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### Comparison of TIR, TAR and TBR of Ultra Rapid Acting Insulin Lispro (URLI) administered pre and post meal in T2DM

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**Background:** There is limited data from Indian sub-continent comparing the efficacy of prandial analogue Insulins like URLI administered pre and post-meal in T2DM patients in Real world settings in a CGM based study.

**Aim:** To compare the TIR, TAR and TBR in T2DM patients administering URLI pre-meal and post-meal in a CGM based real-world study.

**Method:** 56 subjects (females = 24) stable on Basal bolus therapy with Insulin Glargine and URLI underwent CGM with Abbott's 'Free style libre PRO' sensor for 14 days. Patients were instructed to administer URLI 5 minutes pre-meal in initial 7 days of CGM and 2 minutes post meal during last 7 days.

Data was downloaded at the end of 14 days and analysed. Mean TIR, TAR and TBR was calculated based on readings on Day 3-6 (pre-meal) and Day 10-13 (post-meal).

The study was conducted between March and August 2024. Data was analysed retrospectively from an electronic data base.

Basal and prandial doses were adjusted prior to commencement of CGM to achieve a Fasting of 90-120 mg/dl and prandials 140-180 mg/dl based on SMBG and thereafter not altered throughout the 14 days of CGM. All patients consumed 3 meals, 50 g each during CGM.

**Results:** Mean TIR in 5 min Pre-meal administration of URLI was 85 % and Mean TIR in 2 min Post-meal administration of URLI was 94 %. Mean increase in TIR in post-meal administration of URLI was 11% ( $p < 0.005$ ).

Mean TAR was 14 % and 5 % respectively in pre-meal and post-meal administration of URLI. Mean decrease in TIR in post-meal administration of URLI was 9 % ( $p < 0.005$ )

Mean TBR was 1 % in both pre-meal and post-meal administration of URLI.

Mean Basal Dose of Glargine was  $32 \pm 9$  units and mean dose of URLI was  $35 \pm 12$  units.

**Conclusion:** First CGM based real-world study from India with URLI showed a significant increase in TIR, significant decrease in TAR and similar TBR, when URLI was administered post-meal vs pre-meals.

Post meal URLI increases flexibility for the patients. The study would help physicians to decide on the timing of URLI and may bring in a change in the practice of using rapid acting analogue insulins pre-meals as a convention.

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### Potential cardiometabolic role of a Malaysian red pigmented rice in T2D patients – Primary findings from the RICH study

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**Background:** Global diabetes guidelines emphasize wholegrains for reducing cardiometabolic risk (CMR). In line with this, the Malaysian guidelines recommend substituting white rice with brown rice [1], although limited efficacy is reported [2]. Conversely, the role of pigmented rice as a wholegrain alternative for diabetes patients in reducing CMR is unknown and warrants exploration [3].

**Aim:** To evaluate the effects of substituting white rice with a Malaysian low glycemic index, anthocyanin-rich, red pigmented rice (UKMRC9) on CMR markers in T2D patients.

**Method:** The Rice Intervention in Chronic Health (RICH) study was a 24-week, multicenter, open-label, parallel-group, randomized controlled trial involving 101 Malaysian adult T2D patients. Eligible participants, who were regular white rice consumers with poorly controlled T2D, were randomly assigned to either UKMRC9 (treatment) or white rice (control) groups with assessment at baseline, 12th and 24th weeks. Generalized estimating equations compared changes between groups in study parameters: adiposity, glycemic, and inflammatory markers, lipid profiles, blood pressure, and 10-year CVD risk. Intention-to-treat analysis evaluated the real-world effectiveness of UKMRC9. Path analysis explored putative mechanisms while dose-response analysis with linear-programming determined the minimum UKMRC9 intake needed for its optimal effects on CMR.

