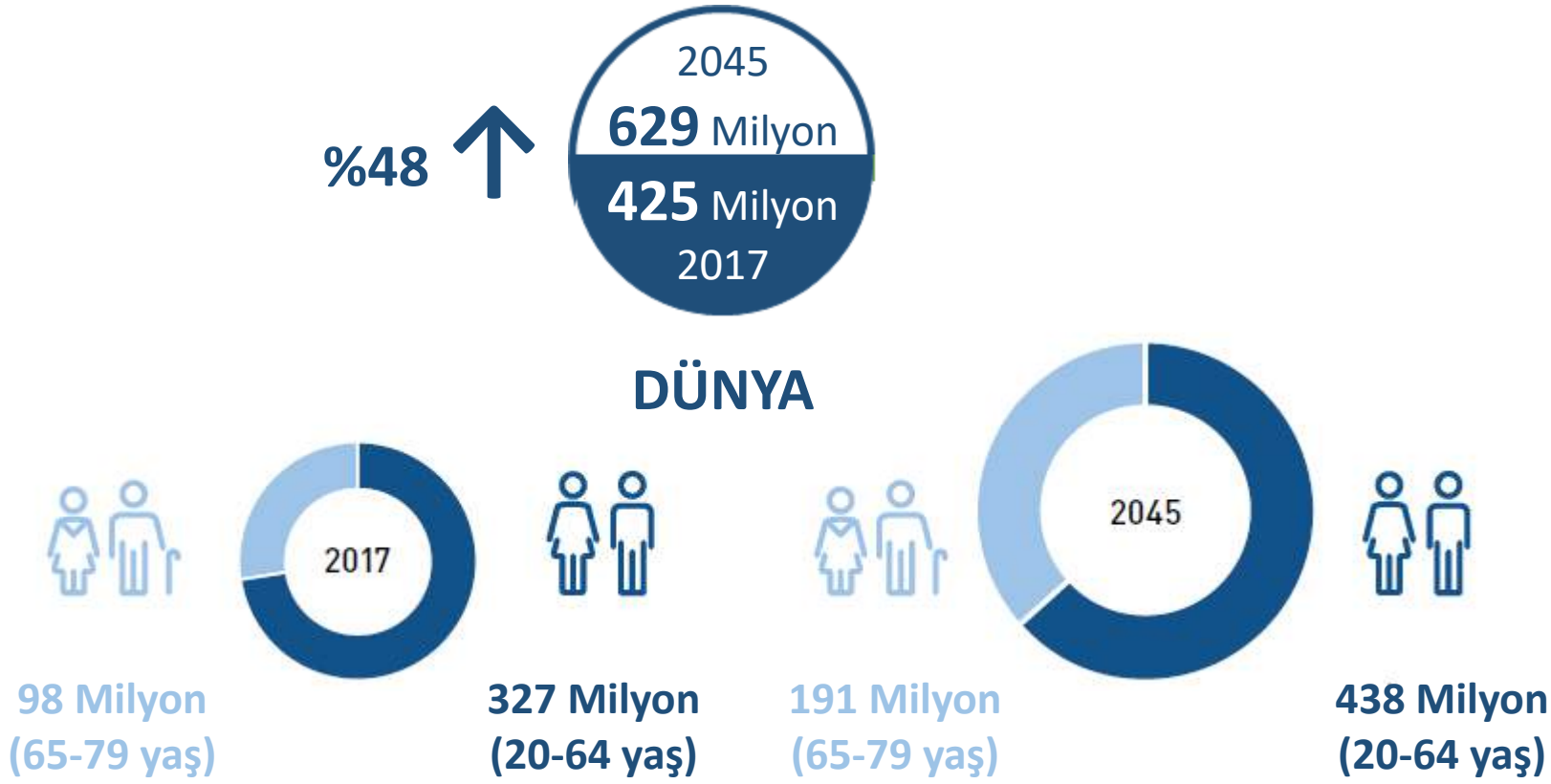
54. ULUSAL DİYABET KONGRESİ
TÜRK DİYABET CEMİYETİ
TÜRKİYE DİYABET VAKFI

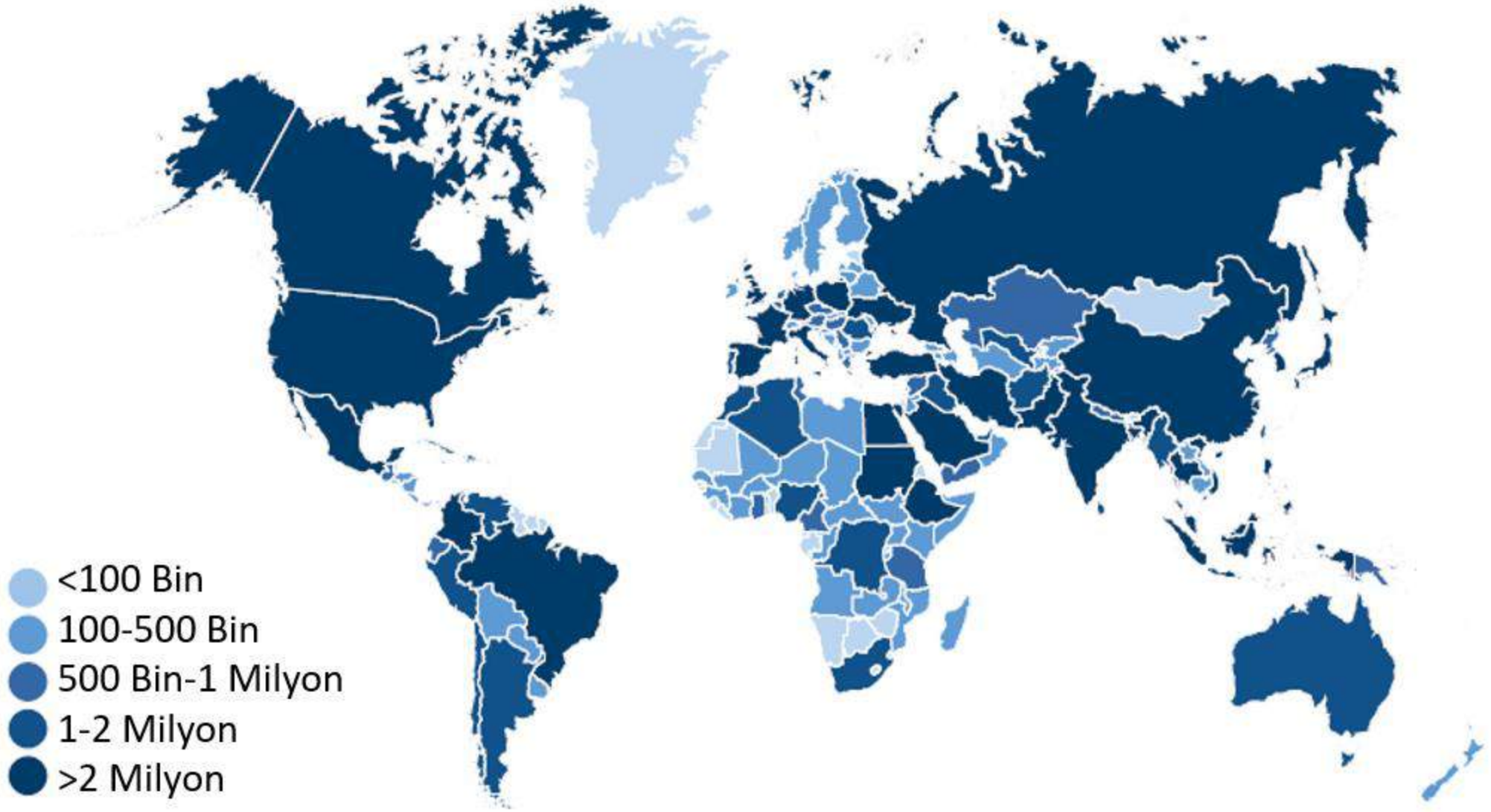
BESLENME TEDAVISININ GLISEMIK KONTROL, AĞıRLıK YÖNETIMI VE KARDIYOVASKÜLER HASTALıK RISK PROFILINE ETKISI

Dr. Öğr. Üyesi Aylin Açıkgöz
Hacettepe Üniversitesi Sağlık Bilimleri Fakültesi
Beslenme ve Diyetetik Bölümü



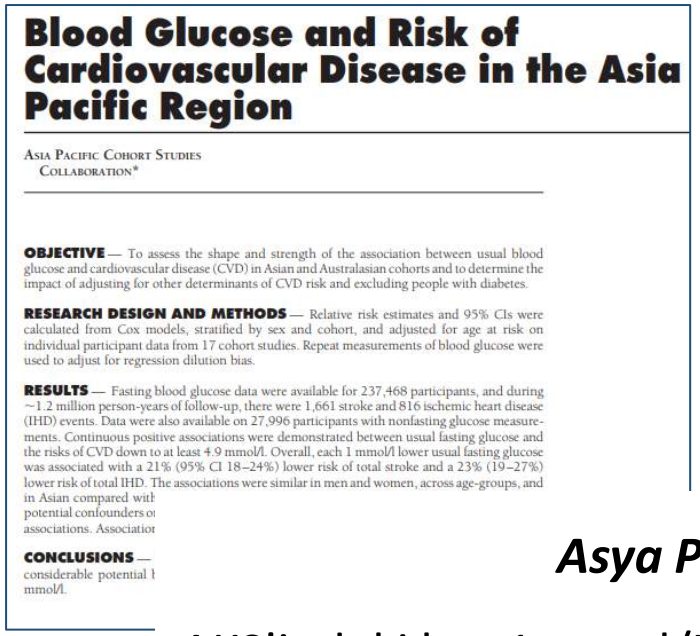
Diyabet (20-79 yaş)

IDF DIABETES ATLAS
Eighth edition 2017



Tahmin Edilen Toplam Diyabet Tanılı Yetişkin Birey (20-79 yaş) Sayısı, 2017

IDF DIABETES ATLAS
Eighth edition 2017



Blood Glucose and Risk of Cardiovascular Disease in the Asia Pacific Region

ASIA PACIFIC COHORT STUDIES COLLABORATION*

OBJECTIVE — To assess the shape and strength of the association between usual blood glucose and cardiovascular disease (CVD) in Asian and Australasian cohorts and to determine the impact of adjusting for other determinants of CVD risk and excluding people with diabetes.

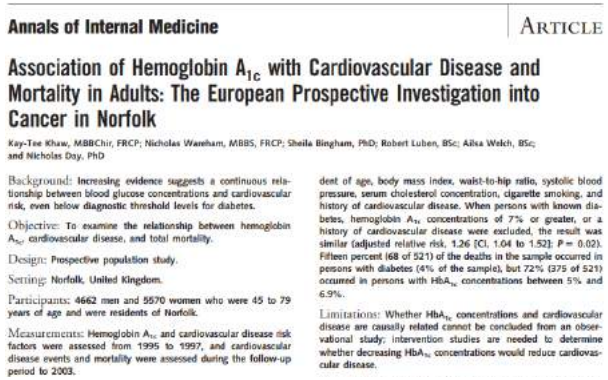
RESEARCH DESIGN AND METHODS — Relative risk estimates and 95% CIs were calculated from Cox models, stratified by sex and cohort, and adjusted for age at risk on individual participant data from 17 cohort studies. Repeat measurements of blood glucose were used to adjust for regression dilution bias.

RESULTS — Fasting blood glucose data were available for 237,468 participants, and during ~1.2 million person-years of follow-up, there were 1,661 stroke and 816 ischemic heart disease (IHD) events. Data were also available on 27,996 participants with nonfasting glucose measurements. Continuous positive associations were demonstrated between usual fasting glucose and the risks of CVD down to at least 4.9 mmol/l. Overall, each 1 mmol/l lower usual fasting glucose was associated with a 21% (95% CI 18–24%) lower risk of total stroke and a 23% (19–27%) lower risk of total IHD. The associations were similar in men and women, across age-groups, and in Asian compared with
potential confounders o
associations. Associatio

CONCLUSIONS —
considerable potential
mmol/l.

