabetic Neuropathy: An Insight into Pain Management Services at a Tertiary Centre in the UK

Citation: *Diabetes Therapy* 2021, 12(2):487-498.

Author(s): Twiddy H., Frank B., Alam U.

Abstract: Painful diabetic neuropathy (pDN) is characterised by both sensory and affective disturbances, suggesting a complex bidirectional relationship of neuropathic pain and mood disorders. Data on pDN indicate that neuropathic pain reduces quality of life, including mood and physical and social functioning. Depression and pain coping strategies such as catastrophising and social support predict pain severity. There is a significant and reciprocal relationship between depressed mood and increased pain. The key features of assessing people with neuropathic pain in relation to psychological aspects of their health are discussed in the context of management in a tertiary pain management centre (The Walton Centre, Liverpool, UK) including cognitive behavioural interventions amongst others to improve the quality of life in patients with pDN. We consider psychological issues as a factor influencing treatment and outcome in patients with pDN.

Freely available online

Title: Widespread sensory neuropathy in diabetic patients hospitalized with severe COVID-19 infection

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108631.

Author(s): Odriozola A., et al.

Aims: To characterize the distribution and severity of sensory neuropathy using a portable quantitative sensory testing (QST) device in diabetic patients (DM) hospitalized with severe COVID-19 infection.

Diabetic Retinopathy

Articles

Title: Metabolomics-based multidimensional network biomarkers for diabetic retinopathy identification in patients with type 2 diabetes mellitus

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001443

Author(s): Zuo J., et al.

Introduction: Despite advances in diabetic retinopathy (DR) medications, early identification is vitally important for DR administration and remains a major challenge. This study aims to develop a novel system of multidimensional network biomarkers (MDNBs) based on a widely targeted metabolomics approach to detect DR among patients with type 2 diabetes mellitus (T2DM) efficiently.

Freely available online

Kidney Disease

Articles

Title: Can patterns of medication use explain the increasing incidence of end stage kidney disease among people with diabetes in Australia?

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108635.

Author(s): Buyadaa O., et al.

Aims: Recently, an increase in the incidence of end-stage kidney disease (ESKD) among people with type 2 diabetes (T2D) aged < 50 years and ≥ 80 years has been observed in Australia. We examined whether patterns of medication use are likely to explain these trends.

Title: Cross-sectional and longitudinal associations between dipstick hematuria and chronic kidney disease in patients with type 2 diabetes

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108519.

Author(s): Yoshida N., et al.

Aims: To examine the association of dipstick hematuria with kidney function and albuminuria in patients with type 2 diabetes (T2D).

Title: Diabetes status modifies the efficacy of home-based kidney care for Zuni Indians in a randomized controlled trial

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107753.

Author(s): Pankratz VS., et al.

Background: Home-Based Kidney Care (HBKC) is a pragmatic treatment approach that addresses patient preferences and cultural barriers to healthcare. We previously reported the results of a clinical trial of HBKC vs. usual care in a cohort of Zuni Indians in New Mexico. This study investigated the potential for differential efficacy of HBKC vs. usual care according to type 2 diabetes (T2DM) status.

Title: Hepatic and cardiovascular safety of acarbose among type 2 diabetes patients with end-stage renal disease: A nationwide population-based longitudinal study

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108489.

Author(s): Lin WH., et al.

Aim: To assess the relationship between acarbose and hepatotoxicity, cardiovascular disease (CVD), and mortality among type 2 diabetes (T2D) patients with end-stage renal disease (ESRD).

Title: Linear Projection of Estimated Glomerular Filtration Rate Decline with Canagliflozin and Implications for Dialysis Utilization and Cost in Diabetic Nephropathy

Citation: *Diabetes Therapy* 2021, 12(2):499-508.

Author(s): Durkin M., Blais J.

Introduction: Diabetes is a common cause of end-stage kidney disease leading to dialysis or kidney transplantation. Estimated glomerular filtration rate (eGFR) measures kidney function, and differences in the rate (slope) of eGFR decline can be used to assess treatment effects on kidney function over time. In the CREDENCE trial, the sodium glucose co-transporter 2 inhibitor canagliflozin slowed the rate of eGFR decline by 60% compared to placebo in patients with diabetes and chronic kidney disease. This analysis utilized eGFR slopes from CREDENCE to estimate the difference in time to dialysis by treatment arm and estimated the economic value of that delay.

Freely available online

Title: Monitoring and management of hyperglycemia in patients with advanced diabetic kidney disease

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107774.

Author(s): Escott GM., et al.

Abstract: Diabetes mellitus is the leading cause of end-stage renal disease, and uncontrolled hyperglycemia is directly related to the increased mortality in this setting. As kidney function decreases, it becomes more challenging to control blood glucose since the risk of hypoglycemia increases. Decreased appetite, changes in glycaemia homeostasis, along with reduced renal excretion of anti-hyperglycemic drugs tend to facilitate the occurrence of hypoglycemia, despite the paradoxical occurrence of insulin resistance in advanced kidney disease. Thus, in patients using insulin and/or oral anti-hyperglycemic agents, dynamic adjustments with drug dose reduction or drug switching are often necessary. Furthermore, in addition to consider these pharmacokinetics alterations, it is of utmost importance to choose drugs with proven cardio-renal benefits in this setting, such as sodium-glucose co-transporter 2 inhibitors and glucagon-like peptide 1 receptor agonists. In this review, we summarize the indications and contraindications, titration of doses and side effects of the available anti-hyperglycemic agents in the presence of advanced diabetic kidney disease (DKD) and dialysis, highlighting the risks and benefits of the different agents. Additionally, basic renal function assessment and monitoring of glycemic control in DKD will be evaluated in order to guide the use of drugs and define the glycemic targets to be achieved.

Title: Nephrotic range proteinuria associated with focal segmental glomerulosclerosis reversed with pioglitazone therapy in a patient with Dunnigan type lipodystrophy

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108620.

Author(s): Sharma A., et al.

Abstract: Familial partial lipodystrophy (FPLD) is a rare disorder associated with severe insulin resistance, hypertriglyceridemia, low serum HDL cholesterol and proteinuric renal disease. Although proteinuric renal disease is not common among in patients with partial lipodystrophy, we report a patient with Dunnigan type FPLD complicated by nephrotic syndrome which resolved following treatment with the PPAR γ agonist pioglitazone, CPAP, diet, and exercise.

Title: SLC30A7 has anti-oxidant stress effects in high glucose-induced apoptosis via the NFE2L2/HMOX1 signal transduction pathway

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108445.

Author(s): Zhang X., et al.

Aims: Apoptosis and oxidant stress are known to be involved in the pathogenesis of diabetic kidney disease (DKD). We have previously reported that zinc transporter 7 in SLC30 family (SLC30A7) inhibits apoptosis in rat peritoneal mesothelial cells under high glucose (HG) conditions. In the current study, we aimed to investigate whether SLC30A7 had effect for anti-oxidant stress in renal tubular epithelial cells under HG.

Complications (find here atherosclerosis, claudication, diabetic foot, ulcers etc)

Diabetic Foot

Articles

Title: Behaviour change approaches for individuals with diabetes to improve foot self-management: a scoping review.

Citation: *Journal of Foot and Ankle Research* 2021;14(1):1 .

Author(s): Paton J., et al.

Abstract: This review charted the evidence for interventions promoting diabetic foot self-management through a theoretical behaviour change perspective. A core set of behaviour change activities and intervention functions associated with positive changes in behaviour were identified. This information will provide researchers with a useful basis for developing self-management interventions.

Freely available online

Title: Comparison of the risk of SGLT2is and NonSGLT2is in leading to amputation: A network meta-analysis

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107803.

Author(s): Qiu M., et al.

Objective: Whether sodium-glucose cotransporter 2 inhibitors (SGLT2is) increase the risk of amputation or not remains controversial. We aimed to evaluate the relative risk of different SGLT2is and Non-SGLT2i antihyperglycemic drugs (NonSGLT2is) in leading to amputation by network meta-analysis of large sample studies.

Title: Cumulative long-term recurrence of diabetic foot ulcers in two cohorts from centres in Germany and the Czech Republic

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108621.

Author(s): Ogurtsova K., et al.

Aims: Our aim was to comprehensively estimate the incidence of diabetic foot ulcer (DFU) recurrence and corresponding risk factors in two cohorts.

Title: Diabetic ankle fracture complications: a meta-analysis.

Citation: *Foot and Ankle Surgery* 2021;; doi: 10.1016/j.fas.2020.10.015.

