Type 2 Diabetes
Current Awareness Bulletin
October 2017

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Prevention

Assessment of a National Diabetes Education Program diabetes prevention toolkit: The D2d experience.

Author(s): Devchand, Roshni; Sheehan, Patricia; Gallivan, Joanne M.; Tuncer, Diane M.; Nicols, Christina

Source: Journal of the American Association of Nurse Practitioners; Sep 2017; vol. 29 (no. 9); p. 514-520

Publication Date: Sep 2017

Publication Type(s): Academic Journal

Abstract: Background and purpose The National Diabetes Education Program created the Small Steps. Big Rewards. GAME PLAN. toolkit to deliver basic type 2 diabetes prevention information to individuals at risk. The purpose of this study is to test the impact of GAME PLAN on diabetes prevention knowledge and behavioral readiness in the vitamin D and type 2 diabetes (D2d) study and participant satisfaction with toolkit materials. Methods Three hundred sixty adults at risk for diabetes participating in the D2d study were enrolled. Participants took a pretest, were sent home with the GAME PLAN, then took a posttest at their next visit, 3 months later. The Wilcoxon-signed rank test was used to examine changes in knowledge and behavioral readiness between scale scores pre- and posttest. Conclusions There were modest increases in composite diabetes prevention knowledge scores (p < .05) and behavioral readiness scores (p < .001) from pre- to posttest. Participants also reported at posttest that the toolkit materials were appropriate, comprehensive, and relevant. Implications for practice The GAME PLAN health education materials improve knowledge and behavioral readiness among adults at risk for diabetes. Providers can use GAME PLAN as one component of diabetes prevention education.

Database: CINAHL

Diabetes: The cost of globalization

Author(s): Nilsson P.M.; Bennet L.

Source: Heart and Metabolism; 2017 (no. 73); p. 4-8

Publication Date: 2017

Publication Type(s): Article

Abstract: The epidemic of type 2 diabetes mellitus (T2DM) on a global scale is a matter of concern, not only from a public health perspective, but also with consideration of societal costs. The increased call on health care resources to treat and monitor T2DM and its complications could put a heavy burden on national health care systems and financing. An important contributing factor for development of T2DM is lifestyle, reflecting increasing affluence and exposure to increased calorie intake in combination with sedentary lifestyle and less human energy expenditure. More detailed glucometabolic studies have been conducted in high-risk migrant populations, eg, from the Middle East. Recently, intervention programs have also been tested to improve lifestyle and reduce the risk of developing T2DM in at-risk individuals. There are many obstacles to success for such programs, which should be tailored not only to the individual in a culture-sensitive way, but also to families and local ethnic communities.

Database: EMBASE

How to prevent type 2 diabetes in women with previous gestational diabetes? A systematic review of behavioural interventions

Author(s): Pedersen A.L.W.; Terkildsen Maindal H.; Juul L.

Source: Primary Care Diabetes; Oct 2017; vol. 11 (no. 5); p. 403-413

Publication Date: Oct 2017

Publication Type(s): Review

Abstract: Objectives Women with previous gestational diabetes (GDM) have a seven times higher risk of developing type 2 diabetes (T2DM) than women without. We aimed to review the evidence of effective behavioural interventions seeking to prevent T2DM in this high-risk group. Methods A systematic review of RCTs in several databases in March 2016. Results No specific intervention or intervention components were found superior. The pooled effect on diabetes incidence (four trials) was estimated to: -5.02 per 100 (95% CI: -9.24; -0.80). Conclusions This study indicates that intervention is superior to no intervention in prevention of T2DM among women with previous GDM.

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Database: EMBASE
Associations of Dairy Intake with Incident Prediabetes or Diabetes in Middle-Aged Adults Vary by Both Dairy Type and Glycemic Status.

Author(s): Hruby, Adela; Ma, Jiantao; Rogers, Gail; Meigs, James B; Jacques, Paul F

Source: The Journal of nutrition; Sep 2017; vol. 147 (no. 9); p. 1764-1775

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 28768835

Abstract: Background: Inconsistent evidence describes the association between dietary intake of dairy and milk-based products and type 2 diabetes (T2D) risk. Objective: Our objective was to assess associations between consumption of milk-based products, incident prediabetes, and progression to T2D in the Framingham Heart Study Offspring Cohort. Methods: Total dairy and milk-based product consumption was assessed by ≤4 food-frequency questionnaires across a mean of 12 y of follow-up in 2809 participants [mean ± SD age: 54.0 ± 9.7 y; body mass index (in kg/m²): 27.1 ± 4.7; 54% female]. Prediabetes was defined as the first occurrence of fasting plasma glucose ≥5.6 to <7.0 mmol/L (≥100 to <126 mg/dL), and T2D was defined as the first occurrence of fasting plasma glucose ≥7.0 mmol/L (≥126 mg/dL) or diabetes treatment. Proportional hazards models were used to estimate the risk of incident outcomes relative to dairy product intake in subsets of the cohort who were at risk of developing the outcomes. Spline regressions were used to examine potential nonlinear relations. Results: Of 1867 participants free of prediabetes at baseline, 902 (48%) developed prediabetes. Total, low-fat, and high-fat dairy consumptions were associated with a 39%, 32%, and 25% lower risk of incident prediabetes, respectively, in the highest compared with the lowest intakes (≥14 compared with <4 servings/wk). Total, low-fat and skim milk, whole-milk, and yogurt intakes were associated nonlinearly with incident prediabetes; moderate intake was associated with the greatest relative risk reduction. Neither cheese nor cream and butter was associated with prediabetes. Of 925 participants with prediabetes at baseline, 196 (21%) developed T2D. Only high-fat dairy and cheese showed evidence of dose-response, inverse associations with incident T2D, with 70% and 63% lower risk, respectively, of incident T2D between the highest and lowest intake categories (≥14 compared with <1 serving/wk for high-fat dairy, ≥4 compared with <1 serving/wk for cheese). Conclusion: Associations of dairy with incident prediabetes or diabetes varied both by dairy product and type and by baseline glycemic status in this middle-aged US population. Baseline glycemic status may partially underlie prior equivocal evidence regarding the role of dairy intake in diabetes.