Asya Pasifik Çalışması;

AKŞ'indeki her 1 mmol/L'lik azalma ---> %23 KVH riskini ↘



Annals of Internal Medicine | ARTICLE

Association of Hemoglobin A_{1c} with Cardiovascular Disease and Mortality in Adults: The European Prospective Investigation into Cancer in Norfolk

Kay-Tee Khaw, MBBChir, FRCP; Nicholas Wareham, MBBS, FRCP; Sheila Bingham, PhD; Robert Luben, BSc; Ailsa Welch, BSc; and Nicholas Day, PhD

Background: Increasing evidence suggests a continuous relationship between blood glucose concentrations and cardiovascular risk, even below diagnostic threshold levels for diabetes.

Objective: To examine the relationship between hemoglobin A_{1c}, cardiovascular disease, and total mortality.

Design: Prospective population study.

Setting: Norfolk, United Kingdom.

Participants: 4662 men and 5570 women who were 45 to 79 years of age and were residents of Norfolk.

Measurements: Hemoglobin A_{1c} and cardiovascular disease risk factors were assessed from 1995 to 1997, and cardiovascular disease events and mortality were assessed during the follow-up period to 2003.

dent of age, body mass index, waist-to-hip ratio, systolic blood pressure, serum cholesterol concentration, cigarette smoking, and history of cardiovascular disease. When persons with known diabetes, hemoglobin A_{1c} concentrations of 7% or greater, or a history of cardiovascular disease were excluded, the result was similar (adjusted relative risk, 1.26 [CI, 1.04 to 1.52]; $P = 0.02$). Fifteen percent (68 of 521) of the deaths in the sample occurred in persons with diabetes (4% of the sample), but 72% (375 of 521) occurred in persons with HbA_{1c} concentrations between 5% and 6.9%.

Limitations: Whether HbA_{1c} concentrations and cardiovascular disease are causally related cannot be concluded from an observational study; intervention studies are needed to determine whether decreasing HbA_{1c} concentrations would reduce cardiovascular disease.

EPIC-Norfolk Çalışması;

HbA1c'deki her %1'lik artış ---> %20-30 mortalite veya KVH olay ↗

Hafif şişman veya obez hastalarda %5-10 vücut ağırlığında kayıp ---> Glisemik kontrolde iyileşme
KVH risk faktörlerini ↘

KANIT DÜZEYİ

A

Beslenme tedavisi;

tüm Tip 1 ve Tip 2 diyabet hastalarının

tedavi planlarının etkili bileşenidir.

Diabetes Care Volume 37, Supplement 1, January 2014

Beslenme Tedavisinin Amacı;

sağlıklı beslenme alışkanlıklarını kazandırmak ve

glukoz, lipid ve kan basıncı hedeflerine ulaşmada yardımcı olmaktır.

SORU 1:

Diyabette tıbbi beslenme tedavisi etkili mi?

Beslenme tedavisi uygulamaları uzman diyetisyen ile yürütüldüğünde

HbA1c düzeylerinde %1-2 (-%0.23-2.6) ↓

($p<0.05$)

http://www.adaevidencelibrary.com
Franz MJ et al. (2010) *J Am Diet Assoc*;110:1852–1889.
Evert AB et al. (2013) *Diabetes Care*. 2013;36:3821–3842.

Optimal olarak kontrolü olmayan (HbA1c>%7), <70 yaş, diyabet yaşları ortalaması ~9 yıl olan Tip 2 DM tanılı bireyler (n=93)

6 ay diyetisyen takibi (1 kez/ay)

Table | Primary and secondary end points at baseline and six months and adjusted differences between intervention and control groups. Values are means (SD) unless stated otherwise

	Intervention (n=45)		Control (n=48)			
Measures	**Baseline**	**6 months**	**Baseline**	**6 months**	**Difference* (95% CI)**	**P value***
HbA_{1c} (%)	8.9 (1.4)	8.4 (1.0)	8.6 (1.3)	8.6 (1.2)	−0.4 (−0.7 to −0.1)	0.007
Glucose (mmol/l)	9.0 (2.6)	8.1 (2.2)	8.3 (2.4)	8.3 (2.9)	−0.6 (−1.5 to 0.3)	0.181
Weight (kg)	98.4 (18.7)	96.3 (18.0)	95.1 (18.8)	94.5 (18.3)	−1.3 (−2.4 to −0.1)	0.032
Body mass index†	35.1 (6.1)	34.3 (5.8)	34.2 (6.0)	34.0 (5.9)	−0.5 (−0.9 to −0.1)	0.026
Waist circumference (cm)	111.4 (13.7)	108.9 (13.6)	108.0 (12.8)	107.4 (12.7)	−1.6 (−2.7 to −0.5)	0.005
Systolic blood pressure (mm Hg)	131.9 (15.8)	127.8 (15.6)	131.7 (16.1)	129.2 (16.4)	−1.4 (−6.1 to 3.2)	0.536
Diastolic blood pressure (mm Hg)	79.8 (9.0)	76.5 (8.7)	79.0 (10.3)	76.4 (10.6)	−0.5 (−3.0 to 2.0)	0.673
Total cholesterol (mmol/l)	4.35 (0.93)	4.11 (0.97)	3.93 (0.84)	3.87 (0.94)	−0.14 (−0.38 to 0.10)	0.248
HDL cholesterol (mmol/l)	1.04 (0.22)	1.04 (0.25)	1.03 (0.22)	1.01 (0.24)	0.01 (−0.04 to 0.05)	0.747
LDL cholesterol (mmol/l)	2.52 (0.83)	2.30 (0.82)	2.16 (0.71)	2.13 (0.80)	−0.15 (−0.35 to 0.06)	0.162
Triglycerides (mmol/l)	1.71 (0.83)	1.67 (1.04)	1.61 (0.65)	1.59 (0.68)	0.01 (−0.26 to 0.28)	0.933
Uric acid (µmol/l)	302.1 (78.9)	313.3 (81.5)	316.2 (74.0)	315.9 (79.5)	11.0 (−3.7 to 25.6)	0.140
Urine albumin:creatinine ratio‡	7.5 (24.6)	7.1 (23.8)	11.0 (53.1)	5.6 (22.2)	3.4 (−0.5 to 7.4)	0.089

BMJ 2010;341:c3337

26 randomize kontrollü çalışmanın meta-analizi (n=5500)

Diyet kalitesinde,

Açlık kan glukozu ve HbA1c,

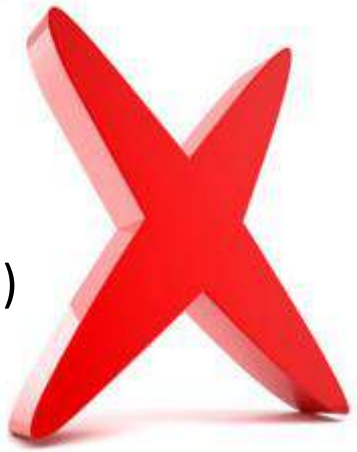
Vücut ağırlığındaki ve bel

çevresi ölçümündeki değişim

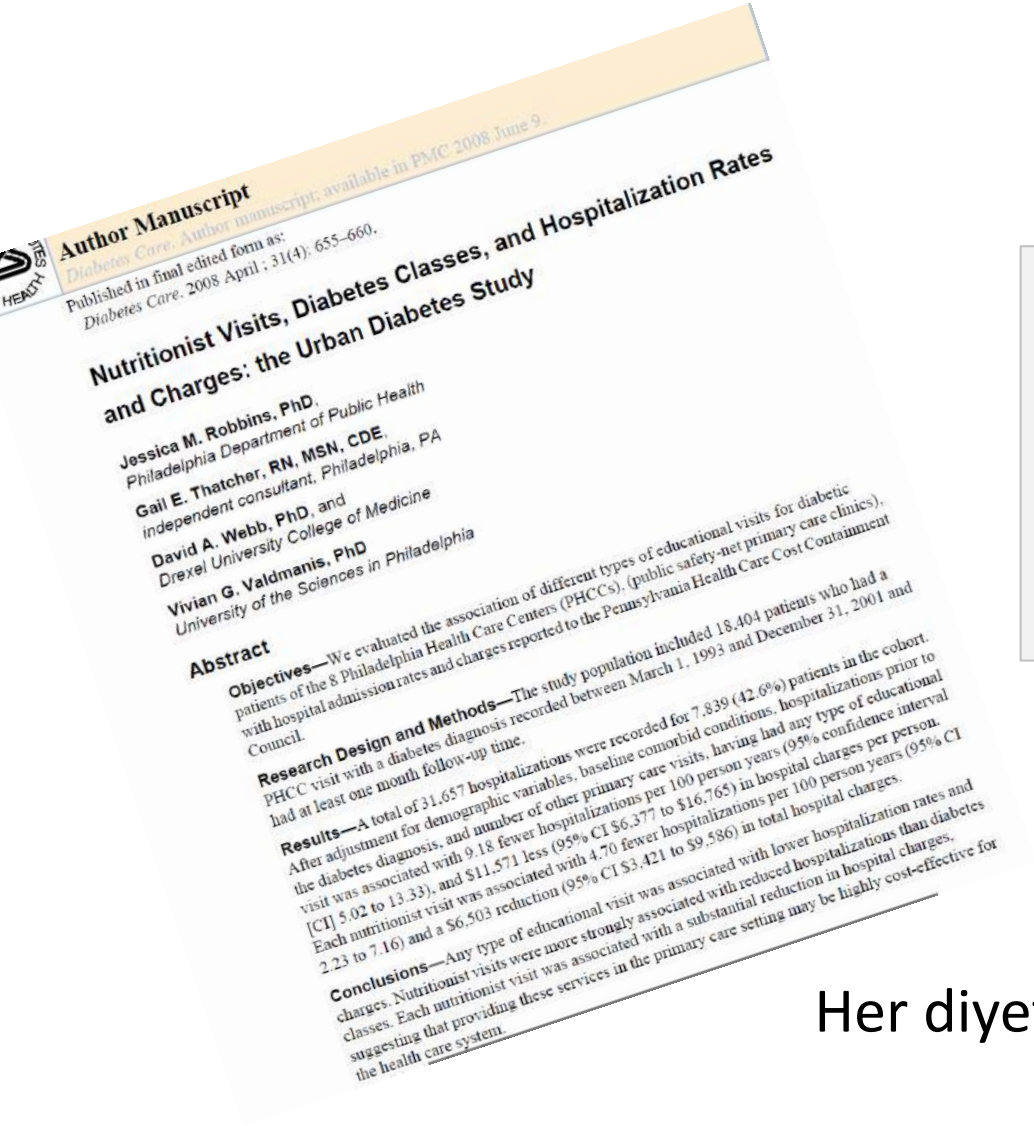
($p<0.05$)

Lipid profili ve KB

(Tek başına değerlendirildiğinde)



J Acad Nutr Diet. 2017;117:1941-1962.



Author Manuscript

Published in final edited form as:

Diabetes Care. 2008 April ; 31(4): 655–660.

Nutritionist Visits, Diabetes Classes, and Hospitalization Rates and Charges: the Urban Diabetes Study

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Philadelphia Department of Public Health
Gail E. Thatcher, RN, MSN, CDE,
independent consultant, Philadelphia, PA
David A. Webb, PhD, and
Drexel University College of Medicine
Vivian G. Valdmanis, PhD
University of the Sciences in Philadelphia

Abstract

Objectives—We evaluated the association of different types of educational visits for diabetic patients of the 8 Philadelphia Health Care Centers (PHCCs), (public safety-net primary care clinics), with hospital admission rates and charges reported to the Pennsylvania Health Care Cost Containment Council.

Research Design and Methods—The study population included 18,404 patients who had a PHCC visit with a diabetes diagnosis recorded between March 1, 1993 and December 31, 2001 and had at least one month follow-up time.

Results—A total of 31,657 hospitalizations were recorded for 7,839 (42.6%) patients in the cohort. After adjustment for demographic variables, baseline comorbid conditions, hospitalizations prior to the diabetes diagnosis, and number of other primary care visits, having had any type of educational visit was associated with 9.18 fewer hospitalizations per 100 person years (95% confidence interval [CI] 5.02 to 13.33), and $11,571 less (95% CI $6,377 to $16,765) in hospital charges per person. Each nutritionist visit was associated with 4.70 fewer hospitalizations per 100 person years (95% CI 2.23 to 7.16) and a $6,503 reduction (95% CI $3,421 to $9,586) in total hospital charges.