Author(s): Lopez-Capdevila L., et al.

Abstract: This meta-analysis provides evidence that diabetic patients are at a greater risk of complication after an ankle fracture.

Title: Diabetes-related foot disease in Australia: a systematic review of the prevalence and incidence of risk factors, disease and amputation in Australian populations.

Citation: *Journal of Foot and Ankle Research* 2021;;doi: 10.1186/s13047-021-00447-x..

Author(s): Zhang Y., et al.

Abstract: Our review suggests a similar risk factor prevalence, low but uncertain DFD prevalence, and high DFD-related hospitalisation and amputation incidence in Australia compared to international populations. These findings may suggest that a low proportion of people with risk factors develop DFD, however, it is also possible that there is an underestimation of DFD prevalence in Australia in the few limited studies, given the high incidence of hospitalisation and amputation because of DFD.]
Freely available online

Title: The effects of felted foam in diabetic foot treatment: systematic review with meta-analysis.

Citation: *Revista da Escola de Enfermagem da U S P* 2020;54:e03640.

Author(s): Meneses JCBC., et al.

Abstract: Higher reduction of plantar pressure was observed to be associated with the use of felt. Development of new models of relief orthosis with felted foam for plantar pressure is recommended, along with more clinical research elucidating related outcomes.
Freely available online

Title: Efficacy of hyperbaric oxygen therapy for diabetic foot ulcer, a systematic review and meta-analysis of controlled clinical trials.

Citation: *Scientific Reports* 2021;11(1):2189.

Author(s): Sharma R., et al.

Abstract: This review provides an evidence that hyperbaric oxygen therapy is effective as an adjunct treatment measure for the diabetes foot ulcers. These findings could be generalized cautiously by considering methodological flaws within all studies.
Freely available online

Title: Foot disease and physical function in older adults: A systematic review and meta-analysis.

Citation: *Australasian Journal on Ageing* 2020;;doi: 10.1111/ajag.12892.

Author(s): Iseli RK., et al.

Abstract: Foot disease is associated with poorer physical function in older adults. Future research should include broader study populations and intervention strategies.

Title: The impact of diabetes mellitus on major amputation among patients with chronic limb threatening ischemia undergoing elective endovascular therapy- a nationwide propensity score adjusted analysis

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107675.

Author(s): Lilja E., et al.

Aim: To investigate the risk of major amputation after elective endovascular therapy in patients with chronic limb threatening ischemia (CLTI) comparing patients with and without diabetes mellitus (DM).

Title: In-shoe pressure thresholds for people with diabetes and neuropathy at risk of ulceration: A systematic review.

Citation: *Journal of Diabetes and its Complications* 2020;;doi: 10.1016/j.jdiacomp.2020.107815.

Author(s): Jones P., et al.

Abstract: Five in-shoe pressure thresholds were identified, which are employed to reduce the risk of diabetes-related foot ulceration: a mean peak pressure threshold of 200 kPa used in conjunction with a 25% baseline reduction target; a sustained pressure threshold of 35 mm Hg, a threshold matrix based on risk, shoe size and foot region, and a 40-80% baseline pressure reduction target.

Title: Long-term Mortality After Nontraumatic Major Lower Extremity Amputation: A Systematic Review and Meta-analysis.

Citation: *Journal of Foot and Ankle Surgery* 2020;;doi: 10.1053/j.jfas.2020.06.027.

Author(s): Meshkin DH., et al.

Abstract: Mortality after nontraumatic major lower extremity amputation is high, both in patients with diabetes as well as those without. Methods used to measure and report mortality are inconsistent, lack reliability, and may underestimate true mortality rates. These findings illustrate the need for a paradigm shift in wound management and improved outcomes reporting. A focus on amputation prevention and care within a multidisciplinary team is critical for recalcitrant ulcers.

Title: Reviving the debate: Articular cartilage preservation during disarticulation at the lower limb? A systematic review.

Citation: *Foot and Ankle Surgery* 2020;;doi: 10.1016/j.fas.2020.12.010.

Author(s): Aerden LK., et al.

Abstract: There is no difference in wound healing, functionality and mortality between the preservation and removal of articular cartilage in the lower limb.

Guidelines

Title: The VAC Veraflo Therapy system for acute infected or chronic wounds that are failing to heal.

Citation: National Institute for Health and Care Excellence (NICE); 2021.

<https://www.nice.org.uk/guidance/mtg54>

Abstract: 1 Recommendations 1.1 The VAC Veraflo Therapy system shows promise for treating acute infected or chronic wounds that are not healing. However there is not enough good-quality evidence to support the case for routine adoption. 1.2 Research in the form of a randomised controlled trial is recommended to show clinically meaningful benefits for the VAC Veraflo Therapy system compared with negative pressure wound therapy alone. A key outcome should be time to wound closure.

Freely available online

Diabetic Gastroparesis

Articles

Title: Diabetic gastroparesis: An overview of pathogenesis, clinical presentation and novel therapies, with a focus on ghrelin receptor agonists

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107733.

Author(s): Petri M., et al.

Abstract: Diabetic gastroparesis is defined as delayed gastric emptying without mechanical obstruction in the setting of diabetes. Symptoms range from mild bloating to severe vomiting episodes and can result in frequent hospitalizations and poor quality of life. It is suspected that diabetic gastroparesis is underdiagnosed due to its similar presentation to other conditions such as gastroesophageal reflux disease. The pathogenesis of diabetic gastroparesis remains unclear, but proposed mechanisms include vagal dysfunction, hyperglycemia, interstitial cells of Cajal network disturbances, loss of neural nitric oxide synthase expression in the myenteric plexus, and oxidative stress. Current management for diabetic gastroparesis focuses on dietary and lifestyle changes as well as improved glycemic control. Limited options for medical therapies are available that include prokinetic and antiemetic medications. Metoclopramide is the only FDA-approved medication for the treatment of gastroparesis. Metoclopramide improves symptoms of gastroparesis although extended treatment presents challenges such as decreased efficacy over time and increased risks for adverse

events. We summarize the current knowledge of the pathophysiology of diabetic gastroparesis and review current and investigational treatments for diabetes gastroparesis.

Diabetic Ketoacidosis

Articles

Title: Incidence and determinants of hypophosphatemia in diabetic ketoacidosis: an observational study

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e002018

Author(s): Van der Vaart A., et al.

Introduction: Diabetic ketoacidosis (DKA) is a life-threatening complication of type 1 diabetes mellitus (T1DM) characterized by hyperglycemia and metabolic acidosis. Hypophosphatemia in DKA often occurs during hospital admittance for DKA. Literature on the magnitude, determinants and consequences of hypophosphatemia in DKA is scarce. Primary aim of this study was to investigate the incidence and consequences of hypophosphatemia during hospitalisation for DKA.

Freely available online

Diabetes and pregnancy

Articles

Title: Associations of pre-pregnancy impaired fasting glucose and body mass index among pregnant women without pre-existing diabetes with offspring being large for gestational age and preterm birth: a cohort study in China

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001641

Author(s): Tang J., et al.

Introduction: Associations of pre-pregnancy impaired fasting glucose (IFG) and body mass index (BMI) with large for gestational age (LGA) and preterm birth (PTB) have been poorly understood. We aimed to investigate the associations of maternal BMI, separately and together with pre-pregnancy IFG, with LGA and PTB in Chinese population. We also aimed to quantify these associations by maternal age.

Freely available online

Title: Genetic variants of TCF7L2 gene and its coherence with metabolic parameters in Lithuanian (Kaunas district) women population with previously diagnosed gestational diabetes mellitus compared to general population

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108636.

Author(s): Francaite-Daugeliene M., et al.

Objective: To determine the association of genetic variants rs7901695, rs7903146, rs7895340, rs11196205, rs12255372 of transcription factor 7 like 2 (TCF7L2) gene and its coherence with metabolic parameters in Lithuanian (Kaunas district) women population with previously diagnosed gestational diabetes mellitus (GDM) and to compare the prevalence of TCF7L2 single nucleotide polymorphism (SNP) results to general population.

Title: Increasing prevalence of gestational diabetes mellitus when implementing the IADPSG criteria: A systematic review and meta-analysis

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108642.

Author(s): Saeedi M., et al.

Aims: Quantify the proportional increase in gestational diabetes (GDM) prevalence when implementing the new International Association of Diabetes and Pregnancy Study Groups (IADPSG) criteria compared to prior GDM criteria, and to assess risk factors that might affect the change in prevalence.

Diabetes mellitus Type 1

Articles

Title: Impaired exocrine pancreatic function in different stages of type 1 diabetes

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001158

Author(s): Dozio N., et al.

