

Obesity

DIABETES CARE

Type 2 diabetes risk is higher in Asian, Hispanic and Black populations

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

1 This study looked at the ethnic differences in the risk of type 2 diabetes, taking lifestyle and dietary risks into account.

2 A total of 78 419 apparently healthy women from a prospective cohort were studied, and lifestyle and dietary information for each woman was collected every 4 years.

3 During the follow-up, the researchers documented 3844 incident cases of diabetes.

4 Compared with White people, the age-adjusted relative risks (RRs) were 1.43 for Asian, 1.76 for Hispanic and 2.18 for Black groups.

5 After adjusting for body mass index (BMI), the RRs became 2.26 for Asian, 1.86 for Hispanic and 1.34 for Black people.

6 For each 5-unit increment in BMI, the multivariate RR of diabetes was 2.36 for Asian, 2.21 for Hispanic, 1.96 for White and 1.55 for Black people.

7 For each 5 kg weight gain, the risk of diabetes increased by 84 % for Asian, 44 % for Hispanic, 38 % for Black and 37 % for White people.

8 Healthy diet was more strongly associated with a lower risk of diabetes for minorities than among White groups.

9 The risk of diabetes is higher among Asian, Hispanic and Black ethnic groups than among Whites, and weight gain is especially detrimental for Asians.

Shai I, Jiang R, Manson JE et al (2006) Ethnicity, obesity, and risk of type 2 diabetes in women. *Diabetes Care* **29**: 1585–90

Diabetes in high-risk groups: Opportunities for screening and prevention



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Large epidemiological studies continue to be a treasure trove of useful information, and provide important messages for public health and clinical practice — especially primary care. As was so memorably reported from the Nurses' Health Study, compared with lean women with body mass index (BMI) 22 kg/m², the risks of type 2 diabetes in women who reach a BMI of 30 kg/m² were already 27-fold increased and above a BMI of 35 kg/m² the diabetes risk was 93-fold increased (Colditz et al, 1995).

This was one of several important studies showing that obesity is the major potentially preventable cause of type 2 diabetes in both men and women.

In an interesting new report from the Nurses' Health Study, attention is now

drawn to the additional adverse impact which ethnic background has on the risks of type 2 diabetes, over and above the already high risks from obesity. Despite a similar BMI at age 18 and similar amounts of adult weight gain, people of Asian, African and Hispanic origin all experience excessive risks of diabetes. The authors noted that weight gain is especially harmful for people of Asian origin, for whom the risks are more than double again.

At a time when increasing worldwide attention is being given to the prevention of type 2 diabetes, these data highlight a need to inform people of their potential long-term health risks early enough for prevention to be realistic and to offer screening for diabetes in particularly high-risk groups of people.

Colditz GA, Willett WC, Rotnitzky A, Manson JE (1995) Weight gain as a risk factor for clinical diabetes mellitus in women. *Annals of Internal Medicine* **122**: 481–6

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Higher risks in extreme obesity

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

1 This study aimed to establish how cardiovascular and mortality risks differ in women across a wide range of body mass index (BMI) values, including extreme obesity.

2 Incident mortality and cardiovascular outcomes by weight status in 90 185 women from 40 US centres were examined and women were followed-up for an average of 7 years.

3 Prevalence of extreme obesity (BMI >40 kg/m²) differed with race/ethnicity from 0.9% in Asian people and Pacific Islanders to 9.6% in Black women.

4 Mortality rates per 10 000 person-years were 68.39 for normal BMI,

71.16 for overweight, 84.47 for class 1 obesity, 102.85 for class 2 obesity and 116.85 for extreme obesity.

5 Analyses indicated that weight-related risk for all-cause mortality, coronary heart disease mortality and coronary heart disease incidence did not differ by race/ethnicity.

6 Adjusted analyses among White and Black participants showed positive trends in all-cause mortality and coronary heart disease incidence with increasing weight category.

7 Much obesity-related mortality and coronary heart disease risk was mediated by diabetes, hyperlipidaemia and hypertension.

8 If obesity is considered as a BMI of ≥30 kg/m², individual and population risks may be misinterpreted and underestimated.

McTigue K, Larson JC, Valoski A et al (2006) Mortality and cardiac and vascular outcomes in extremely obese women. *Journal of the American Medical Association* **296**: 79–86

‘Healthy lifestyle advice and treatment with metformin for obese children with insulin resistance improves body composition and fasting insulin levels.’

JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

Metformin improves fasting insulin and body composition

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| WOW! factor | ✓✓✓ |

- This randomised, double-blind, crossover trial evaluated the effect of metformin on body composition and insulin sensitivity in children with obesity who had been referred to a paediatric endocrine clinic.
- A total of 28 participants (13 males) aged 9–18 years received metformin and placebo for 6 months, each with a 2-week washout period.
- Metformin had a greater effect over placebo for weight, fasting insulin, waist circumference, body mass index and subcutaneous abdominal adipose tissue.
- Insulin sensitivity improved in 45% of participants while on metformin, and 27% of participants while on placebo.
- Healthy lifestyle advice and treatment with metformin for obese children with insulin resistance improves body composition and fasting insulin levels.

Srinivasan S et al (2006) Randomized, controlled trial of metformin for obesity and insulin resistance in children and adolescents: improvement in body composition and fasting insulin. *Journal of Clinical Endocrinology & Metabolism* **91**: 2074–80

JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM

BMI – still a crude index of risk

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| Readability | ✓✓✓ |
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| WOW! factor | ✓✓✓ |

- This community-based longitudinal study assessed the risk for cardiovascular disease (CVD) or diabetes stratified by body mass index (BMI) and the presence or absence of insulin resistance or the metabolic syndrome.
- A total of 2902 people (55% women, mean age 53 years) without CVD or diabetes were followed for up to 11 years.

‘Hypogonadism in Klinefelter’s syndrome may cause an unfavourable change in body composition through increased truncal fat and decreased muscle mass.’

DIABETES CARE

Environment outweighs genetics as a cause of type 2 diabetes

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| WOW! factor | ✓✓✓✓✓ |

- The effects of environment on type 2 diabetes and obesity in Pima Indians in Mexico and the US were studied.
- Adult Pima Indians and non-Pima people in Mexico were examined for obesity and physical activity; results were compared with those from US Pima Indians.
- Prevalence of type 2 diabetes in Mexican Pima Indians (6.9%) was less than one-fifth that in US Pima Indians (38%), and was similar to that of non-Pima Mexicans (2.6%).
- Obesity levels were similar in Mexican Pima Indians (20% in women and 7% in men) and non-Pima Mexicans (27% women and 9% in men).
- In populations genetically prone to type 2 diabetes and obesity, their development is determined mostly by environmental circumstances.

Schulz LO, Bennett PH, Ravussin E et al (2006) Effects of traditional and western environments on prevalence of type 2 diabetes in Pima Indians in Mexico and the US. *Diabetes Care* **29**: 1866–71

- Participants were categorised and proportional hazard models were used to estimate risk relative to ‘normal weight’, ‘no insulin resistance’ and ‘no metabolic syndrome’.
- A total of 1056 participants were of normal weight; of these, 7% had the metabolic syndrome with a 3.97 relative risk for diabetes and a 3.01 relative risk for CVD.
- In 638 participants with obesity, 37% (n=236) were without metabolic syndrome.
- Obese people with the metabolic syndrome (n=402) had a relative risk for diabetes of 10.3 and for CVD of 2.13.
- Risk factor clustering or insulin resistance seem to confer much of the risk for CVD or diabetes commonly

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Metabolic syndrome in Klinefelter’s syndrome

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- This study aimed to assess measures of insulin sensitivity, the metabolic syndrome and sex hormones in people in men with Klinefelter’s syndrome – a common genetic cause of hypogonadism.
- A total of 71 people with Klinefelter’s syndrome (of whom 35 had undergone testosterone treatment) and 71 control participants were examined.
- Dual-energy X-ray absorptiometry scans evaluated body composition, and fasting blood samples were analysed for sex hormones, insulin, plasma glucose, C-reactive protein (CRP) and adipocytokines.
- Of those with Klinefelter’s syndrome, 44% had metabolic syndrome, compared with 10% of the control group.
- In untreated Klinefelter’s syndrome participants, insulin sensitivity, androgen and HDL cholesterol levels were decreased, but total fat mass, LDL cholesterol, triglyceride, CRP, leptin and fructosamine levels were increased.

- In treated Klinefelter’s syndrome participants, LDL cholesterol and adiponectin were significantly decreased, but no difference in body composition was seen in comparison with untreated Klinefelter’s syndrome participants.
- Hypogonadism in Klinefelter’s syndrome may cause an unfavourable change in body composition through increased truncal fat and decreased muscle mass.

Bojesen A, Kristensen K, Birkebaek NH et al (2006) The metabolic syndrome is frequent in Klinefelter’s syndrome and is associated with abdominal obesity and hypogonadism. *Diabetes Care* **29**: 1591–98

associated with elevated BMI. BMI alone is an inadequate risk marker and needs to be complemented by additional measures.

Meigs JB, Wilson PWF, Fox CS et al (2006) Body mass index, metabolic syndrome, and risk of type 2 diabetes or cardiovascular disease. *The Journal of Clinical Endocrinology & Metabolism* **91**: 2906–12