IQ among strongest predictors of cardiovascular disease -- second only to cigarette smoking

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as reflected by low results on written or oral tests of IQ - have been associated with a raised risk of cardiovascular disease, no study has so far compared the relative strength of this association with other established risk factors such as obesity, smoking and high blood pressure. Now, a large study funded by Britain's Medical Research Council, which set out to gauge the relative importance of IQ alongside other risk factors, has found that lower intelligence scores were associated with higher rates of cardiovascular disease and total mortality at a greater level of magnitude than found with any other risk factor except smoking.

The findings, published in the February issue of the *European Journal of Cardiovascular Prevention and Rehabilitation,* are derived from the West of Scotland Twenty-07 Study, a population study designed to investigate the influence of social factors on health. The present analysis was based on data collected in 1987 in a cohort of 1145 men and women aged around 55 and followed up for 20 years. Data were collected for height, weight, blood pressure, smoking habits, physical activity, education and occupation; cognitive ability (IQ) was assessed using a standard test of general intelligence.

When the data were applied to a statistical model to quantify the associations of nine risk factors with cardiovascular mortality, results showed that the most important was cigarette smoking, followed by low

IQ. Similar results were apparent when the health outcome was total mortality.

The relative strengths of the association were measured by an "index of inequality", which summarised the relative risk of a health outcome (cardiovascular death) in the most disadvantaged (high risk) people relative to the most advantaged (low risk). This relative index of inequality for the top five risk factors was found to be 5.58 for cigarette smoking, 3.76 for IQ, 3.20 for low income, 2.61 for high systolic blood pressure, and 2.06 for low physical activity.

The investigators note "a number of plausible mechanisms" whereby lower IQ scores could elevate cardiovascular disease risk, notably the application of intelligence to healthy behaviour (such as smoking or exercise) and its correlates (obesity, blood pressure). A further possibility, they add, "is that IQ denotes 'a record' of environmental insults" (eg, illness, sub-optimal nutrition) accumulated throughout life.

Commenting on the public health implications of the findings, the study's principal investigator Dr David Batty said that the individual skills reflected in a person's IQ may be important in the management of personal cardiovascular risk.

"From a public health perspective, there is the possibility that IQ can be increased, with some mixed results from trials of early learning and school readiness programmes," said Dr Batty. "It may also be worthwhile for health promotion campaigns to be planned with consideration of individual cognition levels."

He also noted that IQ may well be one important factor behind the place of social class as a fundamental determinant of inequalities in health. So far, said Dr Batty, explanations for such socio-economic gradients in health have traditionally focused on access to resources (such as

education and income), physical exposures at home and at work (such as housing conditions and toxins), and health related behaviours (such as smoking and diet). But studies show that such factors do not fully explain class-based differentials in health. A low IQ, he explained, as suggested in this study, may be a further independent explanation.

More information: Batty GD, Deary IJ, Benzeval M, Der G. Does IQ predict cardiovascular disease mortality as strongly as established risk factors? Comparison of effect estimates using the West of Scotland 'Twenty-07' cohort study. Eur J Cardiovasc Prev Rehabil 2010, 17:24; DOI:10.1097/HJR.0b013e328321311b

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