Introduction: Aim of this study was to investigate the pancreatic exocrine function in patients with type 1 diabetes (T1D) by multiple non-invasive tests.

Freely available online

Title: Incidence and determinants of hypophosphatemia in diabetic ketoacidosis: an observational study

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e002018

Author(s): Van der Vaart A., et al.

Introduction: Diabetic ketoacidosis (DKA) is a life-threatening complication of type 1 diabetes mellitus (T1DM) characterized by hyperglycemia and metabolic acidosis. Hypophosphatemia in DKA often occurs during hospital admittance for DKA. Literature on the magnitude, determinants and consequences of hypophosphatemia in DKA is scarce. Primary aim of this study was to investigate the incidence and consequences of hypophosphatemia during hospitalisation for DKA.

Freely available online

Title: Long-Term Efficacy and Safety of Ultra Rapid Lispro (URLi) in Adults with Type 1 Diabetes: The PRONTO-T1D Extension

Citation: *Diabetes Therapy* 2021, 12(2):569-580.

Author(s): Bue-Valleskey J., et al.

Introduction: The PRONTO-T1D study, which evaluated the efficacy and safety of ultra rapid lispro (URLi) versus lispro in adults with type 1 diabetes (T1D), met the primary endpoint of noninferiority of HbA1c change from baseline compared to lispro at 26 weeks. We present results of an additional 26-week treatment phase evaluating long-term efficacy and safety of URLi.

Freely available online

Title: Ramadan fasting in people with type 1 diabetes during COVID-19 pandemic: The DaR Global survey

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108626.

Author(s): Hassanein M., et al.

Objectives: The DaR Global survey was conducted to determine the impact of the COVID-19 pandemic on the intentions to fast and the outcomes of fasting in <18 years versus ≥18 years age groups with type 1 diabetes mellitus (T1DM).

Citation: Skin intrinsic fluorescence scores are a predictor of all-cause mortality risk in type 1 diabetes: The Epidemiology of Diabetes Complications study

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107770.

Author(s): Tomaszewski EL., et al.

Aims: We assessed the association of skin intrinsic fluorescence (SIF) scores, as a measure of advanced glycation end-products (AGE), with all-cause mortality in type 1 diabetes (T1D).

Title: Trajectories in estimated glomerular filtration rate in youth-onset type 1 and type 2 diabetes: The SEARCH for Diabetes in Youth Study

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107768.

Author(s): Westreich KD., et al.

Aims: We sought to characterize the direction and associated factors of eGFR change following diagnosis of youth-onset type 1 and type 2 diabetes.

Diabetes mellitus Type 2

Articles

Title: Association between intake of white rice and incident type 2 diabetes – An updated meta-analysis

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108651.

Author(s): Ren G., Qi J., Zou Y.

Aims: Meta-analyses on the association between white rice intake and incident type 2 diabetes (T2D) have been inconsistent. Since the last meta-analysis, more studies have been published with inconsistent results. We aimed to examine the rice-T2D association in Asian populations in an updated meta-analysis.

Title: Association between type 2 diabetes and non-exercise estimated cardiorespiratory fitness among adults: evidences from a middle-income country.

Citation: *Public Health* 2020;189:110-114.

Author(s): Neto GAM., et al.

Abstract: The objective of this study is to assess the association between type 2 diabetes (T2D) and cardiorespiratory fitness (CRF) estimated through a non-exercise model in a large representative group of Brazilian adults.

Title: Changes in fasting patterns during Ramadan, and associated clinical outcomes in adults with type 2 diabetes: A narrative review of epidemiological studies over the last 20 years

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108584.

Author(s): Hassanein M., et al.

Abstract: Although religious guidance exempts some Muslims with type 2 diabetes from fasting during Ramadan, many choose to fast. The associated risks for fasting adults with diabetes includes hypoglycemia, hyperglycemia, ketoacidosis, dehydration, and thrombosis. Thus, it is important that healthcare professionals support individuals who choose to fast to minimize risks. We reviewed three epidemiologic studies to understand how fasting patterns during Ramadan and associated clinical outcomes in adults with type 2 diabetes have evolved over two decades (2000–2020). Over a period of time people with diabetes choosing to fast during Ramadan are displaying increasingly complex profiles in terms of their diabetes, with increased disease duration, greater body mass index, and elevated pre-Ramadan mean glycated hemoglobin levels. Despite this, in the most recent study, >85% of adults with type 2 diabetes still chose to fast. Increased risk of hypoglycemia remains a major concern despite some improvements over time, which could be attributable to enhanced education programs, and changes in treatment type and/or dose prior to and/or during Ramadan. Our review highlights the evolution in fasting patterns over two decades and serves as an update for healthcare professionals to provide appropriate guidance to ensure that Ramadan fasting is safe and rewarding.

Title: Clinician prescription of lipid-lowering drugs and achievement of treatment goals in patients with newly diagnosed type 2 diabetes mellitus

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001891

Author(s): García-Ulloa AC., et al.

Introduction: Lipid control is essential in type 2 diabetes mellitus (T2DM). The aim of this study is to investigate factors associated with lipid therapy adherence and achievement of goals in real-life setting among patients with recently diagnosed T2DM.

Freely available online

Title: Comparing the effects of tofogliflozin and pioglitazone in non-alcoholic fatty liver disease patients with type 2 diabetes mellitus (ToPiND study): a randomized prospective open-label controlled trial

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001990

Author(s): Yoneda M., et al.

Introduction: The treatment of diabetes has a significant impact on the pathogenesis of non-alcoholic fatty liver disease (NAFLD). We compared the effectiveness of tofogliflozin, a selective sodium-glucose cotransporter 2 inhibitor, and pioglitazone for the treatment of NAFLD patients with type 2 diabetes mellitus.

Freely available online

Title: Comparison of Patient-Led and Physician-Led Insulin Titration in Japanese Type 2 Diabetes Mellitus Patients Based on Treatment Distress, Satisfaction, and Self-Efficacy: The COMMIT-Patient Study

Citation: *Diabetes Therapy* 2021, 12(2):595-611.

Author(s): Ishii H., et al.

Introduction: In Japan, patient-led insulin titration is rare in type 2 diabetes mellitus (T2DM) patients. Few studies have compared the effects of patient-led versus physician-led insulin titration on patient-reported outcomes in Japanese T2DM patients. This study aimed to compare the effects of patient-led and physician-led insulin titration in Japanese insulin-naïve T2DM patients on safety, glycemic control, and patient-reported outcomes (emotional distress, treatment satisfaction, and self-efficacy).

Freely available online

Title: Cost effectiveness of dietitian-led nutrition therapy for people with type 2 diabetes mellitus: a scoping review.

Citation: *Journal of Human Nutrition and Dietetics* 2021;34(1):81-93.

Author(s): Siopis G., et al.

Abstract: The findings highlight the importance of advocacy for medical nutrition therapy for people with type 2 diabetes, with respect to alleviating the great global economic burden from this condition. Further studies are warranted to elucidate the factors that mediate and moderate cost effectiveness and to allow for the generalisation of the findings.

Title: Diabesity negatively affects transferrin saturation and iron status. The DICARIVA study

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108653.

Author(s): Pilar Vaquero M., et al.

Aims: The relationship between iron status, obesity and type 2 diabetes mellitus (T2DM) has scarcely been tested. This study hypothesizes that patients with obesity and T2DM have altered iron metabolism.

Title: Effect of Orally Administered Semaglutide Versus Dulaglutide on Diabetes-Related Quality of Life in Japanese Patients with Type 2 Diabetes: The PIONEER 10 Randomized, Active-Controlled Trial

Citation: *Diabetes Therapy* 2021, 12(2):613-623.

Author(s): Ishii H., et al.

Introduction: In the randomized Peptide InnOvatioN for Early diabEtes tReatment (PIONEER) 10 trial, once-daily orally administered semaglutide-the first oral glucagon-like peptide 1 receptor agonist (GLP-1RA)-was similarly tolerated with comparable (at 7 mg) or better (at 14 mg) efficacy versus the injectable GLP-1RA dulaglutide 0.75 mg. Health-related quality of life (HRQoL) in PIONEER 10 was assessed using the Japanese-specific Diabetes Therapy-Related Quality of Life (DTR-QoL) questionnaire.

Freely available online

Title: Effects of potato resistant starch intake on insulin sensitivity, related metabolic markers and appetite ratings in men and women at risk for type 2 diabetes: a pilot cross-over randomised controlled trial.