Database: Medline

'Disturbing' rise in type 2 diabetes in children

Author(s):

Source: Community Practitioner; Sep 2017; vol. 90 (no. 9); p. 8

Publication Date: Sep 2017

Publication Type(s): News

PubMedID: 40570

Abstract: The LGA claimed the government has slashed funding on public health by £531m over the past five years and that urgent action on childhood obesity is needed.

Database: BNI

The UK's inadequate plan for reducing childhood obesity

Author(s): The Lancet

Source: The Lancet; Aug 2017; vol. 390 (no. 10097); p. 822

Publication Date: Aug 2017

Publication Type(s): Editorial

PubMedID: 28154

Available in print at RNHRD Academy Library - from The Lancet

Abstract: "Next stage of world-leading childhood obesity plan announced", trumpeted the press release from Public Health England (PHE) on Aug 18, to coincide with the 1-year anniversary since the UK Government's child obesity plan was launched. With a third of children being overweight or obese by the time they leave primary school, and the latest data highlighting an increasing prevalence of type 2 diabetes in young people (621 received care from paediatric diabetic clinics in 2015-16), confronting childhood obesity remains an urgent public health challenge.

Database: BNI
H. pylori seroprevalence and risk of diabetes: An ancillary case-control study nested in the diabetes prevention program

Author(s): Alzahrani S.; Pittas A.G.; Nelson J.; Paulus J.K.; Moss S.F.; Knowler W.C.

Source: Journal of Diabetes and its Complications; Oct 2017; vol. 31 (no. 10); p. 1515-1520

Publication Date: Oct 2017

Abstract: Objective To determine the association between H. pylori infection and risk of incident diabetes in adults at high risk for diabetes who participated in the Diabetes Prevention Program (DPP) study. Methods In a nested case-control study conducted among 421 adults with newly diagnosed diabetes and 421 matched controls, we examined the association between serological status of H. pylori at baseline and risk of incident diabetes over a mean follow-up period of 2.6 years. Using data from the baseline visit of the DPP, we also examined the cross-sectional association between presence of H. pylori antibodies and insulin sensitivity, insulin secretion and the disposition index-like measure after a 75-g oral glucose tolerance test (OGTT). Results At baseline, H. pylori antibodies were present in 40% of participants who developed diabetes and 39% of controls. After adjusting for matching factors, there was no association between exposure to H. pylori and incident diabetes (odds ratio [OR] of 1.04 (95% CI, 0.77 to 1.40). In cross-sectional analyses, H. pylori status was not significantly associated with insulin sensitivity and disposition index-like measure from OGTT. Conclusions In adults at high risk for diabetes, H. pylori seropositivity was not associated with risk of developing diabetes. Copyright © 2017 Elsevier Inc.

Database: EMBASE

Treatment

Treatment for 6 months with fish oil-derived n-3 polyunsaturated fatty acids has neutral effects on glycemic control but improves dyslipidemia in type 2 diabetic patients with abdominal obesity: a randomized, double-blind, placebo-controlled trial.

Author(s): Wang, Feng; Wang, Yanyan; Zhu, Yan; Liu, Xiaosong; Xia, Hui; Yang, Xian; Sun, Guiju

Source: European Journal of Nutrition; Oct 2017; vol. 56 (no. 7); p. 2415-2422

Publication Date: Oct 2017

Abstract: Purpose: This study aimed to determine the effects of fish oil-derived n-3 PUFA on glycemic control and lipid profiles in type 2 diabetic patients with abdominal obesity. Methods: In a randomized, double-blind, placebo-controlled trial, 100 type 2 diabetic patients with abdominal obesity were randomized into two groups including 4 g/day of fish oil (2.4 g n-3 PUFA) or placebo (corn oil) for 6 months. Serum fatty acid, body composition, as well as markers of glucose regulation and lipid parameters were measured before and after intervention. Results: Thirty-five men and 64 women aged 65.4 ± 5.3 years completed the intervention. Although body composition was unchanged, serum EPA and DHA were higher in the fish oil group than those in the placebo group ( P < 0.001 and P < 0.001, respectively). Serum triglyceride (TG) decreased ( P = 0.007), whereas high-density lipoprotein cholesterol (HDL-C) increased ( P = 0.006) in the fish oil group compared with the placebo group after 6 months. Serum total cholesterol, low-density lipoprotein cholesterol (LDL-C), the ratio of LDL-C to HDL-C, and glycemic control (measured by serum glucose, glycated hemoglobin, insulin, and homeostasis model assessment-insulin resistance) were not significantly different between the two groups after 6 months. Conclusions: This study showed that 6 months of fish oil supplement had no statistically significant effects on glycemic control, but improved TG and HDL-C in type 2 diabetic patients with abdominal obesity. Trial registration: ChiCTR.org ChiCTR-TRC-14005084.

Database: CINAHL

Effectiveness of shared goal setting and decision making to achieve treatment targets in type 2 diabetes patients: A cluster-randomized trial (OPTIMAL).

Author(s): Den Ouden, Henk; Vos, Rimke C.; Rutten, Guy E. H. M.

Source: Health Expectations; Oct 2017; vol. 20 (no. 5); p. 1172-1180

Publication Date: Oct 2017

Publication Type(s): Academic Journal

Available in full text at Health Expectations - from EBSCOhost
Abstract: Objective About 20% of patients with type 2 diabetes achieve all their treatment targets. Shared decision making (SDM) using a support aid based on the 5-years results of the ADDITION study on multifactorial treatment, could increase this proportion. Research design and methods Cluster-randomized trial in 35 former ADDITION primary care practices. Practices were randomized to SDM or care as usual (1:1). Both ADDITION and non-ADDITION type 2 diabetes patients, 60-80 years, known with diabetes for 8-12 years, were included. In the intervention group, patients were presented evidence about the relationship between treatment intensity and cardiovascular events. They chose intensive or less intensive treatment and prioritized their targets. After 1 year priorities could be rearranged. Follow-up: 24 months. Intention-to-treat analysis. Main outcome measure: proportion of patients that achieved all three treatment results. Results At baseline 26.4% in the SDM group (n=72) had already achieved all three treatment goals (CG: 23.5%, n=81). In the SDM group 44 patients chose intensive treatment, 25 continued their former less intensive treatment and three people switched from the more to the less intensive protocol. After 24 months 31.8% of the patients in the SDM group achieved all three treatment targets (CG: 25.3%), RR 1.26 (95% CI 0.81-1.95). Mean systolic blood pressure decreased in the SDM group (−5.4 mm Hg, P < 0.01), mean HbA1c and total cholesterol did not change. Conclusions Despite an already high baseline level of diabetes care, we found strong indications that SDM on both intensity of treatment and prioritizing treatment goals further improved outcomes.

