Diabetes incidence: seven-fold risk among those with metabolic syndrome

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INTRODUCTION

The North West Adelaide Health Study, a biomedical cohort study of a random representative sample of people living in the north western suburbs of Adelaide, was used to determine the cumulative incidence of diabetes among those with and without metabolic syndrome.

METHODS

All households within the north west region of Adelaide, with a telephone connected and the number listed in the Electronic White Pages were eligible for selection in the North West Adelaide Health Study. The original sample (n=4060) was randomly selected and recruited by computer assisted telephone interview in 2000-2002 (Stage 1) to participate in a clinic assessment. Within each household, the person who had their birthday last and was aged 18 years or older, was selected for interview and invited to attend the study clinic. The participation rate at Stage 1 was 69%.

The second stage of data collection for this cohort was undertaken between 2004 and 2006. Of the original living cohort, 94.3% were contacted at Stage 2 with clinical measurements obtained at follow-up for 78.9% (n=3206) of the original participants.

Metabolic syndrome was defined using the IDF consensus definition (Box 1). Those with previously diagnosed diabetes or FPG ≥7.0mmol/L at Stage 1 were excluded from the analyses in order to examine development of diabetes over time. People with diabetes were defined as those who had a FPG level of at least 7.0 mmol/L, or those who self-reported being told by a doctor that they had diabetes.

Box 1. Definition of Metabolic Syndrome

Central obesity (waist circumference ≥ 94cm for men and ≥ 80cm for women) plus any two of the following:

- Triglyceride > 1.7mmol/L;
- HDL cholesterol <0.9mmol/L (men), <1.1mmo/L (women);
- Blood pressure ≥ 130/85mmHg;
- FPG ≥ 5.6mmol/L (excluding previously diagnosed diabetes)

Data were weighted by age, sex, area of residence and probability of selection in the household to ensure that the sample was representative.

RESULTS

The three-year cumulative incidence of diabetes was 2.1% (95% CI 1.7-2.7). The annual incidence of diabetes between Stage 1 and Stage 2 was 6.8 incident cases per 1000 in the adult population. Of the participants who developed diabetes between Stage 1 and Stage 2, 75.2% had been diagnosed and 24.8% had not yet been told by a doctor that they had diabetes.

The three-year cumulative incidence of diabetes among those with metabolic syndrome was 7.3%, compared to 1.1% among those without metabolic syndrome. Of the 41 participants with metabolic syndrome who developed diabetes between Stage 1 and 2, 80% had been diagnosed and 20% had not yet been told by a doctor that they had the condition.

Table 1. Cumulative incidence of diabetes among those with and without metabolic syndrome

Status at Stage 1	Cumulative incidence of diabetes at Stage 2
No metabolic syndrome	1.1%
Metabolic syndrome	7.3%

For those with metabolic syndrome, the cumulative incidence of diabetes was statistically significantly higher for those with an annual household income of less than $20,000 (Figure 1).

CONCLUSIONS

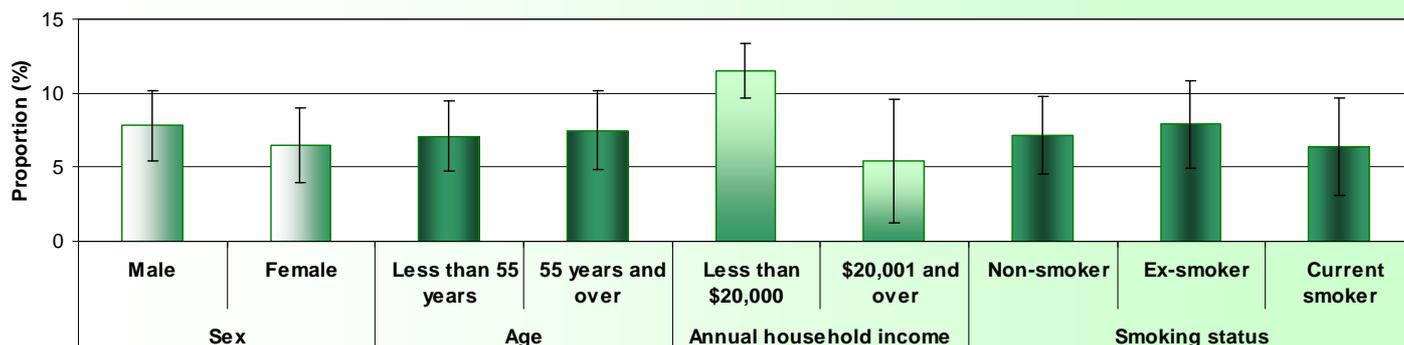Early detection of diabetes, particularly among those with metabolic syndrome, remains a priority.

Figure 1. Demographic and risk factors associated with three-year cumulative incidence of diabetes