

Diabetes journals

Cardiovascular risk in people with metabolic syndrome and diabetes



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Discussion continues regarding the interventions used for primary prevention of cardiovascular disease in people with diabetes. The study by Church et al (summarised alongside) is a part of the Aerobic Centre Longitudinal Study, examining cardiovascular disease mortality risk in men with diabetes alone, metabolic syndrome alone or with the combination of diabetes and metabolic syndrome.

Participants with a mean age of 45 years were characterised in to four categories: having neither diabetes nor metabolic syndrome ($n=23\,770$), metabolic syndrome only ($n=8780$), diabetes only ($n=532$) or both ($n=1097$). Participants were followed up for 14.6 ± 7 years, providing a total of 483 079 person-years of exposure and 1085 cardiovascular deaths.

This study demonstrates that the age, examination year, and smoking-adjusted cardiovascular disease death rates in men with neither metabolic syndrome or diabetes, metabolic syndrome only or diabetes only, and

both diabetes and metabolic syndrome, were 1.9, 3.3, 5.5 and 6.5 per 1000 person-years, respectively.

Mortality was higher with metabolic syndrome alone, or diabetes alone compared with men with neither. Presence of metabolic syndrome per se was not associated with a higher cardiovascular disease mortality risk in individuals with diabetes. By comparison, diabetes itself substantially increased the mortality risk in individuals with metabolic syndrome.

This analysis has demonstrated significant points for the management of people with metabolic syndrome and diabetes, alone or in conjunction. It is the presence of diabetes that is associated with 3-fold higher cardiovascular disease mortality risk and, indeed, metabolic syndrome status does not modify this risk. This will further stoke the discussion regarding the existence of a metabolic syndrome or alternatively simply a collection of risk factors.

The findings of this study are additionally significant as they support aggressive cardiovascular disease risk-reducing therapies in all people with diabetes, regardless of their metabolic syndrome status.

DIABETES CARE

Diabetes associated with a three-fold increase in CV risk factors

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 The authors undertook this study to determine the risk of cardiovascular (CV) mortality in American men with diabetes, the metabolic syndrome or both.

2 Data from the Aerobics Center Longitudinal Study were examined, and split into the following groups of people with: neither diabetes nor metabolic syndrome ($n=23\,770$), metabolic syndrome only ($n=8780$), diabetes only ($n=532$), or both ($n=1097$). The mean age was 45.1 ± 10.2 years.

3 Follow-up was for 14.6 ± 7.0 years. Metabolic syndrome was defined by meeting three of the following criteria: high blood pressure (≥ 130 mmHg systolic or ≥ 85 mmHg diastolic), central obesity (waist circumference >102 cm); high triglycerides (≥ 1.69 mmol/L); low HDL-cholesterol (<1.04 mmol/L); and high fasting plasma glucose (≥ 5.6 mmol/L).

4 Compared with men with neither metabolic syndrome or diabetes, CV mortality risk rate was higher in men with both diabetes and metabolic syndrome, with diabetes alone or metabolic syndrome alone.

5 In those with diabetes, metabolic syndrome did not increase CV mortality; however, in those with metabolic syndrome, the development of diabetes increased mortality substantially.

6 The authors recommended CV risk-reducing therapies in all people with diabetes, regardless of metabolic syndrome status.

Church TS, Thompson AM, Katzmarzyk PT et al (2009) Metabolic syndrome and diabetes, alone and in combination, as predictors of cardiovascular disease mortality among men. *Diabetes Care* **32**: 1289–9

DIABETES CARE

Telmisartan response may be blunted by salt supplementation

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 In an effort to determine the effects of salt intake on the anti-albuminuric action of telmisartan in hypertensive individuals with type 2 diabetes, the authors of this US-based study recruited 32 individuals from their local diabetes centre.

2 The participants all had type 2 diabetes, hypertension, increased albumin excretion rate, and habitual low

dietary salt (LDS) intake (<100 mmol sodium/24 h on two of three consecutive occasions) or high dietary salt (HDS) intake (>200 mmol sodium/24 h on two of three consecutive occasions).

3 After a 6-week washout, participants were given 40 mg/day telmisartan for 4 weeks followed by 40 mg telmisartan plus 12.5 mg/day for 4 weeks. For the final 2 weeks, they received either 100 mmol/day NaCl or placebo capsule.

4 In those with LDS, salt supplementation caused a reduction in the effectiveness of telmisartan. However, in those with HDS, the extra salt did not alter the response to telmisartan.