Conclusions—Any type of educational visit was associated with lower hospitalization rates and charges. Nutritionist visits were more strongly associated with reduced hospitalizations than diabetes classes. Each nutritionist visit was associated with a substantial reduction in hospital charges, suggesting that providing these services in the primary care setting may be highly cost-effective for the health care system.

- ~18000 diyabetik birey
- 9 yıllık dönemde
- Sadece %9.1'i en az 1 kez diyetisyen ile görüşme

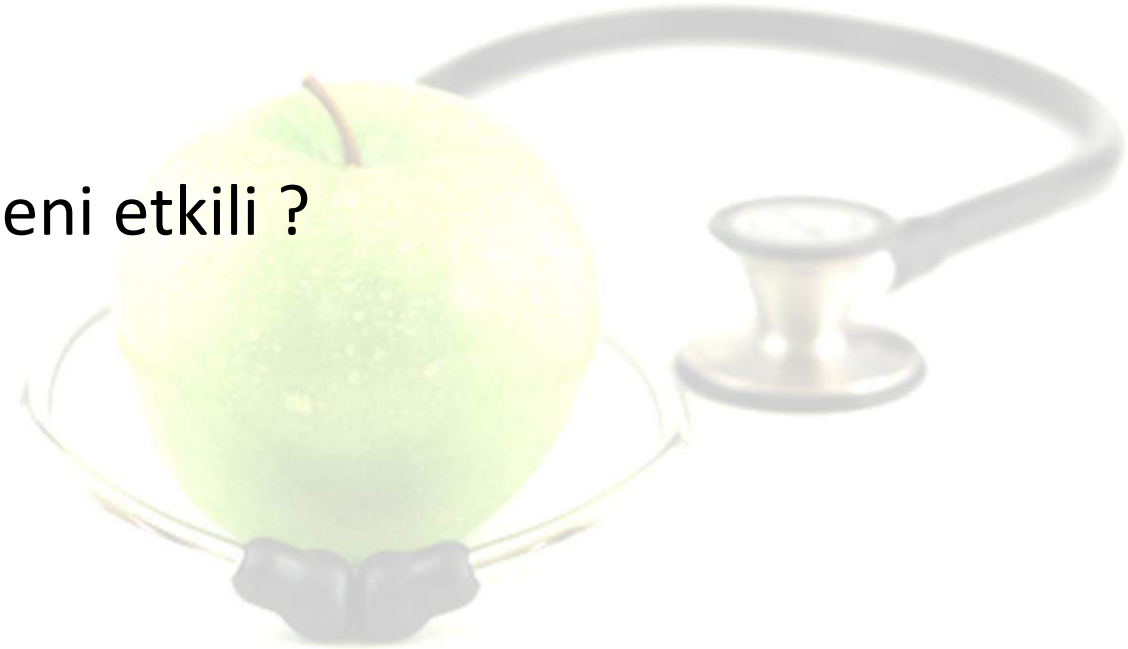
Her diyetisyen görüşmesi hastaneye yatışda 4.7 kat ↓ ($p<0.05$)

SORU 2:

Diyabette hangi tıbbi beslenme tedavisi yaklaşımı

veya

besin ögesi/bileşeni etkili ?



Doymuş yağ asitleri

Tekli doymamış yağ asitleri

Yüksek Protein İçerikli Diyet

Yüksek Proteinli Diyet

Fruktoz

Vejetaryen Diyet

Posa

Düşük Enerji İçerikli Diyet

Düşük Yağ İçerikli Diyet

Akdeniz Diyeti

Trans yağ asitleri

DASH Diyeti

Düşük Karbonhidrat İçerikli Diyet

Omega-3

Düşük Glisemik İndeks İçerikli Diyet

Meets Learning Need Codes 5000, 5190, 5370, and 9020

Restricted-Carbohydrate Diets in Patients with Type 2 Diabetes: A Meta-Analysis

JULIENNE K. KIRK, PharmD; DARBY E. GRAVES, MPH, RD; TIMOTHY E. CRAVEN, MSPH; EDWARD W. LIPKIN, MD, PhD; MARY AUSTIN, MA, RD; KAREN L. MARGOLIS, MD, MPH

ABSTRACT
Many current popular weight-loss diets advocate restricting carbohydrates, but risks and benefits of these diets for pa-
...to be conducted in order to evaluate the overall sustainability of outcomes and long-term safety.
J Am Diet Assoc. 2008;108:91-100.

13 randomize kontrollü çalışma
Diyet CHO’ı enerjinin %4-45
Düşük CHO & Normal CHO
HbA1c ↘ (9/11) (p<0.05)
CHO alım %65 ---> %35’e düştüğünde TG düzeyi %23 ↘ (p<0.05)
Vücut ağırlığı değişiminde fark yok.

«Kısa dönemde HbA1c ve TG düzeylerinde etkili olabilir»

Journal of Human Nutrition and Dietetics
The Official Journal of The British Dietetic Association

REVIEW ARTICLE

A review of low and reduced carbohydrate diets and weight loss in type 2 diabetes

P. A. Dyson
Oxford Centre for Diabetes, Endocrinology & Metabolism, Churchill Hospital, Headington, Oxford, UK

Abstract
Background Recent evidence from randomized controlled trials of hypocaloric low carbohydrate diets in people without diabetes has shown that they promote significant weight loss over the short term.

6 randomize kontrollü çalışma
Diyet CHO’ı <50 g/gün
«Kısa dönemde vücut ağırlığı ve HbA1c düzeylerinde olumlu etki»

BMJ Open Diabetes Research & Care

Systematic review and meta-analysis of dietary carbohydrate restriction in patients with type 2 diabetes

Ole Snorgaard,[1] Grith M Poulsen,[2] Henning K Andersen,[3] Arne Astrup[2]

To cite: Snorgaard O, Poulsen GM, Andersen HK, et al. Systematic review and meta-analysis of dietary carbohydrate restriction in patients with type 2 diabetes. *BMJ Open Diabetes Research and Care* 2017;5:e000354. doi:10.1136/bmjdrc-2016-000354

Received 31 October 2016
Revised 2 February 2017
Accepted 5 February 2017

ABSTRACT
Objective: Nutrition therapy is an integral part of self-management education in patients with type 2 diabetes. Carbohydrates with a low glycemic index are recommended, but the ideal amount of carbohydrate in the diet is unclear. We performed a meta-analysis of comparing diets containing low to moderate amounts of carbohydrate (LCD) (energy percentage below 45%) to diets containing high amounts of carbohydrate (HCD) in subjects with type 2 diabetes.
Research design and methods: We systematically reviewed Cochrane library databases, EMBASE, and MEDLINE in the period 2004–2014 for guidelines, meta-analyses, and randomized trials assessing the outcomes HbA1c, BMI, weight, LDL cholesterol, quality

...lowering of HbA1c over the short term, there is no superiority of low-carbohydrate diets in terms of glycemic control, weight, or LDL cholesterol.

Key messages
- The ideal amount of carbohydrates in the diet in the management of type 2 diabetes is unclear.
- The current meta-analysis conducted according to the GRADE system of rating quality of evidence shows that low to moderate carbohydrate diets have greater glucose-lowering effect compared with high-carbohydrate diets.
- The greater the carbohydrate restriction, the greater glucose lowering.
- Apart from improvements in HbA1c over the short term, there is no superiority of low-carbohydrate diets in terms of glycemic control, weight, or LDL cholesterol.

10 randomize kontrollü çalışma
Diyet CHO’ı <50 g/gün
«Kısa dönemde HbA1c düzeyinde düşürücü etkisi dışında, glisemik kontrol, ağırlık değişimi ve LDL düzeyinde olumlu etki gözlenmedi»

DIABETES RESEARCH AND CLINICAL PRACTICE 131 (2017) 124–131
Contents available at ScienceDirect
Diabetes Research and Clinical Practice
journal homepage: www.elsevier.com/locate/diabres
ELSEVIER
International Diabetes Federation

Review

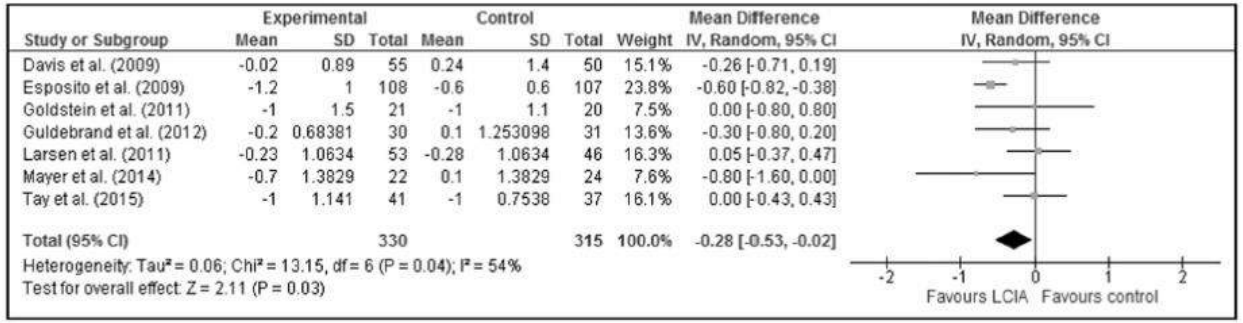
Efficacy of low carbohydrate diet for type 2 diabetes mellitus management: A systematic review and meta-analysis of randomized controlled trials

Yan Meng[a,c,1], Hao Bai[b,c,1],
[a] Shandong University of Traditional Chines...
[b] Department of Nutrition and Food Hygien...
[c] Department of Nutrition, Shandong Provin...

ARTICLE INFO
Article history:
Received 11 March 2017
Received in revised form 7 June 2017
Accepted 3 July 2017
Available online 8 July 2017
Keywords:
Low carbohydrate diet

...and blood lipid levels were included.
Results: A total of 9 studies with 734 patients with diabetes were included. Pooled results suggested that LCD had a significantly effect on HbA1c level (WMD: −0.44; 95% CI: −0.61, −0.26; P = 0.00). For cardiovascular risk factors, the LCD intervention significantly reduced triglycerides concentration (WMD: −0.33; 95% CI: −0.45, −0.21; P = 0.00) and increased

9 randomize kontrollü çalışma (n=734, 3-24 ay)
Diyet CHO’ı <130 g/gün veya enerjinin <%26’sı
«Kısa dönemde TG ve HDL düzeylerinde olumlu etki gösterebilir ancak uzun dönemde ağırlık kaybı üzerine etkili değil»



Şekil. HbA1c değişiminin 1. yıl değerlendirmesi

-%0.28 (p=0.03)

European Journal of Clinical Nutrition (2018) 72:311–325
https://doi.org/10.1038/s41430-017-0019-4

REVIEW ARTICLE

The interpretation and effect of a low-carbohydrate diet in the management of type 2 diabetes: a systematic review and meta-analysis of randomised controlled trials

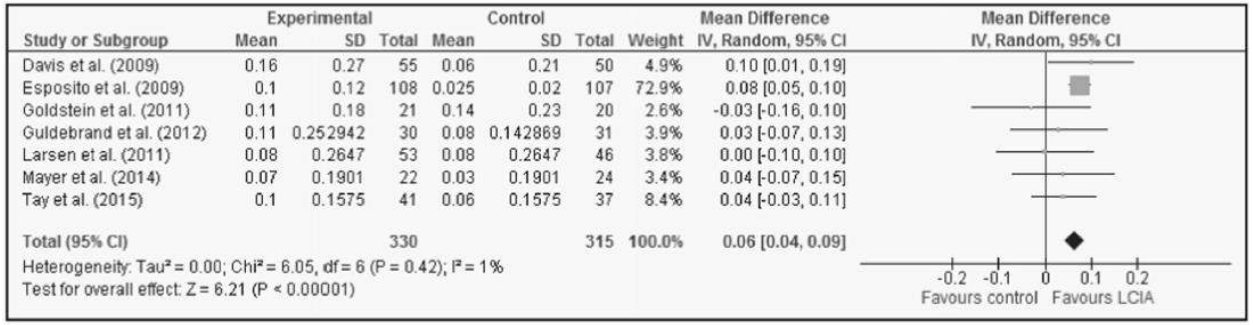
Rosemary Huntriss[1] · Malcolm Campbell[2] · Carol Bedwell[2]