Citation: *Journal of Human Nutrition and Dietetics* 2021;34(1):94-105.

Author(s): Sanders LM., et al.

Abstract: The results of this pilot study suggest RS-enriched potatoes may have a favourable impact on carbohydrate metabolism and support the view that additional research in a larger study sample is warranted.

Freely available online

Title: Efficacy and safety of the glucagon-like peptide-1 receptor agonist oral semaglutide in patients with type 2 diabetes mellitus: A systematic review and meta-analysis

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108656.

Author(s): Li J., et al.

Objectives: To evaluate the efficacy and safety of the glucagon-like peptide-1 (GLP-1) receptor agonist (RA) oral semaglutide in the treatment of type 2 diabetes mellitus (T2DM) patients. **Methods:** Randomized controlled trials comparing oral semaglutide with placebo or other antihyperglycemic agents in T2DM patients were identified by searching PubMed, Embase, Cochrane Library and ClinicalTrials.gov. Risk ratios and mean differences with 95% confidence intervals were used to synthesize the results. **Results:** Ten relevant studies involving 8,536 patients were finally included. Compared with placebo, oral semaglutide significantly reduced hemoglobin A1c (HbA1c), body weight, fasting plasma glucose, self-measured plasma glucose (SMPG), serious adverse events and all-cause death and significantly increased the number of participants who achieved HbA1c<7.0%. Compared with active comparators, oral semaglutide significantly reduced the level of HbA1c, body weight, and SMPG and significantly increased the number of participants who achieved HbA1c<7.0%. Compared with placebo or active comparators, oral semaglutide did not increase the incidence of adverse events, hypoglycemia (severe or blood glucose-confirmed symptomatic), myocardial infarction, heart failure requiring hospitalization, stroke or acute pancreatitis but did increase the incidence of nausea, diarrhea and vomiting. **Conclusions:** Oral semaglutide has favorable efficacy and safety in the treatment of T2DM patients. Oral semaglutide may be superior to liraglutide, dulaglutide, empagliflozin and sitagliptin for T2DM patients who have obesity or poor adherence to injectable GLP-1 RAs.

Title; Evaluating the Cost-Effectiveness of Once-Weekly Semaglutide 1 mg Versus Empagliflozin 25 mg for Treatment of Patients with Type 2 Diabetes in the UK Setting

Citation: *Diabetes Therapy* 2021, 12(2):537-555.

Author(s): Capehorn M., et al

Introduction: Type 2 diabetes represents a continuing healthcare challenge, and choosing cost-effective treatments is crucial to ensure that healthcare resources are used efficiently. The present

analysis assessed the cost-effectiveness of once-weekly semaglutide 1 mg versus empagliflozin 25 mg for the treatment of patients with type 2 diabetes mellitus with inadequate glycaemic control on metformin monotherapy from a healthcare payer perspective in the UK.

Freely available online

Title: Hepatic and cardiovascular safety of acarbose among type 2 diabetes patients with end-stage renal disease: A nationwide population-based longitudinal study

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108489.

Author(s): Lin WH., et al.

Aim: To assess the relationship between acarbose and hepatotoxicity, cardiovascular disease (CVD), and mortality among type 2 diabetes (T2D) patients with end-stage renal disease (ESRD).

Title: Impact of undiagnosed type 2 diabetes and pre-diabetes on severity and mortality for SARS-CoV-2 infection

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e002026

Author(s): Vargas-Vázquez A., et al.

Introduction: Diabetes and hyperglycemia are risk factors for critical COVID-19 outcomes; however, the impact of pre-diabetes and previously unidentified cases of diabetes remains undefined. Here, we profiled hospitalized patients with undiagnosed type 2 diabetes and pre-diabetes to evaluate its impact on adverse COVID-19 outcomes. We also explored the role of de novo and intrahospital hyperglycemia in mediating critical COVID-19 outcomes.

Freely available online

Title: Impaired intestinal barrier function in type 2 diabetic patients measured by serum LPS, Zonulin, and IFABP

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107766.

Author(s): Yuan JH., et al.

Introduction: The epithelial tight junctions of intestine were impaired in murine model of type 2 diabetes mellitus (T2DM). The aim of this work was to investigate the alteration of intestinal barrier in T2DM patients.

Title: Metformin dosage patterns in type 2 diabetes patients in a real-world setting in the United States

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108531.

Author(s): Mahabaleshwarakar R., DeSantis A.

Aim: To examine metformin dosage patterns among adults with type 2 diabetes in an integrated healthcare system in the US.

Title: Multilevel clustering approach driven by continuous glucose monitoring data for further classification of type 2 diabetes

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001869

Author(s): Tao R., et al.

Introduction: Mining knowledge from continuous glucose monitoring (CGM) data to classify highly heterogeneous patients with type 2 diabetes according to their characteristics remains unaddressed. A refined clustering method that retrieves hidden information from CGM data could provide a viable method to identify patients with different degrees of dysglycemia and clinical phenotypes.

Freely available online

Title: Non-targeted metabolomic analysis predicts the therapeutic effects of exenatide on endothelial injury in patients with type 2 diabetes

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107797.

Author(s): Yang J., et al.

Aims: We aimed to investigate whether treatment with exenatide could ameliorate endothelial injury in patients with type 2 diabetes mellitus (T2DM), and to identify biomarkers for predicting amelioration of the endothelial injury induced by the treatment.

Title: Occupational balance in people with type-2 diabetes: A comparative cross-sectional study.

Citation: *British Journal of Occupational Therapy* 2021;84(2):122-129.

Author(s): Binesh M., Aghili R., Mehraban AH.

Abstract: Diabetes mellitus may negatively impact individuals' occupational balance. This study seeks to compare occupational balance in people with and without diabetes and also explore the biological and psychological factors associated with occupational balance in people with diabetes.

Title: Oxidative stress and nitrate/nitrite (NOx) status following citrulline supplementation in type 2 diabetes: a randomised, double-blind, placebo-controlled trial.

Citation: *Journal of Human Nutrition and Dietetics* 2021;34(1):64-72.

Author(s): Azizi S., et al.

Abstract: The results of the present study show the positive effects of citrulline supplementation with respect to attenuating FBS levels and oxidative stress, as well as boosting NOx status, in patients with T2DM.

Title: Prevalence of ECG abnormalities in people with type 2 diabetes: The Hoorn Diabetes Care System cohort

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107810.

Author(s): Harms PP., et al.

Aims: The American Diabetes Association, and the joint European Society of Cardiology and European Association for the Study of Diabetes guidelines recommend a resting ECG in people with type 2 diabetes with hypertension or suspected cardiovascular disease (CVD). However, knowledge on the prevalence of ECG abnormalities is incomplete. We aimed to analyse the prevalence of ECG abnormalities and their cross-sectional associations with cardiovascular risk factors in people with type 2 diabetes.

Title: Real-World Effectiveness Analysis of Switching From Liraglutide or Dulaglutide to Semaglutide in Patients With Type 2 Diabetes Mellitus: The Retrospective REALISE-DM Study

Citation: *Diabetes Therapy* 2021, 12(2):527-536.

Author(s): Jain AB., et al.

Introduction: Injectable semaglutide is a glucagon-like peptide-1 receptor agonist (GLP-1 RA) that was previously shown to be superior to liraglutide and dulaglutide in head-to-head comparisons in GLP-1 RA-naïve individuals. It is hypothesized that semaglutide will cause further reductions in glycated hemoglobin A1c (HbA1c) and weight in type 2 diabetes mellitus (T2DM) patients previously treated with liraglutide or dulaglutide. The REALISE-DM study provides the first real-world evidence of the effectiveness and tolerability of semaglutide in patients switching from another GLP-1 RA. *Freely available online*

Title: Relative incidence and predictors of pulmonary arterial hypertension complicating type 2 diabetes: The Fremantle Diabetes Study Phase I

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107773.

Author(s): Nundlall N., et al.

Aims: To determine the relative incidence and predictors of pulmonary arterial hypertension (PAH) in type 2 diabetes.

Title: A Retrospective Analysis of Therapeutic Inertia in Type 2 Diabetes Management Across a Diverse Population of Health Care Organizations in the USA

Citation: *Diabetes Therapy* 2021, 12(2):581-594.

Author(s): Rattelman CR., et al.

Introduction: If their target glycated hemoglobin (HbA1c) is not achieved after 3 months, timely treatment intensification is recommended in people with type 2 diabetes to maintain glycemic control and minimize vascular complications. We retrospectively investigated potential therapeutic inertia in the management of type 2 diabetes in multiple health care organizations across the USA.

