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## Type 2 Diabetes

**The Molecular Effect of SGLT2i on the Autophagy/Klotho Pathways in Type II Diabetes mellitus and its Vascular Complications in Diabetic Mouse Model**

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**Background and Aims:** Diabetes mellitus type II (T2DM) is a severe metabolic disorder characterized by chronic hyperglycemia. Hyperglycemia is associated with increased glucose cell toxicity that can lead to irreversible damage in several organs. Diabetic nephropathy (DN) is the common vascular complication of T2DM(1). Autophagy is involved in catabolic processes and plays a key role in the degradation of damaged intracellular proteins in order to maintain intracellular homeostasis and cell integrity. Studies have provided evidence suggesting that autophagy-related protein 5 (ATG5) and LC3, play a critical role in a variety of disease processes, like DM/DN (3). Empagliflozin (EMPA) is sodium glucose transporter inhibitor (SGLT2i) which represents a new class of glucose lowering drugs and is recommended in T2DM(4). We hypothesized that one of the known protective effects of EMPA on renal cells is via autophagy mechanism. The proposed research aim to investigate the molecular effect of SGLT2i on the expression of ATG5 and its downstream collaborator LC3-II in diabetic mice model (5). **Methods:** 8-week-old male mice: 20 C57BL/6 Wild Type (C57BL/6), 20 BTBR ob/ob vehicles (DM), 20 BTBR ob/ob that were treated with Empagliflozin (MPA), a SGLT2i (DM+EMPA). Lysate from murine renal cortex were analyzed for Western blot & immunohistochemistry and ATG5, LC3B & fibronectin expression. All mice were sacrificed 13 weeks after the beginning of the experiment. EMPA powder was diluted in water (1 mg/kg mouse) and administrated to the mice, via drinking water for a period of 12 consecutive weeks. **Results:** Blood glucose concentration in DM mice (BTBR) without EMPA was higher than control, and lower in DM mice treated with EMP. WB and IHC analyses revealed that renal ATG5 level was significantly reduced in renal lysate of diabetic mice compared with control mice and up regulated by EMPA treatment. Quantification of renal ATG5 expression in total IHC blots analysis, ATG5 was significantly decreased in DM mice compared with control mice. A significant increase in ATG5 levels was observed in DM+EMPA mice compared with DM mice. Quantification of total WB LC3-II renal level was significantly reduced in DN renal lysate compared with WT renal lysate. In DM mice treated with EMPA, LC3-II levels were upregulated vs DM mice. Quantification of renal fibronectin expression in total IHC Renal fibronectin increased in DM mice group vs control. Treatment with EMPA decreased Fibronectin expression vs DM group. **Discussion & Conclusions:** 1. ATG5, as well as LC3-II, are important key proteins in the autophagy processes, high regulated in the normal condition. 2. We believe that our data suggest that there is a link between ATG5-LC3 dysregulation and T2DM and DN. 3. Our findings may be translated into clinical practice approach and may lead to further studies to address DM & vascular complications by selective modulation of ATG5/LC3 expression with the SGLT2i (EMPA) treatment. EMPA can be the first choice of treatment in patients with T2DM and its vascular complications.

Obesity

**Nutritional Nesting (‘Nestrition’)- Shaping the Home Food Environment in First Pregnancy**

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**Objective:** To investigate primiparous women’s knowledge, attitudes and practices regarding the physical home food environment (PHFE) and assess if first pregnancy provides a teachable opportunity to enhance the PHFE of first-time pregnant couples.

**Design:** Longitudinal in-depth qualitative study involving questionnaires and individual interviews during and after pregnancy.

**Participants:** Fifteen primigravida women.

**Main outcome measures:** Knowledge, attitudes, and behaviors concerning PHFE; lifestyle and dietary habits; interest in guidance for healthy PHFE during first pregnancy and transition to motherhood.

**Analysis:** Thematic analysis for qualitative data and descriptive statistics.

**Results:** Key findings include the significance of health, nutrition, and spousal support in the transition to motherhood. First pregnancy was recognized as a critical period for establishing a healthy PHFE, while noting the physical and emotional challenges involved. A gap was found in guidance about PHFE for first-time pregnant women despite their interest in practical advice.

**Conclusions and Implications:** First pregnancy presents a significant opportunity to improve PHFE. ‘Nestrition’ (nutritional nesting), a new health-promotion strategy, incorporates nutrition education to enhance this process. These data support future research encompassing partners and diverse at-risk populations prior to the development of effective nutrition education for PHFE

Type 2 Diabetes

**Reducing Foot Amputations in Diabetic Patients**

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Background: The incidence of leg amputations among diabetic patients in Israel has significantly increased in recent years. Being the leading among OECD countries, (17.6 cases per 100,000 people). Approximately 30% of diabetics are likely to develop a diabetic ulcer, which often precedes amputation. These concerning statistics highlight the urgent need for comprehensive prevention strategies and targeted interventions.

Objectives: To reduce the number of foot amputations employing a proactive approach within the community. To ensure continuous, coordinated care for diabetic foot conditions. Methods: A district action team was formed Focusing on raising • awareness about the importance of managing diabetes and preventing foot complications, including training sessions. • Targeting diabetic patients with HbA1c over 9% prioritizing those at high risk for potential ulcers ensuring continuity of care through close monitoring.

Results: • A 30% reduction in foot amputations was observed in the first half of 2024, decreasing from 10 amputations in the same period of 2023 to 7 amputations. • Foot assessments by nurses increased by 9% in the first half of 2024 compared to the median for the same period in 2023. • Improved diabetes management, with 10.9% (HbA1c above 8%) in the first half of 2024, compared to 12.2% in the corresponding period of 2023. • Clinic hours for diabetic foot and wound care were expanded, additional podiatrists service and a collaborative model for preventive care was established. Summary: Structured intervention programs for primary clinic teams have been instrumental in the fight to reduce amputations among diabetes patients.

Type 2 Diabetes

**A Focused Diabetes Program in East Jerusalem Arab Community**

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Background:

Health inequality is largely influenced by non-medical factors such as economic inequality, poverty, cultural accessibility, and language barriers. The diabetes rate among Arabs aged 21 and over is higher than among Jews. Arab men are 1.5 times more likely to have diabetes, and Arab women 2.2 times more likely, with cultural factors contributing to these disparities. In East Jerusalem, uncontrolled diabetes rates in Meuhedet HMO patients are significantly higher than in West Jerusalem (17% vs. 6.5% in 2023). This calls for intervention.

Objective:

To improve diabetes management in East Jerusalem and prevent related complications.

Methods:

1. Training healthcare teams in diabetes treatment, teamwork, and patient communication.
2. Emphasizing healthy lifestyle discussions, including exercise and nutrition.
3. Monitoring patients who missed follow-up tests.
4. Using targeted lists to address care gaps and recommend treatment adjustments.
5. Scheduling follow-ups for treatment changes.
6. Providing training and lectures in Arabic, especially before Ramadan.
7. Evaluating after 3-6 months.

Results:

A reduction in uncontrolled diabetes (HbA1C  $\geq 9\%$ ) in East Jerusalem clinics from 17.1% to 10.2%.

Conclusions:

Collaborative efforts among clinic teams enhance treatment quality. High team motivation leads to clearer communication and better patient outcomes.