7 randomize-kontrollü çalışma (n=2204)

<130 g veya enerjinin <%50 CHO

&

Enerjinin >%50'si CHO



Şekil. HDL kolesterol değişiminin 1. yıl değerlendirmesi

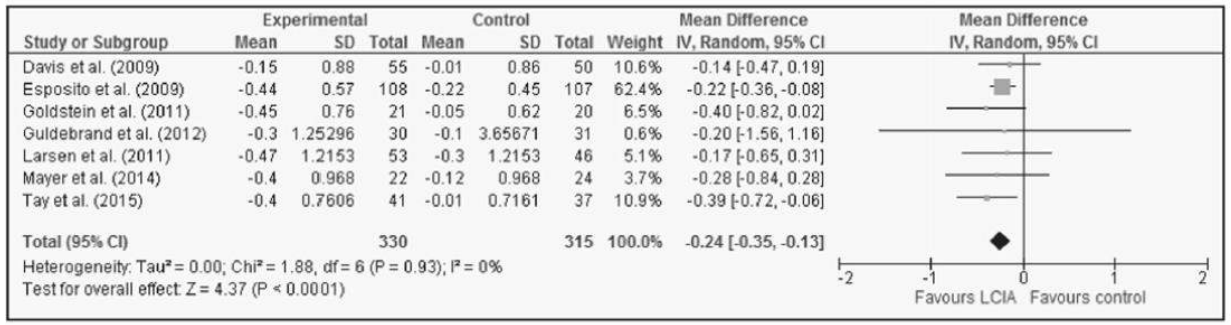
0.06 mmol/L (p<0.001)

Vücut ağırlığı değişiminde,

total ve LDL kolesterol düzeylerinde fark yok

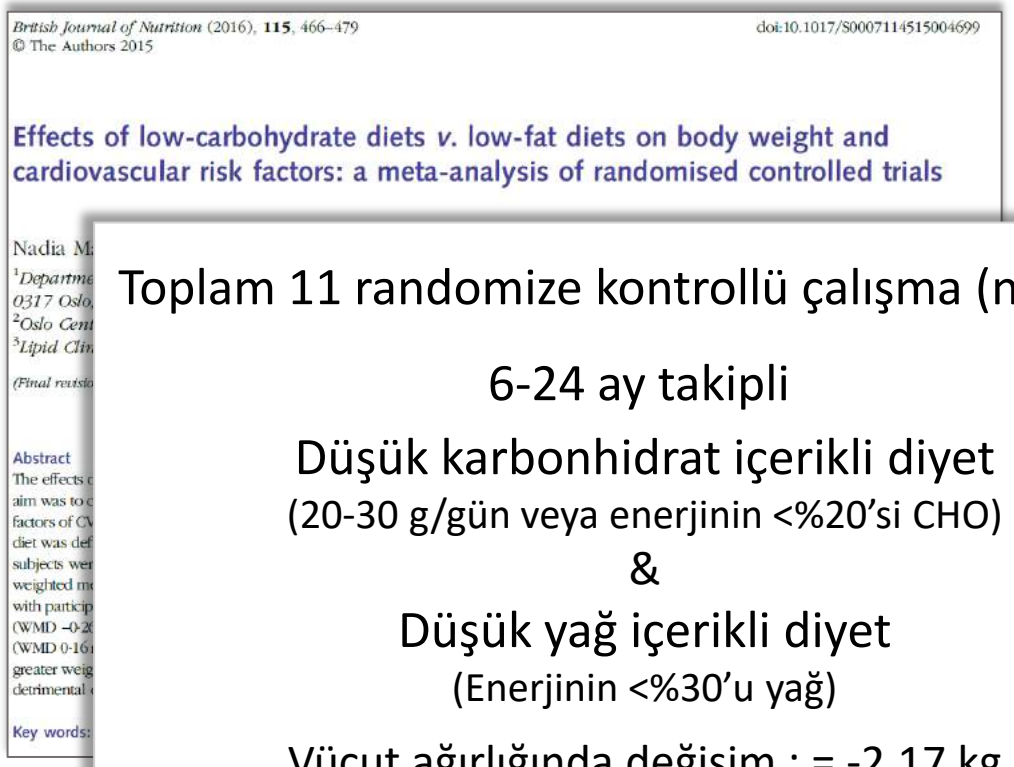
<50 g CHO içeren diyetlerin toplumda

uygulanabilmesinin pek inandırıcı bir hedef DEĞİL!!!



Şekil. Trigliserid değişiminin 1. yıl değerlendirmesi

-0.24 mmol/L (p<0.001)



British Journal of Nutrition (2016), **115**, 466–479 doi:10.1017/S0007114515004699
© The Authors 2015

Effects of low-carbohydrate diets *v.* low-fat diets on body weight and cardiovascular risk factors: a meta-analysis of randomised controlled trials

Nadia M…

Abstract

Key words:

Toplam 11 randomize kontrollü çalışma (n=1369)

6-24 ay takipli

Düşük karbonhidrat içerikli diyet
(20-30 g/gün veya enerjinin <%20'si CHO)
&
Düşük yağ içerikli diyet
(Enerjinin <%30'u yağ)

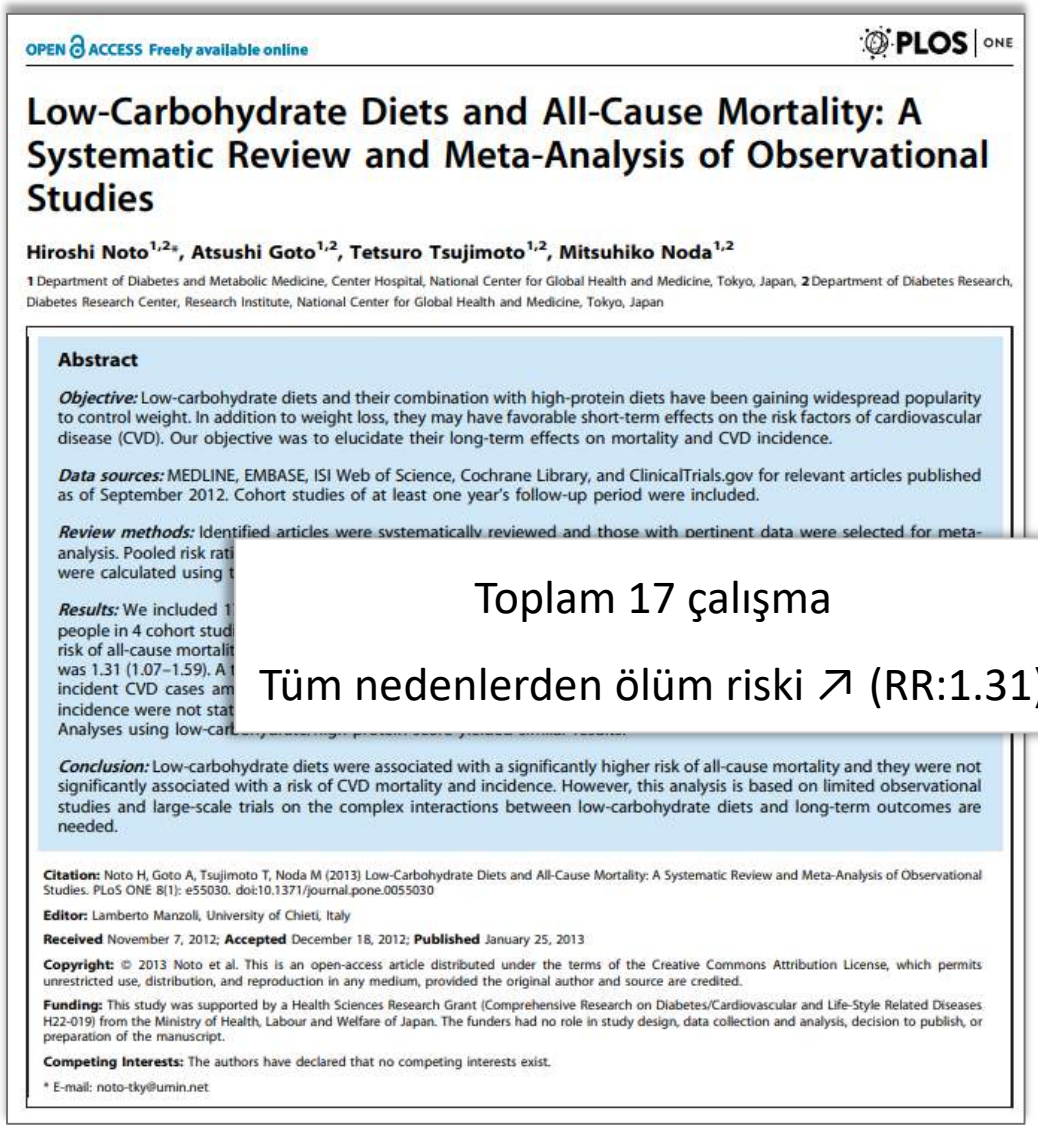
Vücut ağırlığında değişim : = -2.17 kg

TG düzeylerinde değişim : = -0.26 mmol/L

HDL kolesterol düzeylerinde değişim : -0.14 mmol/L

LDL kolesterol düzeylerinde değişim : 0.16 mmol/L

DÜŞÜK KARBONHİDRATLI DİYETLERİN DÜŞÜK YAĞ İÇERİKLİ DİYETELER İLE KARŞILAŞTIRILDIĞINDA BENZER AĞIRLIK KAYBI SAĞLAMAKLA BİRLİKTE
LDL KOLESTEROL DÜZEYİNİ ARTIRDIĞI UNUTULMAMALIDIR!!!



OPEN ACCESS Freely available online PLOS ONE

Low-Carbohydrate Diets and All-Cause Mortality: A Systematic Review and Meta-Analysis of Observational Studies

Hiroshi Noto[1,2]*, Atsushi Goto[1,2], Tetsuro Tsujimoto[1,2], Mitsuhiko Noda[1,2]

1 Department of Diabetes and Metabolic Medicine, Center Hospital, National Center for Global Health and Medicine, Tokyo, Japan, **2** Department of Diabetes Research, Diabetes Research Center, Research Institute, National Center for Global Health and Medicine, Tokyo, Japan

Abstract

Objective: Low-carbohydrate diets and their combination with high-protein diets have been gaining widespread popularity to control weight. In addition to weight loss, they may have favorable short-term effects on the risk factors of cardiovascular disease (CVD). Our objective was to elucidate their long-term effects on mortality and CVD incidence.

Data sources: MEDLINE, EMBASE, ISI Web of Science, Cochrane Library, and ClinicalTrials.gov for relevant articles published as of September 2012. Cohort studies of at least one year's follow-up period were included.

Review methods: Identified articles were systematically reviewed and those with pertinent data were selected for meta-analysis. Pooled risk rati… were calculated using t…

Results: We included 1… people in 4 cohort studi… risk of all-cause mortalit… was 1.31 (1.07–1.59). A … incident CVD cases am… incidence were not stat… Analyses using low-car…

Conclusion: Low-carbohydrate diets were associated with a significantly higher risk of all-cause mortality and they were not significantly associated with a risk of CVD mortality and incidence. However, this analysis is based on limited observational studies and large-scale trials on the complex interactions between low-carbohydrate diets and long-term outcomes are needed.

Citation: Noto H, Goto A, Tsujimoto T, Noda M (2013) Low-Carbohydrate Diets and All-Cause Mortality: A Systematic Review and Meta-Analysis of Observational Studies. PLoS ONE 8(1): e55030. doi:10.1371/journal.pone.0055030

Editor: Lamberto Manzoli, University of Chieti, Italy

Received November 7, 2012; **Accepted** December 18, 2012; **Published** January 25, 2013

Funding: This study was supported by a Health Sciences Research Grant (Comprehensive Research on Diabetes/Cardiovascular and Life-Style Related Diseases H22-019) from the Ministry of Health, Labour and Welfare of Japan. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

* E-mail: noto-tky@umin.net

Toplam 17 çalışma

Tüm nedenlerden ölüm riski ↗ (RR:1.31)

Kilolu ve obez diyabetli bireylerin TBT'nde

<130 g/gün* karbonhidrat alımı

ÖNERİLMEMEKTEDİR.