Ekinci EI, Thomas G, Thomas D et al (2009) Effects of salt supplementation on the albuminuric response to telmisartan with or without hydrochlorothiazide therapy in hypertensive patients with type 2 diabetes are modulated by habitual dietary salt intake. *Diabetes Care* **32**: 1398–1403

DIABETES CARE

African-American and Hispanic women have worse CV risk profiles than non-Hispanic Whites

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 In this observational study, the authors investigated the sex- and ethnicity-related differences in people with diabetes undergoing treatment for cardiovascular risk factors.

2 Participants ($n=926$) were recruited from the Multi-Ethnic Study of Atherosclerosis. Of these, 12% were Chinese, 19% were non-Hispanic White (NHW), 31% were Hispanic, and 38% were African-American; 48% of the study group were women. All had diabetes. Participants underwent four examinations over a 7-year period.

3 At the first examination, women had a 3.5 mmHg higher systolic blood pressure than men ($P<0.01$) and fewer reached their target ($P=0.002$). LDL-cholesterol levels were similar, but a lower percentage of women achieved LDL-cholesterol targets ($P=0.01$). Only 23% of women used aspirin compared with 33% of men.

4 By the final examination the differences in systolic blood pressure and LDL-cholesterol were no longer significant. Differences seen in medication use also disappeared, except for aspirin, which was still used more by men ($P<0.05$).

5 Stratifying these results by ethnic group showed that African-American and Hispanic women had higher mean systolic blood pressure and lower prevalence of aspirin use than NHW women.

Winston GJ, Barr RG, Carrasquillo O et al (2009) Sex and racial/ethnic differences in cardiovascular disease risk factor treatment and control among individuals with diabetes in the Multi-Ethnic Study of Atherosclerosis (MESA). *Diabetes Care* **32**: 1467–9

DIABETES

ApoB may be a useful marker of CAC

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 The authors of this study investigated whether apolipoprotein B (apoB) is a more useful marker of coronary artery calcification (CAC) than LDL-cholesterol.

2 Using data from the Penn Diabetes Heart Study and the Study of Inherited Risk of Coronary

Atherosclerosis, cross-sectional analyses were performed.

3 In total, the analyses included 611 people with type 2 diabetes and 803 without. Those with diabetes were mainly male, more obese and older than those without. They also had lower levels of total cholesterol, LDL-cholesterol and apoB.

4 In type 2 diabetes, after adjusting for age, sex, and medications, apoB was associated with CAC ($P<0.001$), but LDL-cholesterol was not.

Martin SS, Qasim AN, Mehta NN et al (2009) Apolipoprotein B but not LDL cholesterol is associated with coronary artery calcification in type 2 diabetic whites. *Diabetes* **58**: 1887–92

DIABETES CARE

DASH diet may prevent development of type 2 diabetes

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 Previously, the Dietary Approaches to Stop Hypertension (DASH) diet – a diet rich in vegetables, fruit and low-fat dairy – has been shown to reduce blood pressure.

2 Using the data from 862 participants of the Insulin

Resistance Atherosclerosis Study who had completed a food frequency questionnaire, the authors investigated whether there was any association between the DASH diet and incidence of type 2 diabetes.

3 The authors found an inverse correlation between the DASH diet and type 2 diabetes among non-Hispanic White individuals. However, this association was not present in Black or Hispanic individuals.

4 It was concluded that adherence to a DASH-type diet could potentially prevent diabetes in some populations.

Liese AD, Nichols M, Sun X et al (2009) Adherence to the DASH Diet is inversely associated with incidence of type 2 diabetes: the insulin resistance atherosclerosis study. *Diabetes Care* **32**: 1434–6

DIABETIC MEDICINE

Mortality following AMI higher in younger women

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

1 In this Canadian study, the authors investigated the impact of gender in people with diabetes following an acute myocardial infarction (AMI) at 30 days, 1-year and 5-years post-event.

2 A retrospective analysis was undertaken, and included 23 700

individuals aged ≥ 20 years admitted to hospital for a first AMI in any hospital in the Province of Quebec, Canada, between April 1995 and March 1997. Of these, 22% had diabetes.

3 At 30-day follow-up an interaction between gender and mortality was observed, with women having a 38% higher risk of mortality; however, this was independent of diabetes status.

4 At 1-year follow-up there was no association between mortality and gender. However, at 5-year follow-up, women with diabetes who were aged <65 years had a 52% higher mortality.

Ouhoumane N, Abdous B, Emond V, Poirier P (2009) Impact of diabetes and gender on survival after acute myocardial infarction in the Province of Quebec, Canada – a population-based study. *Diabet Med* **26**: 609–16

“Adherence to a DASH (Dietary Approaches to Stop Hypertension)-type diet could potentially prevent diabetes in some populations.”