**Results:** Significant and progressive reductions in adiposity, glycemic markers, insulin resistance, and 10-year CVD risk (all  $p < 0.05$ ) were observed in the treatment group from baseline to 24th weeks of intervention. Conversely, control group did not show significant changes in these parameters ( $p > 0.05$ ). The effect of UKMRC9 on 10-year CVD risk was significantly explained by the improvements in glycemic markers ( $SIE = -2.978$ ,  $p = 0.024$ ). At least 40 g/d (raw weight) of UKMRC9 was required for its optimal effects on CMR.

**Conclusion:** This is the first study to provide Level 1 evidence supporting CMR benefits of pigmented rice consumption in T2D patients. UKMRC9 emerges as a powerful wholegrain alternative for effective T2D management.

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#### BA2025-1015

##### Unveiling mechanisms linking dietary patterns to 10-year cardiovascular risk in multi-ethnic Asian T2D patients

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**Background:** Global Dietary Guidelines emphasize dietary pattern (DP) over nutrient-based approaches for cardiovascular disease (CVD) prevention in T2D patients [1]. To maximize effectiveness, promoting dietary patterns should be aligned to sociocultural contexts [2]. However, DP research of underrepresented populations, particularly Asians, remains limited.

**Aim:** To identify DPs associated with 10-year CVD risk in Malaysian T2D patients and explore the mechanisms behind the association.

**Method:** This cross-sectional screening study involved 186 clinically diagnosed T2D patients recruited from the Rice Intervention in Chronic Health (RICH) clinical trial. Cardiometabolic parameters, including adiposity, glycemic, insulin, and inflammatory markers, blood pressure and lipid profiles, were assessed. The 10-year CVD risk was evaluated using the validated T2D-specific UKPDS Cardiac Risk Engine. DPs were identified using 3-day diet records through Reduced Rank Regression (RRR). Univariate General Linear Model examined the association between tertiles of DP and 10-year CVD risk, controlling for age, gender, and ethnicity. Path analysis examined the mediating effects of cardiometabolic markers on the DP-CVD relationship.

**Results:** One DP, named the "ReGrReTS" pattern, was identified through RRR. This pattern was characterized by high consumption of Refined Grain, Red Meat, Tea & Coffee, Sugar Sweetened Beverages and Rice Dishes, alongside low intake of Wholegrain Cereals and Dairy Products. Increased adherence to the ReGrReTS pattern showed a significant linear trend with the 10-year CVD risk (6.3% in T1 → 10.7% in T2 → 11.3% in T3,  $P_{trend} = 0.001$ ). Glycemic markers ( $SIE = 0.034$ ,  $p = 0.005$ ), waist-to-hip ratio ( $SIE = 0.066$ ,  $p = 0.010$ ), and triglyceride ( $SIE = 0.049$ ,  $p = 0.037$ ) significantly mediated the relationship between the 'ReGrReTS' pattern and 10-year CVD risk.

**Conclusion:** The DP approach, which accounts for food-food interactions, offers valuable insights into how real-world eating patterns impact long-term CVD risk in multi-ethnic Asian T2D patients, highlighting the potential for dietary modifications to reduce CVD risk.

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##### The 3Cs: Calories, Carbs & Clock – Which matters most for glycemic control in T2D in the era of time-restricted eating?

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**Background:** Time-restricted eating (TRE), that limits food consumption to a specific eating window, has gained attention as a potential dietary approach for improving glycemic control in T2D patients [1]. However, its effectiveness compared to conventional dietary approaches focusing on calorie (kcal) and carbohydrate (carbs) remains uncertain.

**Aim:** To determine whether TRE has a greater influence on glycemic control in T2D patients compared to conventional dietary approaches focusing on 'kcal' and 'carbs'.

**Method:** This cross-sectional screening study involved 177 clinically diagnosed T2D patients from the Rice Intervention in Chronic Health (RICH) clinical trial. Dietary kcal and carbs intakes were assessed using 3-day diet records (3DDR). Additionally, eating habits, including eating window, calorie midpoint (time achieving 50% of kcal intake), and meal skipping behaviour, were also evaluated from 3DDRs. TRE was defined as an eating window of 8–10 h [2], while those eating outside this window was considered as non-TRE. Subsequently, TRE participants were further