Düşük karbonhidrat

(<130 g/gün veya enerjinin <%26'sı)

veya

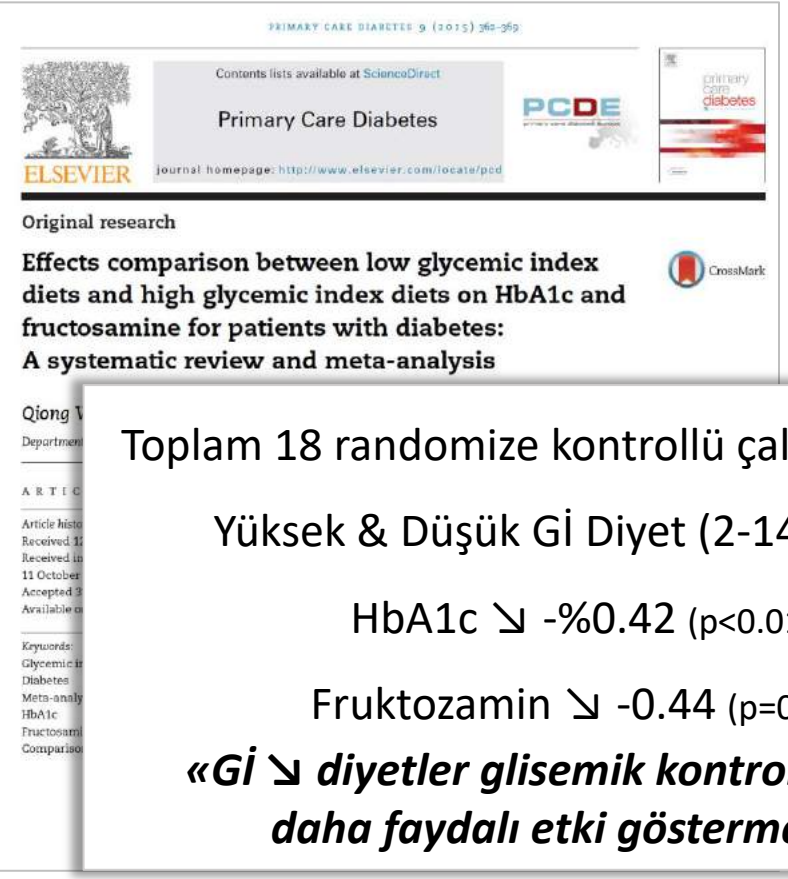
çok düşük karbonhidrat içerikli

(<50 g/gün veya enerjinin <%10'u)

diyetler kullanılmamalıdır.

*Gebelik döneminde >170 g/gün, emziklilik döneminde >210 g/gün

Diabetes Care 2018 Jan; 41(Supplement 1): S38-S50
Diabetes Care 2014; 37(Supplement 1): S120


PRIMARY CARE DIABETES 9 (2015) 362–369

Contents lists available at ScienceDirect

Primary Care Diabetes

journal homepage: http://www.elsevier.com/locate/pcd

Original research

Effects comparison between low glycemic index diets and high glycemic index diets on HbA1c and fructosamine for patients with diabetes: A systematic review and meta-analysis

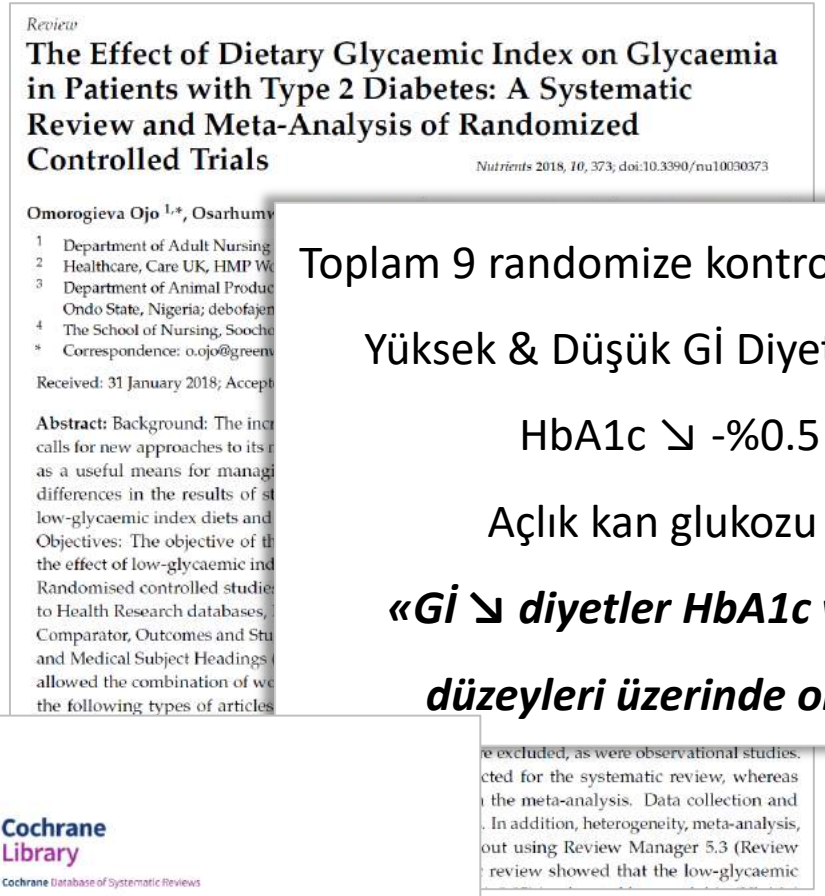
Toplam 18 randomize kontrollü çalışma (n=840)

Yüksek & Düşük Gİ Diyet (2-144 hafta)

HbA1c ↘ -%0.42 (p<0.01)

Fruktozamin ↘ -0.44 (p=0.02)

«Gİ ↘ diyetler glisemik kontrol üzerinde daha faydalı etki göstermekte»


Review

The Effect of Dietary Glycaemic Index on Glycaemia in Patients with Type 2 Diabetes: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Nutrients 2018, *10*, 373; doi:10.3390/nu10030373

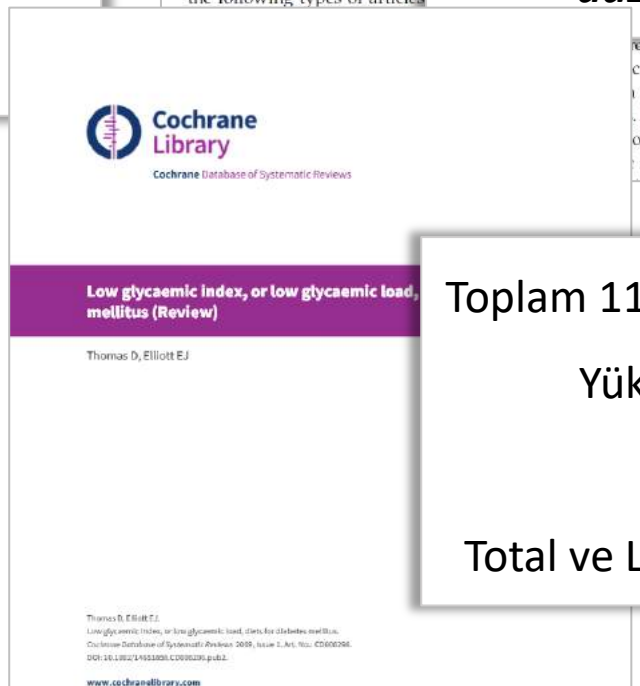
Toplam 9 randomize kontrollü çalışma (n=705)

Yüksek & Düşük Gİ Diyet (2 hafta-22 ay)

HbA1c ↘ -%0.5 (p<0.001)

Açlık kan glukozu ↘ (p<0.05)

«Gİ ↘ diyetler HbA1c ve açlık glukoz düzeyleri üzerinde olumlu etkili»


Cochrane Library

Cochrane Database of Systematic Reviews

Low glycaemic index, or low glycaemic load, mellitus (Review)

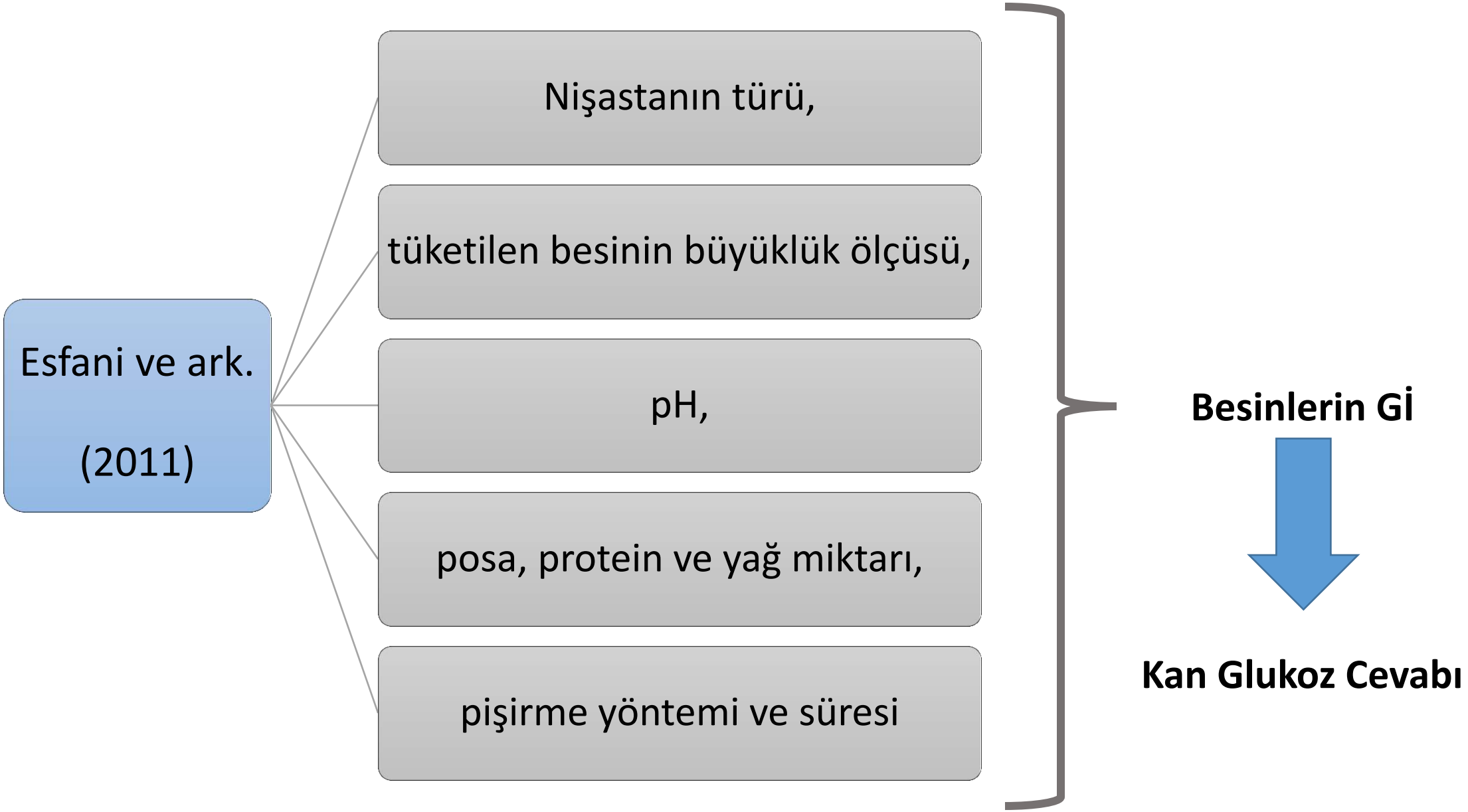
Thomas D, Elliott EJ

Toplam 11 randomize kontrollü çalışma (n=402)

Yüksek & Düşük Gİ Diyet (1-12 ay)

HbA1c ↘ -%0.5 (p=0.02)

Total ve LDL kolesterol düzeylerinde ↘ (p<0.05)



UBMB Life (2011), 63,7-13.