Freely available online

Title: Serum calcification propensity is associated with HbA1c in type 2 diabetes mellitus

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e002016

Author(s): Mencke R., et al.

Introduction: Serum calcification propensity is emerging as an independent predictor for cardiovascular outcomes in high-risk populations. Calcification propensity can be monitored by the maturation time of calciprotein particles in serum (T50 test). A low T50 value is an independent determinant of cardiovascular morbidity and mortality in various populations. Aim was to investigate the T50 and its relationship to type 2 diabetes mellitus.

Freely available online

Title: Shahrad Taheri: putting patients' needs first

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), p.67.

Author(s): Mitchell F., Stirrups R.

Abstract: As in many countries in the Middle East, the prevalence of type 2 diabetes in Qatar is a cause for concern—at 17% in adults, it is almost twice the global average. Shahrad Taheri is Professor of Medicine at Weill Cornell Medicine - Qatar and Senior Consultant at Qatar's National Obesity Treatment Centre. He has been involved in Qatar's National Diabetes Strategy since its inception and has had a major role in developing the clinical research infrastructure in Qatar, including chairing the National Diabetes Research Strategy Subcommittee at the Qatar Ministry of Public Health. Although much of the research being done in the new research centres in Qatar has focussed on basic research, the capacity for clinical research including clinical trials is expanding and Taheri has been a driving force behind this movement.

Title: Spousal concordance in pathophysiological markers and risk factors for type 2 diabetes: a cross-sectional analysis of The Maastricht Study

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001879

Author(s): Silverman-Retana O., et al.

Introduction: We compared the degree of spousal concordance in a set of detailed pathophysiological markers and risk factors for type 2 diabetes to understand where in the causal cascade spousal similarities are most relevant.]

Freely available online

Title: Substitution among milk and yogurt products and the risk of incident type 2 diabetes in the EPIC-NL cohort.

Citation: *Journal of Human Nutrition and Dietetics* 2021;34(1):54-63.

Author(s): Stuber JM., et al.

Abstract: No evidence was found for the association between substitutions among milk and yogurt products and the risk of incident T2D, although we cannot exclude possible attenuation of results as a result of dietary changes over time. This analysis should be repeated in a population with a wider consumption range of whole-fat yogurt.

Title: Trajectories in estimated glomerular filtration rate in youth-onset type 1 and type 2 diabetes: The SEARCH for Diabetes in Youth Study

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107768.

Author(s): Westreich KD., et al.

Aims: We sought to characterize the direction and associated factors of eGFR change following diagnosis of youth-onset type 1 and type 2 diabetes.

Title: Type 2 diabetes and viral infection; cause and effect of disease

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108637.

Author(s): Turk Wensveen T., et al.

Abstract: The recent pandemic of COVID-19 has made abundantly clear that Type 2 diabetes (T2D) increases the risk of more frequent and more severe viral infections. At the same time, pro-inflammatory cytokines of an anti-viral Type-I profile promote insulin resistance and form a risk factor for development of T2D. What this illustrates is that there is a reciprocal, detrimental interaction between the immune and endocrine system in the context of T2D. Why these two systems would interact at all long remained unclear. Recent findings indicate that transient changes in systemic metabolism are induced by the immune system as a strategy against viral infection. In people with T2D, this system fails, thereby negatively impacting the antiviral immune response. In addition, immune-mediated changes in systemic metabolism upon infection may aggravate glycemic control in T2D. In this review, we will discuss recent literature that sheds more light on how T2D impairs immune responses to viral infection and how virus-induced activation of the immune system increases risk of development of T2D.

Title: Type 2 diabetes RCTs in mainland China: insights from a systematic review

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), pp.64-66.

Author(s): Zheng R., et al.

Abstract: Diabetes has become an epidemic worldwide and in China. Diabetes in Chinese adults has distinct features in genetic background and pathophysiological process from diabetes in white populations of European ancestry. Despite this fact, clinical practice guidelines for the management of diabetes in Chinese adults are very similar to guidelines for Europeans and North Americans because evidence from high-quality randomised controlled clinical trials (RCTs) in Chinese patients is scarce. Rigorously designed and effectively conducted RCTs are needed in the face of a continuing challenge from this rising diabetes burden to tailor specific treatment and prevention strategies in China.

Title: Under-reporting of the energy intake in patients with type 2 diabetes.

Citation: *Journal of Human Nutrition and Dietetics* 2021;34(1):73-80.

Author(s): do Nascimento AG., et al.

Abstract: The majority of patients with type 2 DM under-reported their calorie intake, as assessed by FFQ and 24HR. REE showed a positive correlation with both tools.

Title: Women's Wellness with Type 2 Diabetes Program (WWDP): Qualitative findings from the UK and Australian feasibility study

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108654.

Author(s): Anderson D., et al.

Aims: To undertake a qualitative study of a multimodal behavioural intervention and research protocol developed to improve wellness in women with type 2 diabetes mellitus (T2DM), the Women's Wellness with Type 2 Diabetes program (WWDP).

Diagnosis

Articles

Title: The mean of fasting, 1-h, and 2-h plasma glucose levels is superior to each separate index in predicting diabetes

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108650.

Author(s): Pham DD., et al.

Aims: The fasting, 1-h, and 2-h plasma glucose (PG) levels during oral glucose tolerance test represent different glucose metabolic functions. We examined whether averaging these PG indices (GLU M0.60.120) results in a better predictor of future type 2 diabetes (T2DM).

Title: Role of ceramides in the pathogenesis of diabetes mellitus and its complications

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107734.

Author(s): Mandal N., et al.

Abstract: Diabetes mellitus (DM) is a systemic metabolic disease that affects 463 million adults worldwide and is a leading cause of cardiovascular disease, blindness, nephropathy, peripheral neuropathy, and lower-limb amputation. Lipids have long been recognized as contributors to the pathogenesis and pathophysiology of DM and its complications, but recent discoveries have highlighted ceramides, a class of bioactive sphingolipids with cell signaling and second messenger capabilities, as particularly important contributors to insulin resistance and the underlying mechanisms of DM complications. Besides their association with insulin resistance and pathophysiology of type 2 diabetes, evidence is emerging that certain species of ceramides are mediators of cellular mechanisms involved in the initiation and progression of microvascular and macrovascular complications of DM. Advances in our understanding of these associations provide unique opportunities for exploring ceramide species as potential novel therapeutic targets and biomarkers. This review discusses the links between ceramides and the pathogenesis of DM and diabetic complications and identifies opportunities for novel discoveries and applications.

Glucose monitoring and control

Articles

Citation: Casual blood glucose and subsequent cardiovascular disease and all-cause mortality among 159 731 participants in Cohort of Norway (CONOR)

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001928

Author(s): Riise HKR., et al.

Introduction: Our aim was to assess the association between casual blood glucose level and subsequent cardiovascular disease (CVD) and mortality among community-dwelling adults without a diagnosis of diabetes.

Freely available online

Title: Constipation and glycemic control

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107799.

Author(s): Conway RBN., Peltier A., Figaro MK.

Abstract: In this issue of the Journal, Ohkuma and colleagues report on the results of an investigation evaluating the relationship of the frequency of defecation with HbA1c in 5131 adult patients with diabetes from the Fukuoka Diabetes Registry. 1 In these patients, an inverse relationship was observed between defecation frequency and glycemic control. Specifically, patients with lower defecation frequency had higher HbA1c levels, a relationship that was found to be independent of total caloric consumption, dietary fiber, body mass index, use of oral hypoglycemic agents, and use of insulin. This relationship did not vary by age or sex. Because of the nature of the study, it is difficult to extrapolate cause and effect of constipation on hemoglobin A1C. No data was provided on other diabetic complications to suggest whether constipation was an effect of poorly controlled glucose vs. a possible etiology or risk factor for poor glucose control. There is also no mention of diarrhea, bloating, early satiety or other GI symptoms reported by the authors. The results of the study rest on the large population included and strong linear relationship reported. While Ohkuma et al. 1 state that their findings suggest that evaluation of defecation frequency among patients with diabetes may be useful in identifying patients at risk for poor glycemic control, they do acknowledge that their study was cross-sectional and thus the temporality in the association of their findings cannot be determined.

Title: Continuous subcutaneous insulin infusion does not correspond with pregnancy outcomes despite better glycemic control as compared to multiple daily injections in type 1 diabetes – Significance of pregnancy planning and prepregnancy HbA1c

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108628.

Author(s): Żurawska-Kliś M., et al.