Database: CINAHL

Consumption of vitamin D-fortified yogurt drink increased leptin and ghrelin levels but reduced leptin to ghrelin ratio in type 2 diabetes patients: a single blind randomized controlled trial.

Author(s): Hajimohammadi, Mina; Shab-Bidar, Sakineh; Neyestani, Tirang

Source: European Journal of Nutrition; Sep 2017; vol. 56 (no. 6); p. 2029-2036

Publication Date: Sep 2017

Publication Type(s): Academic Journal

Abstract: Purpose: This study aimed to evaluate the effect of daily consumption of vitamin D-fortified yogurt drink (doogh) in comparison with plain doogh on appetite-regulating hormones including leptin and ghrelin in type 2 diabetes (T2D) patients. Methods: In a single blind randomized clinical trial, subjects with T2D were randomly allocated to one of the two groups and received either vitamin D3-fortified doogh (FD; containing 170 mg calcium and 500 IU/250 mL, n = 50) or plain doogh (PD; containing 170 mg calcium and no vitamin D/250 mL, n = 50) twice a day for 12 weeks. Leptin and ghrelin were evaluated at the beginning and after 12 weeks of intervention. Results: The intervention resulted in a significant improvement of circulating 25(OH) D, fasting glucose, Quantitative Insulin Check Index (QUICKI), hs-CRP, in FD compared with PD group. A significant rise in both serum leptin (+1.3 ± 7.2 mg/L; p = 0.013) and ghrelin (10.1 ± 26.1 ng/L; p = 0.012) was observed in FD group. A between-group difference for ghrelin changes (p = 0.029) remained significant after adjusting for changes QUICKI (p = 0.039), body mass index (p = 0.034) and hs-CRP (p = 0.022). Despite an increase in both leptin and ghrelin, leptin to ghrelin (L/G) ratio actually decreased in FD. Changes of L/G ratio showed a significant between-group difference (p = 0.038), which remained significant even after adjusting for changes of hs-CRP (p = 0.028) and fat mass (p = 0.047) but disappeared after adjusting for changes of QUICKI (p = 0.42). Conclusions: Daily intake of vitamin D-fortified doogh may increase circulating leptin and ghrelin but L/G ratio may actually decrease. Our results suggest that improving vitamin D may result in an improvement in insulin sensitivity which may finally regulate beneficially appetite hormones. Further studies with adequate power are needed to confirm the results.

Database: CINAHL

Cardiac-diabetes self-management program for Australians and Taiwanese: A randomized blocked design study.

Author(s): Wu, Chiung-Jung (Jo); Sung, Huei-Chuan; Chang, Anne M.; Atherton, John; Kostner, Karam; McPhail, Steven M.

Source: Nursing & Health Sciences; Sep 2017; vol. 19 (no. 3); p. 307-315

Publication Date: Sep 2017

Publication Type(s): Academic Journal

Abstract: Cardiac disease and type 2 diabetes are prevalent diseases globally. Cardiac rehabilitation and diabetes self-management programs empower patients' self-management to improve their health outcomes. However, inappropriate delivery modes and continuing low participation rates indicate some programs are less than optimal. A previous study demonstrated the feasibility of incorporating telephone and text messages into a cardiac-diabetes self-management program in Australia; however, the program did not specifically address patients' cultural backgrounds. This current study used a randomized blocked design to evaluate short-term efficacy of the cardiac-diabetes self-management program incorporating telephone and text-messaging across different cultural contexts in Australia and Taiwan in comparison to usual care. No significant differences between groups were observed for outcomes of self-care behavior, self efficacy, knowledge and health-related quality of life, with patients in both groups demonstrating improvements. Patient-reported outcomes indicated some
Effect of an Intensive Lifestyle Intervention on Glycemic Control in Patients With Type 2 Diabetes: A Randomized Clinical Trial.

Author(s): Yun Johansen, Mette; MacDonald, Christopher Scott; Hansen, Katrine Bagge; Karstoft, Kristian; Christensen, Robin; Pedersen, Maria; Hansen, Louise Seier; Zacho, Morten; Wedell-Neergaard, Anne-Sophie; Nielsen, Signe Tellerup; Iepsen, Ulrik Wining; Langberg, Henning; Vaag, Allan Arthur; Pedersen, Bente Klarlund; Ried-Larsen, Mathias; Johansen, Mette Yun

Source: JAMA: Journal of the American Medical Association; Aug 2017; vol. 318 (no. 7); p. 637-646