FAO

- Diyabetik bireylerde Gİ; kan glukoz yanıtını etkileyen kullanışlı bir gösterge

ADA

- Diyabetik bireyler posa içeriği yüksek ve düşük Gİ içerikli sebze ve meyveler, tam tahıl kaynakları gibi CHO kaynaklarını tercih etmeliler

- Posa içeriği yüksek ve glisemik yükü düşük besin kaynaklarının özellikle şeker eklenmiş düşük posa içerikli, glisemik yükü yüksek besinlerle değiştirilmesini vurgulamakta.

http://www.fao.org/docrep/w8079e/w8079e00.htm
Diabetes Care 2018, 41 (Suppl. 1), S38–S50.

Wang ve ark (2015)	• 11 çalışmanın meta-analizi (vejetaryen & omnivor beslenme)
	  • Total Kolesterol ↘
	  • LDL Kolesterol ↘
	  • HDL Kolesterol ↗

Le ve Sabate (2014)	• Prospektif kohort çalışma (Vejetaryen & Vejetaryen olmayan) • İskemik kalp, kardiyovasküler ve serebrovasküler hastalıkların mortalitesinde %26-68 ↘

Dinu ve ark (2017)	• 90 prospektif çalışmanın meta-analizi (Vejetaryen/vegan & Vejetaryen olmayan)
	  • BKI ↘, Total Kolesterol ↘, LDL kolesterol ↘ ve glukoz düzeylerinde ↘ ($p<0.05$)
	  • Total kardiyovasküler ve serebrovasküler hastalık görülme sıklığında fark Ø ($p>0.05$)

Wang et al. J Am Heart Assoc. 2015;4(10)
Le LT, Sabate J. Nutrients. 2014;6(6):2131–47.
Dinu M et al. Crit Rev Food Sci Nutr. 2017;57(17):3640–9.

Tip 2 diyabet yönünden riskli bireyler ve diyabetli bireyler için

14 g/1000 kkal posa alımı

(K:25 g/gün, E:38 g/gün)

önerilmektedir

Diabetes Care 2014; 37(Supplement 1): S120

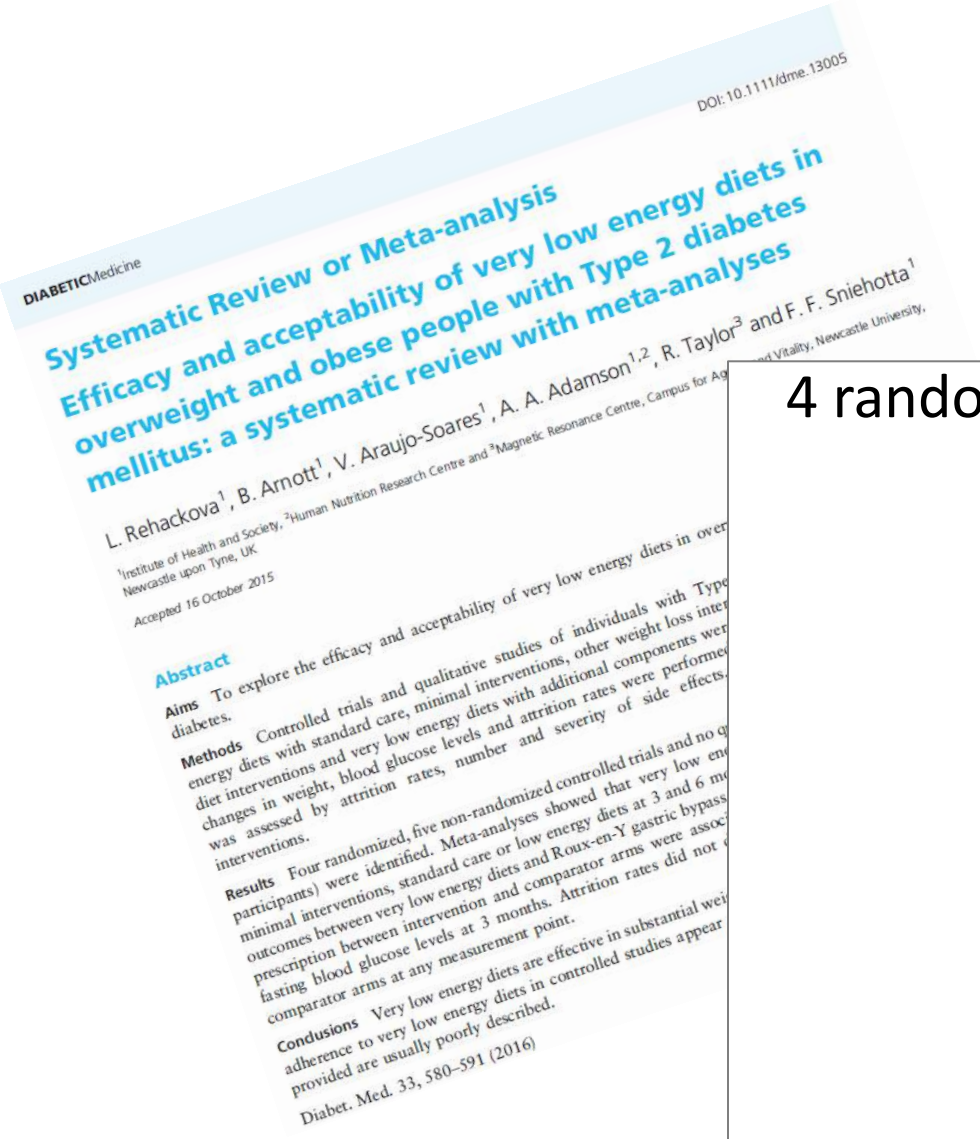
- Tip 2 DM (n= 89), 30-65 yaş, 30-35 kg/m^2, prospektif, çok merkezli çalışma, 4 ay takip

	VLCK diet group (n = 45)			*LC diet group (n = 40)*		
	Baseline	*4 months*	*P-value*[a]	*Baseline*	*4 months*	*P-value*[a]
Body weight						
Body weight (kg)	91.5 (11.4)	76.8 (9.1)	< **0.0001**	90.0 (11.3)	84.95 (13.6)	0.5960
Weight lost > 5% of weight	–	40 (97.6%)	–	–	18 (50.0%)[†]	–
Weight lost > 10% of weight	–	35 (85.4%)	–	–	6 (16.7%)[†]	–
BMI (kg m^{-2})	33.3 (1.5)	27.9 (1.8)	< **0.0001**	32.9 (1.6)	31.0 (2.2)	< **0.0001**
Waist (cm)	108.1 (8.6)	96.1 (7.6)	< **0.0001**	105.8 (8.5)	100.4 (9.2)	**0.0481**
Glycemic control						
Fasting glycemia (mg dl^{-1})	136.9 (34.4)	108.9 (20.4)	< **0.0001**	140.5 (43.1)	123.3 (24.3)	0.1821
HbA1c (%)	6.9 (1.1)	6.0 (0.7)	< **0.0001**	6.8 (1.0)	6.4 (0.8)	0.1453
Patients with HbA1c ⩾ 7%	21 (46.7%)	5 (12.8%)	**0.0008**	15 (34.9%)	9 (25.7%)	0.3828
HOMA Index	6.9 (4.4)	3.5 (1.9)	< **0.0001**	5.8 (2.9)	4.6 (2.5)[†]	**0.0010**
Patients treated with oral antidiabetic drugs	33 (73.3%)	20 (50.0%)	**0.0267**	38 (86.4%)	30 (83.3%)	0.7057
Lipid profile						
Total cholesterol (mg dl^{-1})	200.1 (36.0)	187.5 (46.3)	0.1615	199.4 (51.0)	191.7 (34.1)	0.4489
Triglycerides (mg dl^{-1})	150.5 (54.4)	114.6 (57.2)	**0.0040**	176.1 (92.0)	158.3 (61.0)	0.3308
LDL-c (mg dl^{-1})	112.7 (33.6)	110.6 (38.4)	0.7892	109.8 (45.5)	107.1 (29.9)	0.7629
HDL-c (mg dl^{-1})	55.9 (11.1)	54.5 (11.3)	0.5728	55.1 (11.7)	52.4 (10.0)	0.3017

($p<0.05$)

«Çok düşük enerji içerikli ketojenik diyetler 4 aya kadar Tip 2 DM'de güvenle kullanılabilir»

Nutrition & Diabetes (2016) 6, e230



DIABETICMedicine

DOI: 10.1111/dme.13005

Systematic Review or Meta-analysis

Efficacy and acceptability of very low energy diets in overweight and obese people with Type 2 diabetes mellitus: a systematic review with meta-analyses

L. Rehackova[1], B. Arnott[1], V. Araujo-Soares[1], A. A. Adamson[1,2], R. Taylor[3] and F. F. Sniehotta[1]

[1]Institute of Health and Society, [2]Human Nutrition Research Centre and [3]Magnetic Resonance Centre, Campus for Ag... Vitality, Newcastle University, Newcastle upon Tyne, UK

Accepted 16 October 2015

Abstract

Aims To explore the efficacy and acceptability of very low energy diets in over... diabetes.

Methods Controlled trials and qualitative studies of individuals with Type... energy diets with standard care, minimal interventions, other weight loss inter... diet interventions and very low energy diets with additional components wer... changes in weight, blood glucose levels and attrition rates were performe... was assessed by attrition rates, number and severity of side effects... interventions.

Results Four randomized, five non-randomized controlled trials and no q... participants) were identified. Meta-analyses showed that very low en... minimal interventions, standard care or low energy diets at 3 and 6 m... outcomes between very low energy diets and Roux-en-Y gastric bypass... prescription between intervention and comparator arms were assoc... fasting blood glucose levels at 3 months. Attrition rates did not ... comparator arms at any measurement point.

Conclusions Very low energy diets are effective in substantial wei... adherence to very low energy diets in controlled studies appear ... provided are usually poorly described.

Diabet. Med. 33, 580–591 (2016)

4 randomize, 5 randomize olmayan kontrollü çalışma (n=346)

Çok düşük enerji içerikli diyet

(400-800 kkal/gün)

&

400-1800 kkal/gün

Takip Süresi: 3 hafta-5 yıl

3. ayda

vücut ağırlığındaki kayıp ve

açlık kan glukozu ↓

($p<0.05$)

Kanada Diyabet Derneği

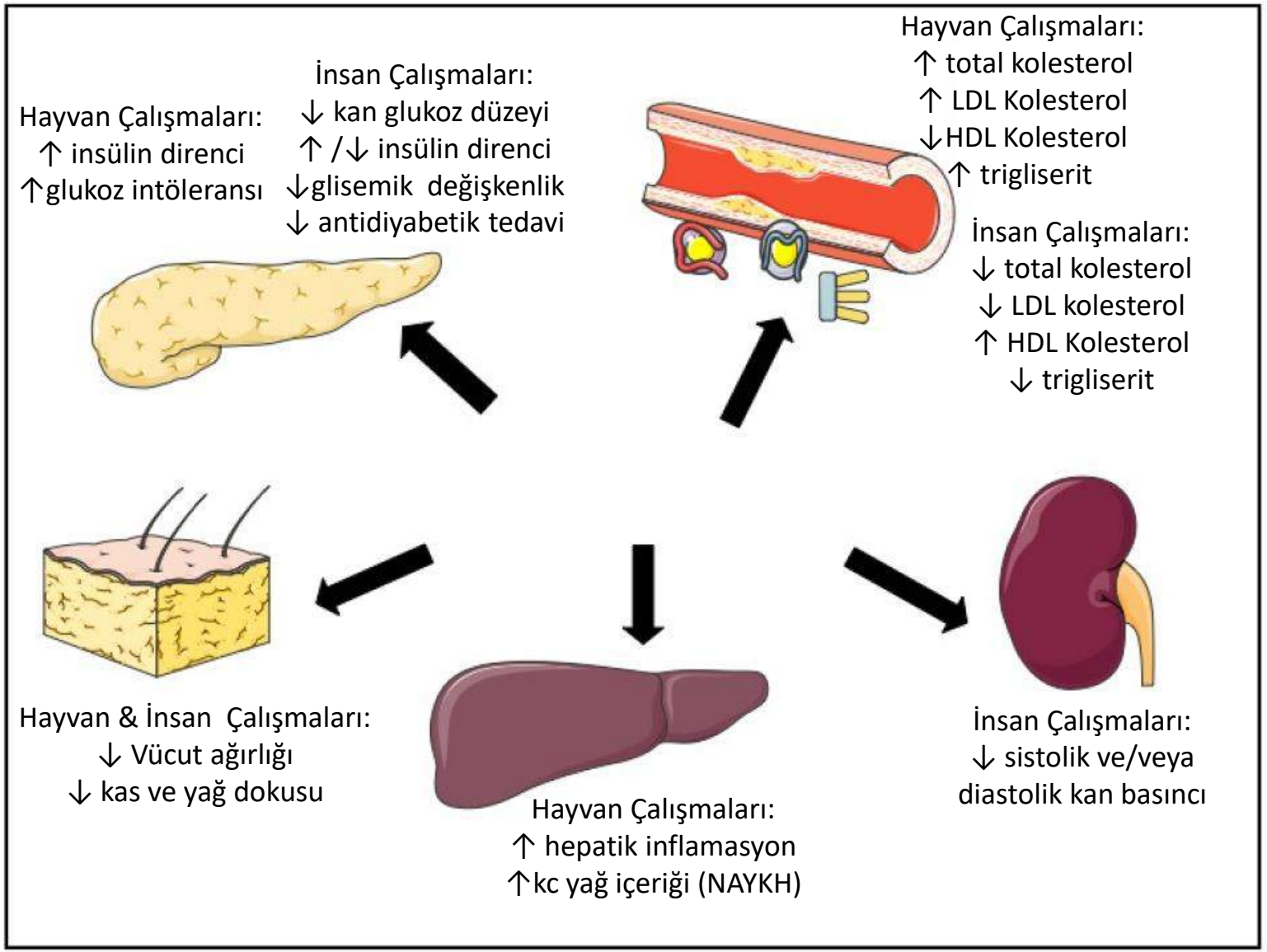
- <900 kkal içerikli diyetlerin rutin kullanımı hasta medikal denetim altında olmadıkça önerilmemektedir.