Objective: The aim of the study was to compare pregnancy outcomes with glycemic control, total increase in insulin requirement, and body weight gain in the women with Type 1 Diabetes Mellitus (T1DM) using continuous subcutaneous insulin infusion (CSII) or multiple daily injections (MDI).

Title: Correlation between glycosylated serum albumin and glycosylated haemoglobin in the southwest Chinese population: Establishment of a regression model

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107796.

Author(s): Kong LR., et al.

Aims: To correlate glycated albumin (GA) and glycosylated haemoglobin (HbA1c) and establish a novel formula for estimating HbA1c from GA.

Title: Cross-sectional and prospective relationships of endogenous progestogens and estrogens with glucose metabolism in men and women: a KORA F4/FF4 Study

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001951

Author(s): Lau LHY., et al.

Introduction: Relationships between endogenous female sex hormones and glycemic traits remain understudied, especially in men. We examined whether endogenous 17 α -hydroxyprogesterone (17-OHP), progesterone, estradiol (E2), and free estradiol (fE2) were associated with glycemic traits and glycemic deterioration.

Freely available online

Title: Defecation frequency and glycemic control in patients with diabetes: The Fukuoka Diabetes Registry

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107751.

Author(s): Ohkuma T., et al.

Aims: Constipation has been shown to be associated with a higher risk of diabetes. However, few studies have evaluated the relationship between defecation frequency, one of the major symptoms of constipation, and glycemic control in patients with diabetes. The aim of the present study was to determine the relationship between defecation frequency and HbA 1c in patients with diabetes.

Title: Glucolipotoxicity and GLP-1 secretion

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001905

Author(s): Hong JH., Kim DH., Lee MK.

Introduction: The concept of glucolipotoxicity refers to the combined, deleterious effects of elevated glucose and/or fatty acid levels.

Freely available online

Title: Glucose tolerance in a cohort of Egyptian children after kidney transplantation

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108605.

Author(s): Arafa N., et al.

Background: Post- transplantation diabetes mellitus (PTDM) in children is a serious metabolic complication that can endanger both graft and patient survival. These complications can be partially reduced by early diagnosis & prompt treatment of impaired glucose tolerance. The aim of this study was to assess glucose tolerance & insulin resistance among a cohort of kidney transplanted children.

Title: Glycemic indices of dates “Ramadan Symbolic Food” in patients with type 2 diabetes using continuous glucose monitoring system

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108563.

Author(s): Assaad Khalil S., et al.

Aim: The high consumption of dates during Ramadan raises the question about its glycemic index (GI) and its effect on the glycemic control in patients with type 2 diabetes (T2DM). We aimed to determine the GI of varieties of meals containing dates in healthy subjects compared to patients with T2DM and the effect of dates on the postprandial glucose excursions using continuous glucose monitoring system (CGMS).

Title: Incidence of stroke and its association with glycemic control and lifestyle in Japanese patients with type 2 diabetes mellitus: The Fukuoka diabetes registry

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108518.

Author(s): Iwase M., et al.

Aims: We prospectively investigated the incidence of stroke and its subtypes, risk factors and prognosis in Japanese patients with type 2 diabetes.

Title: Multilevel clustering approach driven by continuous glucose monitoring data for further classification of type 2 diabetes

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001869

Author(s): Tao R., et al.

Introduction: Mining knowledge from continuous glucose monitoring (CGM) data to classify highly heterogeneous patients with type 2 diabetes according to their characteristics remains unaddressed. A refined clustering method that retrieves hidden information from CGM data could provide a viable method to identify patients with different degrees of dysglycemia and clinical phenotypes.

Freely available online

Title: Order of discontinuation of glucose-lowering medications following bariatric surgery

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108580.

Author(s): Vouri SM., et al.

Aims: To assess the order of glucose-lowering medication (GLM) discontinuation following bariatric surgery among patients taking ≥ 2 GLMs.

Title: Ramadan fasting in insulin-treated patients is associated with potentially unfavourable changes in glucose metrics: A flash glucose monitoring (FGM) study

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108592.

Author(s): Saadane I., et al.

Aim(s): Ramadan fasting (RF) can represent various challenges to glycaemic control especially in insulin-treated patients with diabetes. We aimed to assess the effect of RF on several glucose metrics using flash glucose monitoring (FGM).

Title: Technological innovation of Continuous Glucose Monitoring (CGM) as a tool for commercial aviation pilots with insulin-treated diabetes and stakeholders/regulators: A new chance to improve the directives?

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108638.

Author(s): Strollo F., et al.

Abstract: Civil aviation pilots who develop insulin-treated diabetes and want to renew a Commercial Pilot License (CPL) represent a medical, social and regulatory problem. This depends on justified concerns about hypoglycemia, the most threatening event for people who carry out jobs requiring a high level of concentration and reliability. This negatively affects social and working aspects of pilots' lives, who have a high profile and a high-cost professional qualification. It could be possible now to revise this attitude thanks to the availability of Continuous Glucose Monitoring (CGM) devices. CGM clearly showed to prevent hypoglycemic events in insulin-treated diabetic patients by allowing strict monitoring and trend prediction of glucose levels. By systematizing available data on such devices and present regulations in CPL issuance worldwide, our review can be used as handy tool for a fruitful discussion among the scientific community, national and international civil aviation regulators, stakeholders and pilots, aimed at evaluating the evidence-based opportunity to revise CPL issuance criteria for insulin-treated diabetic pilots. For the above-mentioned reasons, there are, among the regulatory administrations of Civil Aviation around the globe, several different approaches and limitations set for the subjects with insulin-treated diabetes who want to obtain, or renew, a CPL.

Hyperglycaemia

Articles

Title: Characterization of hyperglycemia in patients receiving immune checkpoint inhibitors: Beyond autoimmune insulin-dependent diabetes

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108633.

Author(s): Leiter A., et al.

Aims: Immune-mediated beta cell destruction is known to cause hyperglycemia in patients receiving immune checkpoint inhibitor (ICI) cancer therapy. However, it is uncommon, and little is known about the full spectrum of hyperglycemia in patients receiving ICIs. We aimed to characterize the prevalence and factors associated with hyperglycemia in patients treated with ICIs.

Title: COVID-19 pandemic: Can fasting plasma glucose and HbA1c replace the oral glucose tolerance test to screen for hyperglycaemia in pregnancy?

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108640.

Author(s): Nachtergaele C., et al.

Aims: To evaluate proposals considering HbA1c and fasting plasma glucose (FPG) measurement as a substitute for oral glucose tolerance test (OGTT) to diagnose hyperglycaemia in pregnancy (HIP) during COVID-19 pandemic.

Title: Hyperglycemia associated with lymphopenia and disease severity of COVID-19 in type 2 diabetes mellitus

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107809.

Author(s): Cheng Y., et al.

Background: Coronavirus disease 2019 (COVID-19) has been declared a global pandemic. COVID-19 is more severe in people with diabetes. The identification of risk factors for predicting disease severity in COVID-19 patients with type 2 diabetes mellitus (T2DM) is urgently needed.

Title: Management of diabetes and hyperglycaemia in the hospital.

Citation: *The Lancet Diabetes & Endocrinology* 2021;:doi.org/10.1016/S2213-8587(20)30381-8.

Author(s): Pasquel FJ., et al.,

Abstract: Summarises the evidence from observational studies and clinical trials focusing on inpatient care of people with diabetes and stress hyperglycaemia, including use of insulin and non-insulin treatment strategies, treatment goals, and the application of new technologies.]

Freely available online

Title: Monitoring and management of hyperglycemia in patients with advanced diabetic kidney disease

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107774.

Author(s): Escott GM., et al.

Abstract: Diabetes mellitus is the leading cause of end-stage renal disease, and uncontrolled hyperglycemia is directly related to the increased mortality in this setting. As kidney function decreases, it becomes more challenging to control blood glucose since the risk of hypoglycemia increases. Decreased appetite, changes in glycaemia homeostasis, along with reduced renal excretion of anti-hyperglycemic drugs tend to facilitate the occurrence of hypoglycemia, despite the paradoxical occurrence of insulin resistance in advanced kidney disease. Thus, in patients using insulin and/or oral anti-hyperglycemic agents, dynamic adjustments with drug dose reduction or drug switching are often necessary. Furthermore, in addition to consider these pharmacokinetics alterations, it is of utmost importance to choose drugs with proven cardio-renal benefits in this setting, such as sodium-glucose co-transporter 2 inhibitors and glucagon-like peptide 1 receptor agonists. In this review, we summarize the indications and contraindications, titration of doses and side effects of the available anti-hyperglycemic agents in the presence of advanced diabetic kidney disease (DKD) and dialysis, highlighting the risks and benefits of the different agents. Additionally, basic renal function assessment and monitoring of glycemic control in DKD will be evaluated in order to guide the use of drugs and define the glycemic targets to be achieved.