Database: CINAHL

Abstract: Importance: It is unclear whether a lifestyle intervention can maintain glycemic control in patients with type 2 diabetes. Objective: To test whether an intensive lifestyle intervention results in equivalent glycemic control compared with standard care and, secondarily, leads to a reduction in glucose-lowering medication in patients with type 2 diabetes. Design, Setting, and Participants: Randomized, assessor-blinded, single-center study within Region Zealand and the Capital Region of Denmark (April 2015-August 2016). Ninety-eight adult participants with non-insulin-dependent type 2 diabetes who were diagnosed for less than 10 years were included. Participants were randomly assigned (2:1; stratified by sex) to the lifestyle group (n = 64) or the standard care group (n = 34). Interventions: All participants received standard care with individual counseling and standardized, blinded, target-driven medical therapy. Additionally, the lifestyle intervention included 5 to 6 weekly aerobic training sessions (duration 30-60 minutes), of which 2 to 3 sessions were combined with resistance training. The lifestyle participants received dietary plans aiming for a body mass index of 25 or less. Participants were followed up for 12 months. Main Outcomes and Measures: Primary outcome was change in hemoglobin A1c (HbA1c) from baseline to 12-month follow-up, and equivalence was prespecified by a CI margin of ±0.4% based on the intention-to-treat population. Superiority analysis was performed on the secondary outcome reductions in glucose-lowering medication. Results: Among 98 randomized participants (mean age, 54.6 years [SD, 8.9]; women, 47 [48%]; mean baseline HbA1c, 6.7%), 93 participants completed the trial. From baseline to 12-month follow-up, the mean HbA1c level changed from 6.65% to 6.34% in the lifestyle group and from 6.74% to 6.66% in the standard care group (mean between-group difference in change of -0.28% [95% CI, -0.52% to -0.01%]), not meeting the criteria for equivalence (P = .15). Reduction in glucose-lowering medications occurred in 47 participants (73.5%) in the lifestyle group and 9 participants (26.4%) in the standard care group (difference, 47.1...
The effects of yoga among adults with type 2 diabetes: A systematic review and meta-analysis
The relationship between insulin sensitivity and heart rate-corrected QT interval in patients with type 2 diabetes


Source: Diabetology and Metabolic Syndrome; Sep 2017; vol. 9 (no. 1)

Abstract: Background: Reduced insulin sensitivity not only contributes to the pathogenesis of type 2 diabetes but is also linked to multiple metabolic risk factors and cardiovascular diseases (CVD). A prolonged heart rate-corrected QT interval (QTc interval) is related to ventricular arrhythmias and CVD mortality and exhibits a high prevalence among type 2 diabetes patients. The aim of the study was to investigate the relationships between insulin sensitivity and the QTc interval in patients with type 2 diabetes. Methods: This cross-sectional observational study recruited 2927 patients with type 2 diabetes who visited the Affiliated Haian Hospital and Second Affiliated Hospital of Nantong University. The insulin sensitivity index (Matsuda index, ISIMatsuda) derived from 75-g OGTT and other metabolic risk factors were examined in all patients. The QTc interval was estimated using a resting 12-lead electrocardiogram, and an interval longer than 440 ms was considered abnormally prolonged. Results: The QTc interval was significantly and negatively correlated with the ISIMatsuda (r = -0.296, p Matsuda (beta = -0.23, t = -12.63, p Matsuda, respectively. After adjusting for anthropometric parameters by multiple logistic regression analysis, the corresponding odd ratios (ORs) for prolonged QTc interval of the first, second and third quartiles versus the fourth quartile of ISIMatsuda were 3.11 (95% CI 2.23-4.34), 2.09 (1.51-2.88) and 1.53 (1.09-2.14), respectively, and p for trend was Copyright © 2017 The Author(s).

Database: EMBASE

Immediate Effect of Needling at CV-12 (Zhongwan) Acupuncture Point on Blood Glucose Level in Patients with Type 2 Diabetes Mellitus: A Pilot Randomized Placebo-Controlled Trial

Author(s): Kumar R.; Mooventhan A.; Manjunath N.K.

Source: JAMS Journal of Acupuncture and Meridian Studies; Aug 2017; vol. 10 (no. 4); p. 240-244

Abstract: Introduction: Diabetes mellitus is a major global health problem. Needling at CV-12 has reduced blood glucose level in diabetic rats. The aim of this study was to evaluate the effect of needling at CV-12 (Zhongwan) on blood glucose level in patients with type 2 diabetes mellitus (T2DM). Materials and Methods: Forty T2DM patients were recruited and randomized into either the acupuncture group or placebo control group. The
participants in the acupuncture group were needled at CV-12 (4 cun above the center of the umbilicus), and those in the placebo control group were needled at a placebo point on the right side of the abdomen (1 cun beside the CV-12). For both groups, the needle was retained for 30 minutes. Assessments were performed prior to and after the intervention. Statistical analysis was performed using SPSS version 16. Results There was a significant reduction in random blood glucose level in the acupuncture group compared to baseline. No such significant change was observed in the placebo control group. Conclusion The result of this study suggests that 30 minutes of needling at CV-12 might be useful in reducing blood glucose level in patients with T2DM. Copyright © 2017

Database: EMBASE

Acupuncture for Management of Type 2 Diabetes Mellitus in a Patient with Myasthenia Gravis: A Case Report

Author(s): Kim Y.J.
Source: JAMS Journal of Acupuncture and Meridian Studies; Aug 2017; vol. 10 (no. 4); p. 290-293
Publication Date: Aug 2017
Publication Type(s): Article

Abstract: Myasthenia gravis (MG) is an acquired disease of the neuromuscular junctions characterized by muscular weakness and fatigue, with a prevalence of 50-125 cases per million population in western countries. In men, it usually appears after the age of 60 years, while in women, it usually appears before the age of 40 years. Long-term immunosuppression with corticosteroids is the mainstay treatment for patients with MG; however, the use of corticosteroids is a well-documented risk factor for type 2 diabetes mellitus, which has also been reported in steroid-treated patients with MG. Here, a case of type 2 diabetes mellitus in a patient with MG who underwent 105 sessions of acupuncture delivered over 6 months is reported. After acupuncture treatment, the patient's fasting plasma glucose and hemoglobin A1c levels, as well as the score on the Hamilton Depression Rating Scale, were decreased. Furthermore, no adverse effects were observed. The findings in this clinical study are encouraging and provide evidence supporting the effectiveness of acupuncture in reducing type 2 diabetes mellitus in a patient with MG. Copyright © 2017

Database: EMBASE

Effects of insulin and exercise training on FGF21, its receptors and target genes in obesity and type 2 diabetes

Author(s): Kruse R.; Hojlund K.; Vind B.F.; Vienberg S.G.; Andersen B.
Source: Diabetologia; Oct 2017; vol. 60 (no. 10); p. 2042-2051
Publication Date: Oct 2017
Publication Type(s): Article

Abstract: Aims/hypothesis: Pharmacological doses of FGF21 improve glucose tolerance, lipid metabolism and energy expenditure in rodents. Induced expression and secretion of FGF21 from muscle may increase browning of white adipose tissue (WAT) in a myokine-like manner. Recent studies have reported that insulin and exercise increase FGF21 in plasma. Obesity and type 2 diabetes are potentially FGF21-resistant states, but to what extent FGF21 responses to insulin and exercise training are preserved, and whether FGF21, its receptors and target genes are altered, remains to be established. Methods: The effects of insulin during euglycaemic-hyperinsulinaemic clamps and 10 week endurance training on serum FGF21 were examined in individuals with type 2 diabetes and in glucose tolerant overweight/obese and lean individuals. Gene expression of FGF21, its receptors and target genes in muscle and WAT biopsies was evaluated by quantitative real-time PCR (qPCR). Results: Insulin increased serum and muscle FGF21 independent of overweight/obesity or type 2 diabetes, and there were no effects associated with exercise training. The insulin-induced increases in serum FGF21 and muscle FGF21 expression correlated tightly (p Copyright © 2017, Springer-Verlag GmbH Germany.