Amerikan Diyabet Derneği

- <800 kkal/gün hasta yakın klinik gözlem altında ve klinisyen bu konuda deneyimli ise 3 aya kadar kullanılabilir.

Can J Diabetes (2013), 37(1):1-27.

Diabetes Care 2014; 37(Supplement 1): S120



Effects of ketogenic diets on cardiovascular risk factors: Evidence from animal and human studies
C Kosinski, FR Jornayvaz - Nutrients. 2017, 19;9(5).

Metabolic Effects of Monounsaturated Fatty Acid–Enriched Diets Compared With Carbohydrate or Polyunsaturated Fatty Acid–Enriched Diets in Patients With Type 2 Diabetes: A Systematic Review and Meta-analysis of Randomized Controlled Trials

Frank Qian,[1] Andres Ardisson Korat,[2] Vasanti Malik,[2,3] and Frank B. Hu[2,3]

Diabetes Care 2016;39:1448–1457 | DOI: 10.2337/dc16-0513

24 çalışma (n=1460)

↗ MUFA & ↗ PUFA

Table — Metabolic effects in T2D patients consuming a high-MUFA diet compared with a high-PUFA diet

Metabolic parameter	Number of studies	Number of participants	WMD (95% CI)*	WMD (95% CI)†	I^2 (%)	P_{het}
Fasting plasma glucose (mmol/L)	3	31	**−0.87 (−1.67, −0.07)**	**−0.87 (−1.67, −0.07)**	26.3	0.257
Fasting insulin (pmol/L)	2	15	−7.56 (−26.15, 11.03)	−7.56 (−26.15, 11.03)	0.0	0.516
LDL cholesterol (mmol/L)	4	44	−0.15 (−0.43, 0.13)	−0.15 (−0.44, 0.14)	5.9	0.363
HDL cholesterol (mmol/L)	4	44	0.04 (−0.07, 0.15)	0.04 (−0.07, 0.15)	0.0	0.848
Triglycerides (mmol/L)	3	31	0.01 (−0.46, 0.47)	0.01 (−0.46, 0.47)	0.0	0.941

HbA_{1c}, weight, systolic blood pressure, and diastolic blood pressure were not included in this analysis due to the limited number of studies reporting these outcomes. Values in boldface type indicate statistical significance at $P < 0.05$. *Calculated using a fixed-effects model. †Calculated using a random-effects model.

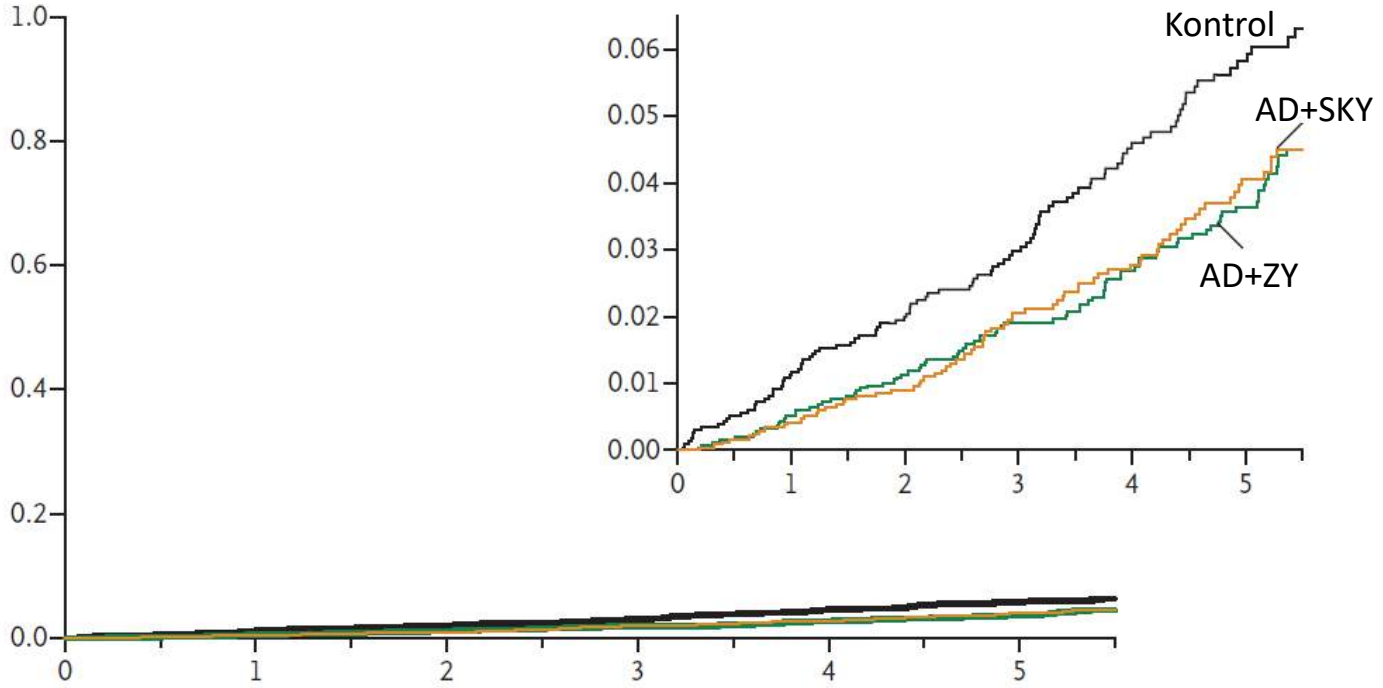
Diastolic blood pressure (mmHg)	5	373	−1.33 (−2.91, 0.25)	−2.64 (−5.91, 0.63)	69.5	0.011

Values in boldface type indicate statistical significance at $P < 0.05$. *Calculated using a fixed-effects model. †Calculated using a random-effects model.

PREDIMED Çalışması (Prevención con Dieta Mediterránea)

55-80 yaş (n=7447)
Medyan Takip: 4.8 yıl
↓
Enerji kısıtlaması Ø
Takip sonunda 288 bireyde değerlendirme

Akdeniz diyeti + zeytinyağı (n=96)
(1 L/hafta zeytinyağı)
&
Akdeniz diyeti + sert kabuklu yemişler (n=83)
(30 g/gün karışık sert kabuklu yemiş)
&
Kontrol (n=109)



Akut miyokardiyal infaktüs, inme ve kardiyovasküler nedenli ölümler

Akdeniz diyeti + zeytinyağı/Kontrol
RR: 0.70 (95% [CI], 0.53-0.91)
(p = 0.009)

Akdeniz diyeti + sert kabuklu yemişler/Kontrol
RR: 0.70 (95% CI, 0.53-0.94)
(p = 0.02)

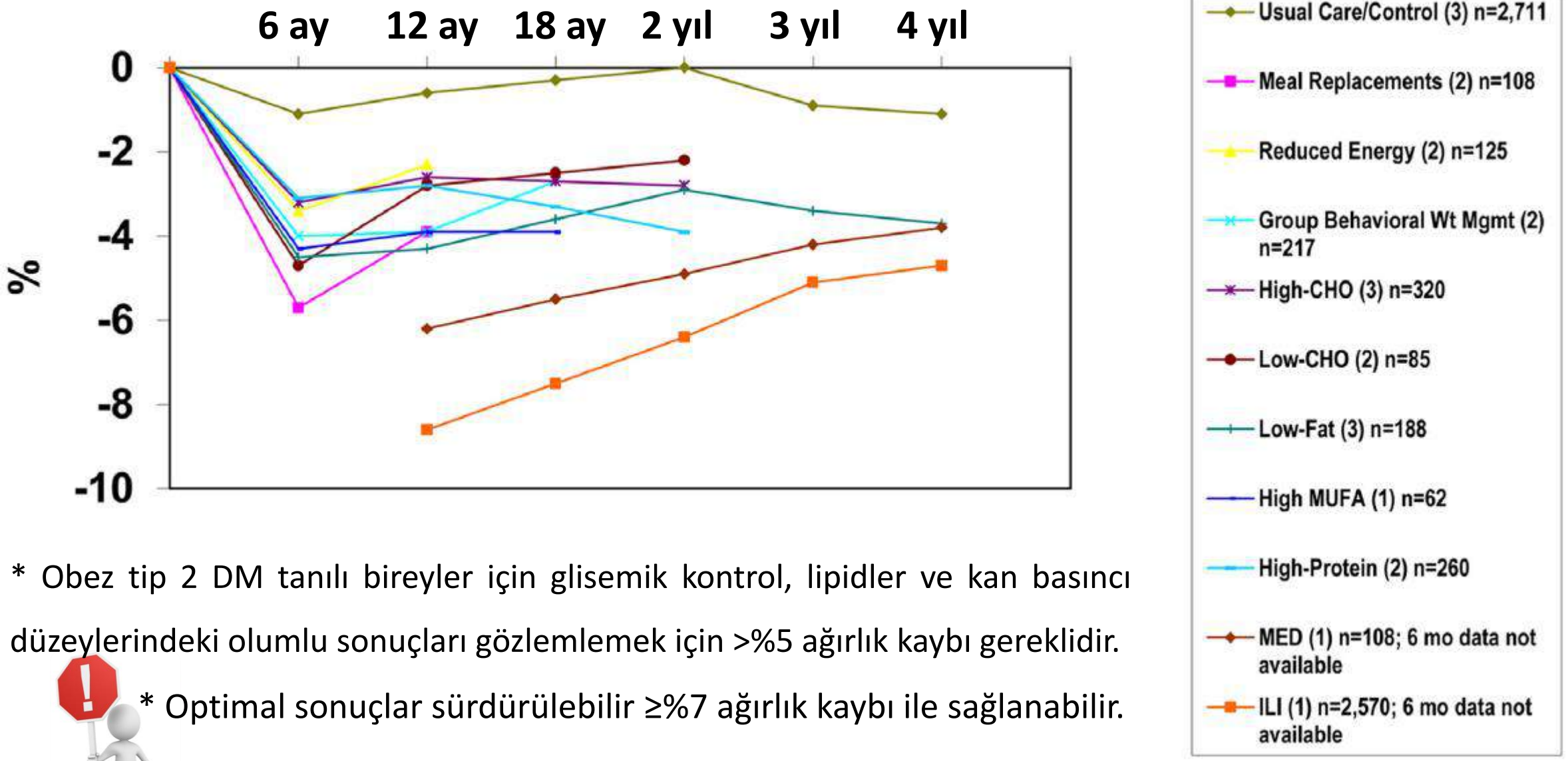
N Engl J Med 2013;368:1279-90

- IOM ---> Yetişkin bireyin diyetinde enerjinin %20-35 yağ kabul edilebilir
- Yağın çeşidi, metabolik hedefler ve KVH riski açısından, miktarından daha önemli
- Doymuş yağ asitleri azaltılmalı (<%7)
- Trans yağ asitleri azaltılmalı (<%1)

Institute of Medicine. Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids
Diabetes Care 2018 Jan; 41(Supplement 1): S38-S50
Diabetes Care 2014; 37(Supplement 1): S120

ADA **B Kanıt Düzeyi**	Diyabetli bireylerin, besinler yolu ile omega-3 yağ asitleri alımı artırılmalı	
	2 porsiyon/hafta balık tüketimi	
ADA **C Kanıt Düzeyi**	Bitki stenol ve sterollerinden zengin besinlerin tüketimi artırılmalı (1.6-3 g/gün)	*Dislipidemisi olan diyabetik bireylerde Total ve LDL kolesterol düzeylerinde ↓

Diabetes Care 2018 Jan; 41(Supplement 1): S38-S50
Diabetes Care 2014; 37(Supplement 1): S120



* Obez tip 2 DM tanılı bireyler için glisemik kontrol, lipidler ve kan basıncı düzeylerindeki olumlu sonuçları gözlemlemek için >%5 ağırlık kaybı gereklidir.