Hypoglycaemia

Articles

Title: Efficacy and safety of the newer oral hypoglycemic agents in patients with T2DM during Ramadan: A systematic review and meta-analysis

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108562.

Author(s): Gad H., et al.

Aims: This systematic review and meta-analysis aims to evaluate the safety and efficacy of the newer glucose lowering treatments on glycemic control, weight, blood pressure and hypoglycemia in patients with T2DM during Ramadan.

Title: Mitigation of hypoglycemia during Ramadan using the flash glucose monitoring system following dose adjustment of insulin and sulphonylurea in patients taking multiple glucose-lowering therapies (The PROFAST-IT Study)

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108589.

Author(s): Elhadd T., et al.

Background and Hypothesis: Patients with type-2 diabetes mellitus (T2DM) on multiple glucose-lowering therapies who fast during Ramadan are at increased risk of hypoglycemia. We have assessed the utility of the flash glucose monitoring system after adjusting the dose of insulin and sulphonylureas to mitigate the risk of hypoglycemia in patients with T2DM who fast during Ramadan.

Title: Risk of hypoglycemia in Japanese people with type 2 diabetes mellitus who initiated or switched to insulin glargine 300 U/mL: A subgroup analysis of 12-month post-marketing surveillance study (X-STAR study)

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108647.

Author(s): Hirose T., et al.

Aims: This study investigated the hypoglycemia risk in people with type 2 diabetes (T2D) who initiated or switched to insulin glargine 300 U/mL (Gla-300) by stratifying them by age and renal function.

Insulin therapies

Articles

Title: Comparative Effectiveness of Switching From First-Generation Basal Insulin to Glargine 300 U/ml or Degludec 100 U/ml in Type 1 Diabetes: The RESTORE-1 Study

Citation: *Diabetes Therapy* 2021, 12(2):509-525.

Author(s): Laviola L., et al.

Introduction: Following pivotal trials, real-world evidence is important to assess the impact of new drugs in everyday clinical practice. The RESTORE-1 study aimed to compare effectiveness and safety of the second-generation basal insulins (2BI), i.e., insulin glargine 300 U/ml (Gla-300) vs. degludec 100 U/ml (IDeg-100), in type 1 diabetes (T1D).
Freely available online

Title: Comparison of Patient-Led and Physician-Led Insulin Titration in Japanese Type 2 Diabetes Mellitus Patients Based on Treatment Distress, Satisfaction, and Self-Efficacy: The COMMIT-Patient Study

Citation: *Diabetes Therapy* 2021, 12(2):595-611.

Author(s): Ishii H., et al.

Introduction: In Japan, patient-led insulin titration is rare in type 2 diabetes mellitus (T2DM) patients. Few studies have compared the effects of patient-led versus physician-led insulin titration on patient-reported outcomes in Japanese T2DM patients. This study aimed to compare the effects of patient-led and physician-led insulin titration in Japanese insulin-naïve T2DM patients on safety, glycemic control, and patient-reported outcomes (emotional distress, treatment satisfaction, and self-efficacy).
Freely available online

Title: Effect of background insulin therapy on cardiovascular outcomes with SGLT-2 inhibitors in type 2 diabetes: A meta-analysis of cardiovascular outcome trials

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108648.

Author(s): Singh AK., Singh R.

Abstract: Cardiovascular (CV) benefits of SGLT-2 inhibitors (SGLT-2i) have been consistent in type 2 diabetes mellitus (T2DM). To find whether SGLT-2i show similar CV effects with insulin therapy in T2DM, we conducted a trial-level meta-analysis of CV outcome trials. This meta-analysis found SGLT-2i exert CV benefit, irrespective of background insulin therapy.

Title: Effect of serum zinc and copper levels on insulin secretion, insulin resistance and pancreatic β cell dysfunction in US adults: Findings from the National Health and Nutrition Examination Survey (NHANES) 2011–2012

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108627.

Author(s): Kant R., et al.

Aim: To compare the zinc (Zn) and copper (Cu) levels in US adults with normoglycemia, prediabetes and diabetes, and study the association of serum Zn and Cu levels with pancreatic β cell insulin secretion, pancreatic dysfunction and insulin resistance in US adults with normoglycemia and prediabetes.

Title: Efficacy, Safety, and Immunogenicity of Insulin Aspart Biosimilar SAR341402 Compared with Originator Insulin Aspart in Adults with Diabetes (GEMELLI 1): A Subgroup Analysis by Prior Type of Mealtime Insulin

Citation: *Diabetes Therapy* 2021, 12(2):557-568.

Author(s): Shah VN., et al.

Introduction: The biosimilar SAR341402 insulin aspart (SAR-Asp) was compared to its originator NovoLog®/NovoRapid® insulin aspart (NN-Asp) in terms of efficacy, safety, and immunogenicity, in adults with type 1 or type 2 diabetes switching from different rapid-acting insulin analogs.
Freely available online

Title: Individualizing Time-in-Range Goals in Management of Diabetes Mellitus and Role of Insulin: Clinical Insights From a Multinational Panel

Citation: *Diabetes Therapy* 2021, 12(2):465-485.

Author(s): Kalra S., et al.

Abstract: Diabetes mellitus is a global health concern associated with significant morbidity and mortality. Inadequate control of diabetes leads to chronic complications and higher mortality rates, which emphasizes the importance of achieving glycemic targets. Although glycated hemoglobin (HbA1c) is the gold standard for measuring glycemic control, it has several limitations. Therefore, in

recent years, along with the emergence of continuous glucose monitoring (CGM) technology, glycemic control modalities have moved beyond HbA1c. They encompass modern glucometrics, such as glycemic variability (GV) and time-in-range (TIR). The key advantage of these newer metrics over HbA1c is that they allow personalized diabetes management with person-centric glycemic control. Basal insulin analogues, especially second-generation basal insulins with properties such as longer duration of action and low risk of hypoglycemia, have demonstrated clinical benefits by reducing GV and improving TIR. Therefore, for more effective and accurate diabetes management, the development of an integrated approach with second-generation basal insulin and glucometrics involving GV and TIR is the need of the hour. With this objective, a multinational group of endocrinologists and diabetologists reviewed the existing recommendations on TIR, provided their clinical insights into the individualization of TIR targets, and elucidated on the role of the second-generation basal insulin analogues in addressing TIR.
Freely available online

Title: Insulin at 100: A life-saving discovery but more remains to be done

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108703.

Author(s): Boulton A., Hussain A.

Abstract: We are fast-approaching some historic milestones in the history of diabetes. In May 1921, the experiments that would culminate in the synthesis of commercially available insulin first began in Toronto, Canada. Banting and Best experimented on a number of diabetes-induced dogs with limited success. A breakthrough came when one of the dogs, named Marjorie by the Toronto team, survived for 70 days with injections of the pancreatic extract, or 'Isletin' as the team were calling it. On January 23rd of the following year, the first successful injection of insulin was administered to a person living with diabetes.

Title: Insulin pump dosing strategies for meals varying in fat, protein or glycaemic index or grazing-style meals in type 1 diabetes: A systematic review

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108516.

Author(s): Metwally M., et al.

Background: Nutritional composition and food patterns influence postprandial glycaemia in type 1 diabetes (T1D). For optimal glycaemic control, insulin dose and delivery pattern must be matched accordingly. This systematic review aimed to compare insulin dosing strategies for meals varying in fat, protein and glycaemic index (GI), and prolonged meals in T1D.

Management of diabetes (diet, exercise, lifestyle)

Articles

Title: Effect of yoga intervention on biochemical, oxidative stress markers, inflammatory markers and sleep quality among subjects with type 2 diabetes in South India: Results from the SATYAM project

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108644.

Author(s): Viswanathan V., et al.

Aims: The aim of this study was to investigate the effect of yoga intervention on the biochemical, oxidative stress markers and inflammatory markers and sleep quality among subjects with type 2 diabetes.

Title: Incidence of stroke and its association with glycemic control and lifestyle in Japanese patients with type 2 diabetes mellitus: The Fukuoka diabetes registry

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108518.

Author(s): Iwase M., et al.

Aims: We prospectively investigated the incidence of stroke and its subtypes, risk factors and prognosis in Japanese patients with type 2 diabetes.