Database: EMBASE

Impact of post-meal and one-time daily exercise in patient with type 2 diabetes mellitus: A randomized crossover study

Author(s): Pahra D.; Sharma N.; Ghai S.; Hajela A.; Bhansali S.; Bhansali A.
Source: Diabetology and Metabolic Syndrome; Aug 2017; vol. 9 (no. 1)
Publication Date: Aug 2017
Publication Type(s): Article

Available in full text at Diabetology & Metabolic Syndrome - from National Library of Medicine
Available in full text at Diabetology and Metabolic Syndrome - from BioMed Central
Available in full text at Diabetology & Metabolic Syndrome - from National Library of Medicine
Effect of an intensive lifestyle intervention on glycemic control in patients with type 2 diabetes: A randomized clinical trial


**Source:** JAMA - Journal of the American Medical Association; Aug 2017; vol. 318 (no. 7); p. 637-646

**Publication Date:** Aug 2017

**Publication Type(s):** Article

**PubMedID:** 28810024

**Abstract:** IMPORTANCE: It is unclear whether a lifestyle intervention can maintain glycemic control in patients with type 2 diabetes. OBJECTIVE: To test whether an intensive lifestyle intervention results in equivalent glycemic control compared with standard care and, secondarily, leads to a reduction in glucose-lowering medication in participants with type 2 diabetes. DESIGN, SETTING, AND PARTICIPANTS: Randomized, assessor-blinded, single-center study within Region Zealand and the Capital Region of Denmark (April 2015-August 2016). Ninety-eight adult participants with non-insulin-dependent type 2 diabetes who were diagnosed for less than 10 years were included. Participants were randomly assigned (2:1; stratified by sex) to the lifestyle group (n = 64) or the standard care group (n = 34). INTERVENTIONS: All participants received standard care with individual counseling and standardized, blinded, target-driven medical therapy. Additionally, the lifestyle intervention included 5 to 6 weekly aerobic training sessions (duration 30-60 minutes), of which 2 to 3 sessions were combined with resistance training. The lifestyle participants received dietary plans aiming for a body mass index of 25 or less. Participants were followed up for 12 months. MAIN OUTCOMES AND MEASURES: Primary outcome was change in hemoglobin A1c (HbA1c) from baseline to 12-month follow-up, and equivalence was prespecified by a CI margin of +/-0.4% based on the intention-to-treat population. Superiority analysis was performed on the secondary outcome reductions in glucose-lowering medication. RESULTS: Among 98 randomized participants (mean age, 54.6 years [SD, 8.9]; women, 47 [48%]; mean baseline HbA1c, 6.7%), 93 participants completed the trial. From baseline to 12-month follow-up, the mean HbA1c level changed from 6.65% to 6.34% in the lifestyle group and from 6.74% to 6.66% in the standard care group (mean between-group difference in change of -0.26% [95% CI, -0.52% to -0.01%]), not meeting the criteria for equivalence (P = .15). Reduction in glucose-lowering medications occurred in 47 participants (73.5%) in the lifestyle group and 9 participants (26.4%) in the standard care group (difference, 47.1 percentage points [95% CI, 28.6-65.3]). There were 32 adverse events (most commonly musculoskeletal pain or discomfort and mild hypoglycemia) in the lifestyle group and 5 in the standard care group. CONCLUSIONS AND RELEVANCE: Among adults with type 2 diabetes diagnosed for less than 10 years, a lifestyle intervention compared with standard care resulted in a change in glycemic control that did not reach the criterion for equivalence, but was in a direction consistent with...
benefit. Further research is needed to assess superiority, as well as generalizability and durability of findings.

TRIAL REGISTRATION: clinicaltrials.gov Identifier: NCT02417012. Copyright © 2017 American Medical Association. All rights reserved.

Database: EMBASE

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Author(s): Hung, Jui-Yu; Chen, Pin-Fan; Livneh, Hanoch; Chen, Yi-Yu; Guo, How-Ran; Tsai, Tzung-Yi

Source: Medicine; Sep 2017; vol. 96 (no. 36); p. e7912

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 28885345

Database: Medline

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Laboratory diagnosis of overt type 2 diabetes in the first trimester of pregnancy

Author(s): Hessler, Karen L; Dunemn, Kathleen

Source: Journal of the American Association of Nurse Practitioners; Sep 2017; vol. 29 (no. 9); p. 521

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 39096

Abstract:Objective The objective of this study was to compare the use of hemoglobin A1C to oral glucose tolerance testing to diagnose overt type 2 diabetes in the first trimester of pregnancy. The study used a nonexperimental descriptive design to compare the use of the hemoglobin A1C test results to oral glucose tolerance test results. Methods The study used a sample of 45 women at high risk for type 2 diabetes in the first trimester of pregnancy. Participants were consented to draw a hemoglobin A1C with their ordered oral glucose tolerance testing for comparison of the two tests’ ability to diagnose overt type 2 diabetes. Results Hemoglobin A1C tests were highly positively correlated with oral glucose tolerance testing for diagnosis of type 2 diabetes in women in the first trimester of pregnancy. Conclusion The research provides beginning evidence that the hemoglobin A1C should be considered as a first-tier diagnostic test for overt type 2 diabetes in the first trimester of pregnancy.