* Optimal sonuçlar sürdürülebilir ≥%7 ağırlık kaybı ile sağlanabilir.

J Acad Nutr Diet. 2015;115:1447-1463.

European Journal of Epidemiology (2018) 33:157–170
https://doi.org/10.1007/s10654-017-0352-x

META-ANALYSIS

A network meta-analysis on the comparative efficacy of different dietary approaches on glycaemic control in patients with type 2 diabetes mellitus

Lukas Schwingshackl[1] · Anna Chaimani[2,3,4] · Georg Hoffmann[5] · Carolina Schwedhelm[1] · Heiner Boeing[1]

4937 birey, 56 çalışmanın meta-analizi

9 farklı diyet yaklaşımı

>12 haftalık takip

Table League table showing the results of the network meta-analysis comparing the effects (mean difference: MD) of all dietary approaches and 95% confidence intervals (95% CI)

HbA1c (%)								
Low-Carb [84%, 58%]	-0.03 (-0.33, 0.27)	0.05 (-0.65, 0.75)	-0.15 (-0.51, 0.21)	-0.19 (-0.45, 0.07)	-0.23 (-0.50, 0.04)	-0.33 (-0.61, -0.05)	-0.35 (-0.56, -0.14)	-0.82 (-1.11, -0.53)
0.38 (-0.32, 1.08)	Mediterranean [80%, 88%]	0.08 (-0.62, 0.78)	-0.12 (-0.48, 0.24)	-0.16 (-0.43, 0.11)	-0.20 (-0.49, 0.09)	-0.30 (-0.59, -0.01)	-0.32 (-0.53, -0.11)	-0.79 (-1.07, -0.52)
0.26 (-1.12, 1.65)	-0.11 (-1.43, 1.21)	Palaeolithic [76%, 71%]	-0.20 (-0.93, 0.52)	-0.24 (-0.93, 0.44)	-0.28 (-0.98, 0.41)	-0.38 (-1.07, 0.31)	-0.40 (-1.07, 0.27)	-0.87 (-1.56, -0.18)
0.06 (-0.81, 0.92)	-0.32 (-1.09, 0.45)	-0.21 (-1.62, 1.20)	Vegetarian [60%, 63%]	-0.04 (-0.37, 0.28)	-0.08 (-0.43, 0.27)	-0.18 (-0.52, 0.16)	-0.20 (-0.49, 0.09)	-0.67 (-1.01, -0.33)
-0.21 (-0.84, 0.43)	-0.59 (-1.13, -0.04)	-0.47 (-1.78, 0.83)	-0.27 (-1.00, 0.47)	Low-GI/GL [54%, 37%]	-0.04 (-0.28, 0.20)	-0.14 (-0.38, 0.11)	-0.16 (-0.31, 0.00)	-0.63 (-0.88, -0.38)
-0.03 (-0.68, 0.62)	-0.41 (-0.96, 0.14)	-0.30 (-1.60, 1.01)	-0.09 (-0.82, 0.64)	0.18 (-0.30, 0.66)	Moderate- Carb [46%, 57%]	-0.10 (-0.37, 0.17)	-0.12 (-0.31, 0.08)	-0.59 (-0.85, -0.32)
-0.16 (-0.88, 0.57)	-0.53 (-1.14, 0.07)	-0.42 (-1.75, 0.91)	-0.21 (-0.99, 0.56)	0.05 (-0.51, 0.61)	-0.13 (-0.69, 0.44)	High-Protein [29%, 44%]	-0.02 (-0.21, 0.17)	-0.49 (-0.76, -0.22)
-0.24 (-0.82, 0.35)	-0.61 (-1.03, -0.20)	-0.50 (-1.75, 0.75)	-0.29 (-0.93, 0.35)	-0.03 (-0.38, 0.31)	-0.20 (-0.56, 0.15)	-0.08 (-0.52, 0.36)	Low-Fat [22%, 32%]	-0.47 (-0.66, -0.28)
-1.23 (-1.91, -0.55)	-1.61 (-2.16, -1.06)	-1.50 (-2.80, -0.19)	-1.29 (-2.02, -0.55)	-1.02 (-1.52, -0.52)	-1.20 (-1.69, -0.71)	-1.07 (-1.64, -0.51)	-1.00 (-1.36, -0.63)	Control [0%, 0%]
Fasting glucose (mmol/l)								

Carbohydrate quantity and quality and cardio-metabolic risk

Ellen E. Blaak

Curr Opin Clin Nutr Metab Care 2016, 19:289–293

Purpose of review
This review highlights the recent research on the effects of dietary carbohydrate (CHO) content and quality in body weight control, glucose homeostasis and cardiovascular risk.

Recent findings
There is some evidence for a role of CHO content and glycemic index in long-term weight control. Prospective cohort studies show that a high glycemic index and a high glycemic load diet increase the risk for diabetes. A controlled short-term feeding study indicates that the glycemic index is less important in insulin sensitivity and cardio-metabolic risk in the context of an overall healthy diet in high-risk individuals. In one of the few dietary inter
that a Mediterranean diet red

Summary
Overall, energy restriction is t
that distinct macronutrients ma
phenotype and genotype. Alth
complex CHO diet may be eff
dietary prevention or treatmen

Keywords
body weight control, carbohy
personalized approaches

Enerji kısıtlaması vücut ağırlığı kaybında primer faktör olsa da,
Akdeniz tipi beslenme veya
düşük yağ içerikli-yüksek kompleks karbonhidrat içerikli diyet
diyabetin tedavisinde ve kardiyovasküler hastalık riskinin
önlenmesinde daha etkili

«Bireysel değerlendirme!!!»

The Look AHEAD Çalışması

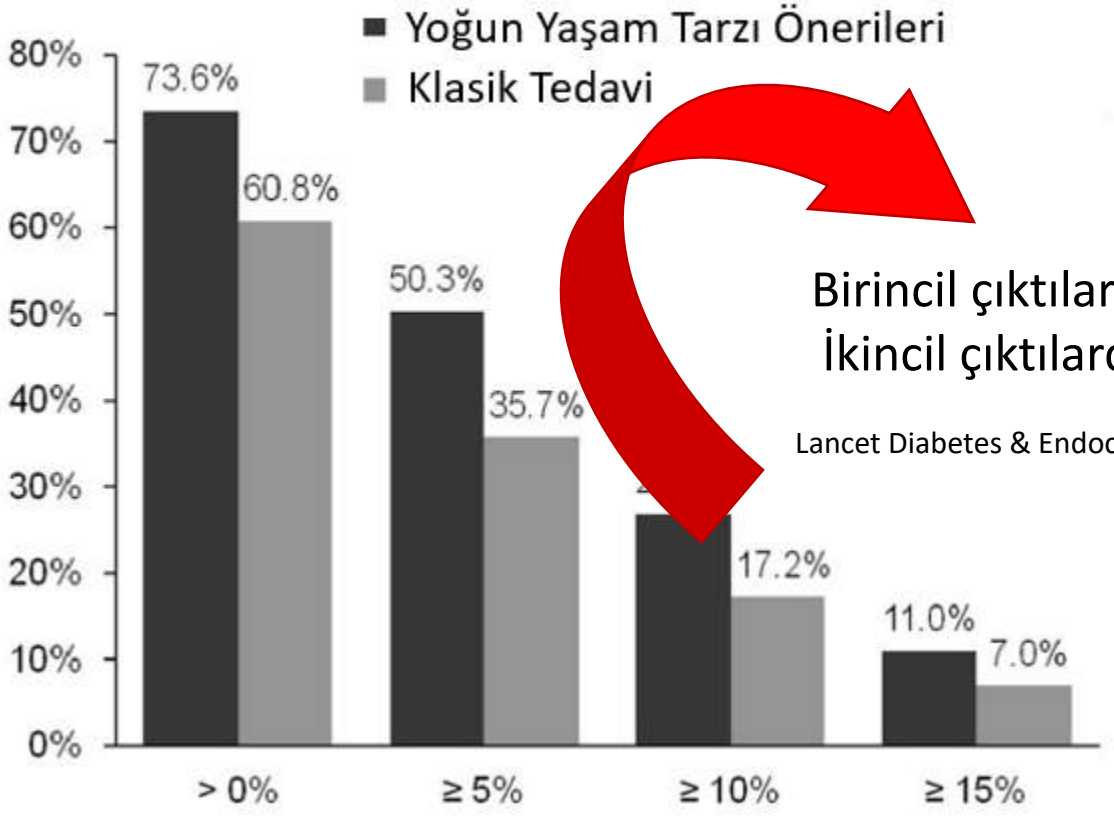
16 farklı merkezde

5145 Tip 2 DM hastası (45-76 yaş)

BKI>25 kg/m^2

Medyan takip: 9.6 yıl

Yoğun Yaşam Tarzı Önerileri
(Diyet Yağı <%30)
&
Klasik Tedavi



Birincil çıktılarda %21 ↘ (p=0.039)
İkincil çıktılarda %20 ↘ (p=0.011)

Lancet Diabetes & Endocrinology (2016), 4(11), 913-21

- Fiziksel fonksiyonlar ve yaşam kalitesi skorları daha ↗
- Medikal tedavi kullanımı ve harcamalarda ↘

Obesity (Silver Spring). 2014; 22(1): 5–13.

SONUÇ VE ÖNERİLER

- Metabolik kontrolün sağlanması diyabet tedavisinin ana unsurudur.
- Beslenme tedavisi diyabetin yönetiminde tamamlayıcı bir role sahiptir ve tanı sonrasında uygun beslenme tedavisi ile izlenen hastalarda metabolik kontrolün sağlanmasına katkı sağlamaktadır.
- Fazla kilolu ve obez diyabetli bireylerde ağırlık kaybı ve tüm hastalar optimal vücut ağırlığının sürdürülmesi önerilmektedir.
    - Glisemik kontrolün iyileştirilmesi ve KVH riskinin azaltılması için 6 ay içinde %5-10 ağırlık kaybı sağlanmalıdır.
    - Ağırlık kaybı tedavileri genel olarak besin tüketimini azaltmak yerine yüksek CHO'lı, düşük posalı, yüksek yağlı beslenme alışkanlıklarını değiştirmeli ve oluşturulan sağlıklı öğün planı, mutlaka fiziksel aktivite ve davranış değişikliği uygulamalarını içeren yaşam tarzı önerilerini içermelidir.

«SAĞLIKLI DİYET»

Curr Obes Rep (2017) 6:405–413

SONUÇ VE ÖNERİLER

- Diyetin makro besin ögesi içeriği, hastanın metabolik durumu ve besin tercihleri göz önünde bulundurularak bireysel olarak ayarlanmalıdır.
- TBT’nde gerçekçi hedefler belirlenmelidir.
    - Tedaviye uyum oranı yüksek bireyselleştirilmiş yaklaşımlar hedefe ulaşmakta daha etki olacaktır.
- Tedavide yaşam boyu multidisipliner yaklaşım benimsenmelidir.

TEŞEKKÜRLER…