Title: Ramadan-focused nutrition therapy for people with diabetes: A narrative review

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108530.

Author(s): Mohd Yusof BN., et al.

Aims: This narrative review aimed to synthesize the evidence on the effects of Ramadan-focused nutrition therapy for people with diabetes.

Title: 'Teaching: individual' to improve adherence in hypertension and type 2 diabetes

Citation: *British Journal of Community Nursing* 2021;26(2):84-91.

Author(s): Parra DI., Guevara SLR., Rojas LZ.

Key Points: The nursing-led multifaceted individual teaching intervention has been effective in improving adherence to the therapeutic regimen and in the short term reducing systolic blood pressure (SBP) in people with hypertension and type-2 diabetes mellitus (T2DM). This intervention did not achieve significant changes in HbA1c levels, more studies are needed that include uncontrolled patients, with HbA1c values above the control range.

Title: Telemedicine: A promising approach for diabetes management - Where is the evidence

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107802.

Author(s): Yang S., Yu W., Jia P.

Abstract: Telemedicine is an information system that uses electronic communication to exchange medical information to improve the clinical health of patients. 1 It makes it possible for medical professionals to collect effective information on the consultation, diagnosis, treatment, and prevention of diseases and injuries with the help of telecommunications technology to provide corresponding medical services to patients. 2 Telemedicine services include distance education, remote consultation and nursing, telemedicine information services, medical testing and scientific management, multimedia medical care consulting, and other medical activities, which are all based on the rapid development of computer technology, remote sensing, telemetry, and remote-control technology in recent years. 3 Hence, telemedicine is also a useful tool for continuous data collection in spatial lifecourse epidemiology. 4 Moreover, such remote systems provide patients with a number of opportunities in situations where quality medical care is not readily available.

Mental health and diabetes

Articles

Title: To explore the association of Ramadan fasting with symptoms of depression, anxiety, and stress in people with diabetes

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108545.

Author(s): Yousuf S., Syed A., Ahmedani MA.

Aim: To explore the association of Ramadan fasting with symptoms of depression, anxiety, and stress in people with diabetes.

Articles

Title: Adoption of the ADA/EASD guidelines in 10 Eastern and Southern European countries: Physician survey and good clinical practice recommendations from an international expert panel

Citation: *Diabetes Research and Clinical Practice* 2021, 172: 108535.

Aims: Evidence from cardiovascular outcomes trials (CVOTs) of glucagon-like peptide-1 receptor agonists and sodium-glucose cotransporter-2 inhibitors was reflected in the most recent guidelines from the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). The aim of the present study was to assess the adoption of the ADA/EASD guidelines in a convenience sample of physicians from Eastern and Southern Europe, the barriers to the implementation of these guidelines and the measures needed to facilitate their implementation.

Title: Effect of Orally Administered Semaglutide Versus Dulaglutide on Diabetes-Related Quality of Life in Japanese Patients with Type 2 Diabetes: The PIONEER 10 Randomized, Active-Controlled Trial

Citation: *Diabetes Therapy* 2021, 12(2):613-623.

Author(s): Ishii H., et al.

Introduction: In the randomized Peptide InnOvation for Early diabEtes tReatment (PIONEER) 10 trial, once-daily orally administered semaglutide-the first oral glucagon-like peptide 1 receptor agonist (GLP-1RA)-was similarly tolerated with comparable (at 7 mg) or better (at 14 mg) efficacy versus the injectable GLP-1RA dulaglutide 0.75 mg. Health-related quality of life (HRQoL) in PIONEER 10 was assessed using the Japanese-specific Diabetes Therapy-Related Quality of Life (DTR-QoL) questionnaire.

Freely available online

Title: Effects of D-allulose on glucose tolerance and insulin response to a standard oral sucrose load: results of a prospective, randomized, crossover study

Citation: *BMJ Open Diabetes Research and Care* 2021;9:e001939

Author(s): Franchi F., et al.

Introduction: Current dietary guidelines recommend limiting sugar intake for the prevention of diabetes mellitus (DM). Reduction in sugar intake may require sugar substitutes. Among these, D-allulose is a non-calorie rare monosaccharide with 70% sweetness of sucrose, which has shown anti-DM effects in Asian populations. However, there is limited data on the effects of D-allulose in other populations, including Westerners.

Freely available online

Title: Effects of empagliflozin on estimated extracellular volume, estimated plasma volume, and measured glomerular filtration rate in patients with heart failure (Empire HF Renal): a prespecified substudy of a double-blind, randomised, placebo-controlled trial

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), pp.106-116.

Author(s): Jensen J., et al.

Background: SGLT2 inhibitors are a promising treatment option in patients with heart failure and reduced ejection fraction. We aimed to investigate the effects of empagliflozin on estimated extracellular volume, estimated plasma volume, and measured glomerular filtration rate (GFR) in patients with heart failure and reduced ejection fraction.

Title: Real-World Effectiveness Analysis of Switching From Liraglutide or Dulaglutide to Semaglutide in Patients With Type 2 Diabetes Mellitus: The Retrospective REALISE-DM Study

Citation: *Diabetes Therapy* 2021, 12(2):527-536.

Author(s): Jain AB., et al.

Introduction: Injectable semaglutide is a glucagon-like peptide-1 receptor agonist (GLP-1 RA) that was previously shown to be superior to liraglutide and dulaglutide in head-to-head comparisons in GLP-1 RA-naïve individuals. It is hypothesized that semaglutide will cause further reductions in glycated hemoglobin A1c (HbA1c) and weight in type 2 diabetes mellitus (T2DM) patients previously treated with liraglutide or dulaglutide. The REALISE-DM study provides the first real-world evidence of the effectiveness and tolerability of semaglutide in patients switching from another GLP-1 RA.]
Freely available online

Title: SGLT2 inhibitors: expanding their Empire beyond diabetes

Citation: *Lancet Diabetes & Endocrinology*, 2021, 9(2), pp.59-61.

Author(s): Muskiet MHA., Heerspink HJL., Van Raalte DH.

Abstract: The path from initial discovery to the realisation of SGLT2 inhibitors as a foundational therapy for chronic kidney disease and heart failure, irrespective of diabetes status, has been circuitous and serendipitous. In 1835, French chemists isolated the naturally occurring non-selective SGLT1/2 inhibitor phlorizin from apple tree bark, with subsequent experiments detailing its glycosuric properties. 1 However, it took more than 150 years to clarify the role of SGLTs as key protein regulators of glucose handling in the gut and kidneys and to realise the potential of SGLT2 inhibition as a novel approach to diabetes therapy. 1 Interest in pharmacologically inhibiting SGLT activity increased with the recognition that patients possessing an inherited inactivating mutation of SGLT2 (known as familial renal glycosuria), who have resultant lifelong so-called benign glycosuria, did not have serious adverse clinical consequences. Since phlorizin is non-selective, not well tolerated, and has low oral bioavailability, synthetic SGLT2 inhibitors were developed. Since 2012, four SGLT2 inhibitors have been granted marketing authorisation by the European Medicines Agency and the US Food and Drug Administration for management of hyperglycaemia in type 2 diabetes.

Title: SGLT-2 inhibitors may be targeting higher risk patients with diabetes possibly justifying higher cost: Single center repeated cross-sectional analysis

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107761.

Author(s): Weinrauch LA., et al.

Introduction: We studied the use of all hypoglycemic agents in periods before and after introduction of SGLT-2 inhibitors in the USA by repeated cross sectional analysis to initially assess improvement in HbA1c control among patients with type 2 diabetes and hypertension. We sought to identify changes in glucose management related to the availability of the SGLT-2 inhibiting agents. We hypothesized that patients transitioned to SGLT-2 inhibitor-based therapy represented a higher risk group that derived benefits in terms of HbA1c control.

Prevention of diabetes (diet, exercise, lifestyle)

Articles

Title: The influence of diabetes and prediabetes on left heart remodeling: A population-based study

Citation: *Journal of Diabetes and Its Complications*, 2021, 35(2), Article 107771.

Author(s): Li T., et al.

Background: Diabetes was regarded as an independent risk factor for abnormal left heart remodeling. However, there was lacking population-based data on the relationship of glucose status with left ventricular hypertrophy (LVH) or left atrial enlargement (LAE). This study intended to clarify

the influence of diabetes and prediabetes on the prevalence and incidence of LVH and LAE based on a northeast rural population of China.

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Type 1 Diabetes. 3D still of *Type 1 Diabetes showing lower amount of insulin production in a diabetic patient* by Scientific Animations -

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