Database: BNI

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Podocyturia parallels proximal tubule dysfunction in type 2 diabetes mellitus patients independently of albuminuria and renal function decline: A cross-sectional study

Author(s): Petrica, Ligia; Vlad, Mihaela; Vlad, Adrian; Gluhovschii, Gheorghe; Gadalean, Florica; Dumitrascu, Victor; Popescu, Roxana; Gluhovschii, Cristina; Matusz, Petru; Velcioc, Silvia; Flaviu Bob; Ursoniu, Sorin; Daliborca Vlad

Source: Journal of Diabetes and its Complications; Sep 2017; vol. 31 (no. 9); p. 1444

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 170341

Abstract:Aims Detection of podocytes in the urine of patients with type 2 diabetes may indicate severe injury to the podocytes. In the course of type 2 diabetes the proximal tubule is involved in urinary albumin processing. We studied the significance of podocyturia in relation with proximal tubule dysfunction in type 2 diabetes. Methods A total of 86 patients with type 2 diabetes (34-normoalbuminuria; 30-microalbuminuria; 22-macroalbuminuria) and 28 healthy subjects were enrolled in the study and assessed concerning urinary podocytes, podocyte-associated molecules, and biomarkers of proximal tubule dysfunction. Urinary podocytes were examined in cell cultures by utilizing monoclonal antibodies against podocalyxin and synaptopodin. Results Podocytes were detected in the urine of 10% of the healthy controls, 24% of the normoalbuminuric, 40% of the microalbuminuric, and 82% of the macroalbuminuric patients. In multivariate logistic regression analysis, urinary podocytes correlated with urinary albumin:creatinine ratio (p=0.006), urinary nephrin:creatin (p=0.001), urinary vascular endothelial growth factor/creatin (p=0.001), urinary kidney injury molecule-1/creatin (p=0.003), cystatin C (p=0.001), urinary advanced glycation end-products (p=0.002), eGFR (p=0.001). Conclusions In patients with type 2 diabetes podocyturia parallels proximal tubule dysfunction independently of albuminuria and renal function decline. Advanced glycation end-products may impact the podocytes and the proximal tubule.

Database: BNI
Cancer risks of anti-hyperglycemic drugs for type 2 diabetes treatment - a clinical appraisal

Author(s): Vora, Jiten; Ray, Kausik; Kosiborod, Mikhail; Poulter, Neil R; Rajagopalan, Sanjay; Leiter, Lawrence A

Source: Journal of Diabetes and its Complications; Sep 2017; vol. 31 (no. 9); p. 1451

Publication Date: Sep 2017

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PubMedID: 170341

Abstract:Aim A clinical appraisal of existing scientific literature sought to assess the need for long-term prospective epidemiological studies to investigate an increased cancer risk of anti-hyperglycemic medication in type 2 diabetes. Method A focus statement was formulated as: "With a higher risk of cancers in patients with type 2 diabetes, all anti-hyperglycemic drugs should undergo long-term, prospective epidemiological studies for cancer risks." Field surveys were sent to practicing physicians and endocrinologists to identify the currently prevalent level of acceptance of this statement. Subsequently, a meeting with a six-member panel of key opinion leaders was held to discuss published evidence in support and against the statement. This publication reviews the publications and discussion points brought forth in this meeting and their effect on statement acceptance by the panel. Results Whereas the majority of field survey responders primarily agreed with the statement, panel members were divided in their statement support. This division remained intact after review of the literature. Conclusions While there was evidence that type 2 diabetes is associated with an increased risk of cancer, existing studies seemed insufficient to definitively demonstrate a link between cancer risk and use of specific anti-hyperglycemic therapies.

Database: BNI

Diet modification challenges faced by marginalized and nonmarginalized adults with type 2 diabetes: A systematic review and qualitative meta-synthesis

Author(s): Vanstone, Meredith; Rewegan, Alex; Brundisini, Francesca; Giacomini, Mita; Kandasamy, Sujane; DeJean, Deirdre

Source: Chronic Illness; Sep 2017; vol. 3 (no. 13); p. 217-235

Publication Date: Sep 2017

Publication Type(s): Article Literature Review

Abstract:Objectives: Diet modification is an important part of the prevention and treatment of type 2 diabetes, but sustained dietary change remains elusive for many individuals. This paper describes and interprets the barriers to diet modification from the perspective of people with type 2 diabetes, paying particular attention to the experiences of people who experience social marginalization. Methods: A systematic review of primary, empirical qualitative research was performed, capturing 120 relevant studies published between 2002 and 2015. Qualitative meta-synthesis was used to provide an integrative analysis of this knowledge. Results: Due to the central role of food in social life, dietary change affects all aspects of a person's life, and barriers related to self-discipline, emotions, family and social support, social significance of food, and knowledge were identified. These barriers are inter-linked and overlapping. Social marginalization magnifies barriers; people who face social marginalization are trying to make the same changes as other people with diabetes with fewer socio-material resources in the face of greater challenges. Discussion: A social-ecological model of behavior supports our findings of challenges at all levels, and highlights the need for interventions and counseling strategies that address the social and environmental factors that shape and sustain dietary change. References

Database: BNI

Continuous glucose monitoring adds information beyond HbA1c in well-controlled diabetes patients with early cardiovascular autonomic neuropathy

Author(s): Fleischer, Jesper; Laugesen, Esben; Simon Lebech Cichosz; Hoejem, Pernille; Dejgaard, Thomas; Fremming; Poulsen, Per Loegstrup; Tarnow, Lise; Troels Krarup Hansen

Source: Journal of Diabetes and its Complications; Sep 2017; vol. 31 (no. 9); p. 1389

Publication Date: Sep 2017

Publication Type(s): Journal Article

PubMedID: 170341

Abstract:Aims Hyperglycemia as evaluated by HbA1c is a risk factor for the development of cardiovascular autonomic neuropathy (CAN). The aim of the present study was to investigate whether continuous glucose monitoring (CGM) may add information beyond HbA1c in patients with type 2 diabetes and CAN. Methods 81 patients with type 2 diabetes (43 men, mean age 58±11year, HbA1c 6.6±0.5%). Patients were tested for CAN using cardiovascular reflex tests (response to standing, deep breathing and Valsalva maneuver) and underwent CGM for three days. CAN was defined as early (one test abnormal), or manifest (two or three tests abnormal). Results Twenty patients had early CAN and two patients had manifest CAN. Blood pressure, HbA1c, cholesterol
levels and smoking habits were comparable in patients with vs. without CAN. Post-breakfast glycemic peak was significantly higher in patients with CAN (peak 207 vs 176mg/dL, P=0.009). Furthermore, the nocturnal glucose drop and dawn glucose was significantly higher in patients with CAN compared with patients without CAN (mean 134 vs. 118mg/dL, P=0.017 and mean 143 vs. 130mg/dL, P=0.045, respectively). Removing the two patients with manifest CAN from the statistical analysis didn’t change the results. Conclusions These findings emphasize the importance of monitoring glucose patterns over 24-h and not only rely on HbA1c as therapeutic target in patients with type 2 diabetes and CAN.

