Low resistance to stress at age 18 years can increase the risk of type 2 diabetes in adulthood by up to 50 percent

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New research published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) shows that low resistance to stress in men at age 18 years can increase the risk of type 2 diabetes in adulthood by up to 50%. The study is by Dr Casey Crump, Department of Medicine, Stanford University, Stanford, CA, USA, and colleagues in Sweden and the USA.

Psychosocial stress in adulthood is associated with a higher risk of type 2 diabetes, possibly mediated by behavioural and physiological factors. However, it is unknown whether low stress resilience earlier in life is related to subsequent development of type 2 diabetes. In this new study, the authors examined whether low stress resilience in late adolescence is associated with an increased risk of type 2 diabetes in adulthood.

This population-based study examined the cohort of all 1,534,425 military conscripts in Sweden during 1969-1997 (covering a period when national service was compulsory in Sweden and including 97-98% of all 18-year-old men nationwide each year). To be included, the men had to have no previous diagnosis of diabetes. They underwent standardised psychological assessment for stress resilience (on a scale of 1-9) and were followed up for type 2 diabetes, identified from outpatient and inpatient diagnoses during 1987-2012 (maximum attained age 62 years).

A total of 34,008 men were found to have been diagnosed with type 2

diabetes in 39 million person-years of follow-up. Low stress resilience was associated with an increased risk of developing type 2 diabetes after adjusting for body mass index, family history of diabetes, and individual and neighbourhood socioeconomic factors—the 20% of men with the lowest resistance to stress (scores 1-3) were 51% more likely to have been diagnosed with diabetes than the 20% with the highest resistance to stress (scores 7-9) with diabetes risk decreasing in an approximately linear fashion with increased resistance to stress.

The authors suggest that the mechanisms by which stress resilience may influence the development of type 2 diabetes are probably complex and involve unhealthy lifestyle behaviours as well as other physiological factors. People who are more stressed are more likely to exhibit unhealthy behaviours such as smoking, unhealthy diet and lack of physical activity, and it could be these behaviours that form most of or part of the increased risk of diabetes found in men with lower stress resistance. They also note that since the study was only of male army recruits, it is not certain whether the findings apply directly to women.

The authors conclude: "These findings suggest that psychosocial function and ability to cope with stress may play an important long-term role in aetiological pathways for type 2 diabetes. Additional studies will be needed to elucidate the specific underlying causal factors, which may help inform more effective preventive interventions across the lifespan."

More information: Casey Crump et al. Stress resilience and subsequent risk of type 2 diabetes in 1.5 million young men, *Diabetologia* (2016). DOI: 10.1007/s00125-015-3846-7

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