

Diabetes incidence 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 examine factors associated with the development of diabetes in a randomly selected South Australian population. The aim of this analysis was to determine the 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 telephone 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 2000-2003 (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 response rate for Stage 1 was 49.4%.

The second stage of data collection for this cohort was undertaken between 2004 and 2006. Of the original living cohort, 3564 (90.1%) participants provided some Stage 2 information, and 3206 (81.0%) attended the clinic for their second visit, with diabetes status at follow-up obtained for 78.3% (n=3180) of original participants.

Metabolic syndrome was defined using the IDF consensus definition as waist circumference ≥ 94 cm for men and ≥ 80 cm for women plus any two of triglyceride >1.7 mmol/L, HDL cholesterol <0.9 mmol/L for men and <1.1 mmol/L for women, blood pressure $\geq 130/85$ mmHg or FPG ≥ 5.6 mmol/L. 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. Those with previously diagnosed diabetes or FPG ≥ 7.0 mmol/L at Stage 1 were excluded from the analyses in order to examine development of diabetes over time.

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 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 Stages 1 and 2, 80.0% had been diagnosed and 20.0% had not yet been told by a doctor that they had the condition.

In multivariate analyses adjusting for sociodemographic, lifestyle factors and family history of diabetes, having metabolic syndrome was associated with a 5.02 (95% CI 2.77 – 9.10) times increased risk of developing diabetes. Additionally, every one-unit increase in the components of metabolic syndrome was associated with a 2.13 (1.75 – 2.60) times increased risk of diabetes (Table 1).

Table 1. Odds ratios of developing diabetes with components of metabolic syndrome and lifestyle factors.

| | OR ^a | 95% CI |
|-----------------------------------|-----------------|-------------|
| Number of MetS components | 2.13 | 1.75 – 2.60 |
| <i>Smoking status</i> | | |
| Non-smoker | 1.00 | |
| Ex-smoker | 1.25 | 0.65 – 2.41 |
| Current smoker | 0.80 | 0.34 – 1.87 |
| <i>Alcohol consumption</i> | | |
| Non drinker | 1.00 | |
| Low risk | 0.39 | 0.19 – 0.82 |
| High risk | 1.53 | 0.55 – 4.23 |
| <i>Physical activity level</i> | | |
| Sedentary | 1.00 | |
| Low exercise level | 0.80 | 0.39 – 1.62 |
| Moderate exercise level | 0.77 | 0.37 – 1.61 |
| High exercise level | 1.19 | 0.35 – 4.04 |
| <i>Family history of diabetes</i> | | |
| No | 1.00 | |
| Yes | 2.26 | 1.25 – 4.09 |

^a OR adjusted for age, gender, income, employment status, and marital status in addition to the variables in the table

CONCLUSION

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