**Database**: BNI

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**Effect of dipeptidyl peptidase-4 inhibitors on circulating tumor necrosis factor-α concentrations: A systematic review and meta-analysis of controlled trials**

**Author(s)**: Atkin, Stephen L; Katsiki, Niki; Banach, Maciej; Mikhailidis, Dimitri P; Pirro, Matteo; Sahebkar, Amirhossein

**Source**: Journal of Diabetes and its Complications; Sep 2017; vol. 31 (no. 9); p. 1458

**Publication Date**: Sep 2017

**Publication Type(s)**: Evidence Based Healthcare Journal Article

**PubMedID**: 170341

**Abstract**: Objective Dipeptidyl peptidase-4 (DPP-4) inhibitors improve glycemic control in patients with type 2 diabetes mellitus. There are also reports of an effect of these drugs in reducing inflammation through inhibition of tumor necrosis factor-α (TNF-α) that is an important mediator for several inflammatory processes. The present systematic review and meta-analysis were performed to evaluate the effect of DPP-4 inhibitors on circulating TNF-α levels in T2DM patients. Methods A systematic review and a meta-analysis were undertaken on all controlled trials of DPP-4 inhibitors that included measurement of TNF-α. The search included PubMed-Medline, Scopus, ISI Web of Knowledge and Google Scholar databases. Quantitative data synthesis was performed using a random-effects model, with standardized mean difference (SMD) and 95% confidence interval (CI) as Results Eight eligible articles (6 with sitagliptin and 2 with vildagliptin) comprising 9 treatment arms were selected for this meta-analysis. Meta-analysis suggested a significant reduction of circulating TNF-α concentrations following treatment with DPP-4 inhibitors (SMD: −1.84, 95% CI: −2.88, −0.80, p=0.001). The effect size was robust in the sensitivity analysis and not mainly driven by a single study. A subgroup analysis did not suggest any significant difference between the TNF-α-lowering activity of sitagliptin (SMD: −1.49, 95% CI: −2.89, −0.10) and vildagliptin (SMD: −2.80, 95% CI: −4.98, −0.61) (p=0.326). Conclusion This meta-analysis of the 8 available controlled trials showed that DPP-4 inhibition in patients with type 2 diabetes mellitus was associated with significant reductions in plasma TNF-α levels with no apparent difference between sitagliptin and vildagliptin.

**Database**: BNI

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**Three-year efficacy and safety of exenatide once weekly: A pooled analysis of three trials**

**Author(s)**: Trautmann, Michael E; Luc van Gaal; Han, Jenny; Hardy, Elise

**Source**: Journal of Diabetes and its Complications; Sep 2017; vol. 31 (no. 9); p. 1415

**Publication Date**: Sep 2017

**Publication Type(s)**: Journal Article

**PubMedID**: 170341

**Abstract**: Aims To evaluate the 3-year efficacy and safety of exenatide once weekly (QW) for type 2 diabetes (T2D) in a large clinical population. Methods This post hoc analysis of three DURATION studies examined pooled efficacy and adverse events with exenatide QW from the 2.5- to 3-year completer populations; insulin glargine (glargine) was a reference (DURATION-3). Patients randomized to exenatide QW during the controlled study periods continued controlled treatment (DURATION-3) or single-arm treatment (DURATION-1; DURATION-2) with exenatide QW for the study duration. Results In the exenatide QW group (N=329), reductions from baseline in HbA1C, fasting glucose, and body weight were maintained from weeks 4 to 156 (HbA1C: −1.1±1.3%; fasting glucose: −1.7±2.7mmol/L; body weight: −2.4±5.6kg; P<0.05). Glycemic efficacy with exenatide QW and glargine was similar (HbA1c reduction: −0.8±1.0%; N=158); body weight increased with glargine (+2.0±4.9kg). Variable reductions in systolic blood pressure and low-density lipoprotein cholesterol occurred with exenatide QW. At week 156, 48.3% and 30.7% of exenatide QW recipients achieved HbA1c goals of <7.0% and <=6.5%, respectively. No new safety or tolerability issues were identified. Conclusions Exenatide QW improved glycemic outcomes and was well tolerated in patients with T2D for up to 156weeks.

**Database**: BNI

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**Comparison of MDRD, CKD-EPI, and Cockcroft-Gault equation in relation to measured glomerular filtration rate among a large cohort with diabetes**

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Aims To analyze the performance of Modification of Diet in Renal Disease (MDRD), Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI), Cockcroft-Gault (CG), and CG calculated with ideal bodyweight (CG-IBW) equations to estimate glomerular filtration rate (eGFR) based on serum creatinine in a large diabetic population. Methods 24,516 adults with type-1-diabetes or type-2-diabetes from the multicenter diabetes prospective follow-up registry DPV were analyzed. We compared eGFR and measured GFR (mGFR) based on 24-h urine collection by calculating mean bias (difference), precision (SD of this difference), accuracy (proportion of eGFR within ±10% of mGFR), Bland-Altman-plots. Results CG overestimates, whereas MDRD, CKD-EPI, and CG-IBW underestimate. Smallest mean bias and highest accuracy (75.3%) were observed for MDRD compared to the other equations (p=70years:78.8%). In males and females, MDRD estimated most accurately (males:75.3%, females:75.3%). Conclusion In this large diabetic cohort, smallest bias and highest accuracy were observed for the MDRD.

Clinical characteristics, beta-cell dysfunction and treatment outcomes in patients with A−β+ Ketosis-Prone Diabetes (KPD): The first identified cohort amongst Asian Indians

Objective Ketosis-prone diabetes (KPD), an atypical form of diabetes, has emerged as a heterogeneous syndrome in multiple ethnic groups. The objectives of this study were to look into the clinical characteristics of adult Asian Indian patients with recently diagnosed, antibody negative diabetes presenting with unprovoked ketoacidosis (A−β+ KPD) and to determine the natural course of recovery of beta-cell functions on serial follow-up over one year. Research design and methods Newly diagnosed adult diabetes patients (n=11) with suspected KPD (A−β+) were prospectively studied over a period of 1-year with serial evaluations of clinical, biochemical and beta-cell secretion characteristics. These were compared with a control group (n=23) of KPD (A+β−) (classical Type 1A diabetes) with similar presentation. Beta-cell secretion was assessed by fasting and stimulated C-peptide values after a standard mixed meal challenge. Glycaemic control and treatment outcomes were also documented. Results In comparison to the A+β− KPD controls, the A−β+ KPD patients had a significantly older age, higher BMI, stronger family history of type 2 diabetes, more severe ketoacidosis and higher fasting and stimulated C-peptide level at presentation. On serial follow-up, the patients with KPD achieved complete recovery of their beta-cell function with remission from insulin-dependence within 3-4months without further recurrences of DKA. Conclusions This is the first reported series of A−β+ KPD from India. The phenotype of Indian A−β+ KPD patients differs from their Western counterparts in that they are relatively younger and leaner, though the male preponderance and natural history of recovery of beta-cell dysfunction bears similarity.

Outcomes

Liraglutide and renal outcomes in type 2 diabetes

BACKGROUND: In a randomized, controlled trial that compared liraglutide, a glucagon-like peptide 1 analogue, with placebo in patients with type 2 diabetes and high cardiovascular risk who were receiving usual

Available in print at RNHRD Academy Library - from New England Journal of Medicine

Abstract: BACKGROUND: In a randomized, controlled trial that compared liraglutide, a glucagon-like peptide 1 analogue, with placebo in patients with type 2 diabetes and high cardiovascular risk who were receiving usual
care, we found that liraglutide resulted in lower risks of the primary end point (nonfatal myocardial infarction, nonfatal stroke, or death from cardiovascular causes) and death. However, the long-term effects of liraglutide on renal outcomes in patients with type 2 diabetes are unknown. METHODS: We report the prespecified secondary renal outcomes of that randomized, controlled trial in which patients were assigned to receive liraglutide or placebo. The secondary renal outcome was a composite of new-onset persistent macroalbuminuria, persistent doubling of the serum creatinine level, end-stage renal disease, or death due to renal disease. The risk of renal outcomes was determined with the use of time-to-event analyses with an intention-to-treat approach. Changes in the estimated glomerular filtration rate and albuminuria were also analyzed. RESULTS: A total of 9340 patients underwent randomization, and the median follow-up of the patients was 3.84 years. The renal outcome occurred in fewer participants in the liraglutide group than in the placebo group (268 of 4668 patients vs. 337 of 4672; hazard ratio, 0.78; 95% confidence interval [CI], 0.67 to 0.92; P=0.003). This result was driven primarily by the new onset of persistent macroalbuminuria, which occurred in fewer participants in the liraglutide group than in the placebo group (161 vs. 215 patients; hazard ratio, 0.74; 95% CI, 0.60 to 0.91; P=0.004). The rates of renal adverse events were similar in the liraglutide group and the placebo group (15.1 events and 16.5 events per 1000 patient-years), including the rate of acute kidney injury (7.1 and 6.2 events per 1000 patient-years, respectively). CONCLUSIONS: This prespecified secondary analysis shows that, when added to usual care, liraglutide resulted in lower rates of the development and progression of diabetic kidney disease than placebo. Copyright © 2017 Massachusetts Medical Society.

Prevalence of cardiovascular disease and evaluation of standard of care in type 2 diabetes: A nationwide study in primary care

Author(s): Rungby J.; Warrer P.; Ytte L.; Schou M.; Andersen G.
Source: Diabetologia; Sep 2017; vol. 60 (no. 1)
Publication Date: Sep 2017
Publication Type(s): Conference Abstract
Abstract: Background and aims: Cardiovascular disease (CVD) complicates type 2 diabetes (T2D). Empagliflozin and liraglutide have demonstrated improved survival in patients with T2D and CVD. We assessed prevalence and standard of care (SoC) of patients with T2D and established CVD managed in primary care. Materials and methods: 129 general practitioners, from both rural and urban areas, responsible for 348373 patients, identified T2D patients from the clinic’s electronic patient record system (EPRS) based on ICPC-2 coding system. Patients with concomitant CVD were subsequently identified and characterized. Results: 17113 patients (4.9%) had T2D. T2D with established CVD was found in 3665 patients (21.4%). A maximum of 20 patients form each gp (2003 patients were further analyzed for concommittant CVD: Mean age was 72 yrs; 34.6% were women, see table 1. SoC was good; HbA1c was 52.3 mmol/mol, BP 131.4/75.7 mmHg and LDL-cholesterol 2.0 mmol/l. Mean eGFR was 68.2 ml/min.; 32.2% had micro or macroalbuminuria. Almost 80% were in antilglycemic drug treatment predominantly with metformin in mono or combination therapy (63.4%), insulin was used in 19.5%. 21.8% were treated non-pharmacological. 64.9 % had an ACEI/ARB, 78.3% a statin and 96.1% were in antithrombotic therapy, of these 53% with acetylsalicylic acid; 66.9% were in diuretic treatment. Conclusion: In a nationwide database study in primary care the prevalence of CVD in T2D patients were high (21.4%). SoC was in accordance with local guidelines. Identifying this high-risk group of T2D patients and optimizing treatment might add further CV benefits as suggested in recent cardiovascular outcomes trials. Identification of eligible patients is possible with existing EPRS.

Database: EMBASE