

# Serious life events in childhood can triple risk of developing type 1 diabetes

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New research from Sweden published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) shows that serious life events (SLEs) in childhood, such as death or illness in the family, divorce/separation, a new child or adult in the family, and conflicts in the family, can triple the risk of subsequently developing type 1 diabetes (T1D). The research is by Maria Nygren, Professor Johnny Ludvigsson, Dr Anneli Frostell and colleagues, all from Linköping University, Sweden.

The causes of T1D are unknown, but both genetic and environmental factors are involved. It is usually preceded by the body's own immune system attacking and killing the beta cells in the pancreas that produce insulin. As well as genetic predisposition, several environmental factors such as viral infection, dietary habits in infancy, birthweight and early weight gain, as well as chronic stress, have been proposed as risk factors. Since the incidence of T1D among young children is increasing in most countries in the world, environmental factors are now being examined even more seriously.

In this unique population-based prospective study (The All Babies In Southeast Sweden [ABIS] study) this new research aimed to examine whether [psychological stress](#) in terms of experiences of SLEs, along with parental perception of parenting stress and lack of social support, during the child's first 14 years of life, may be a risk factor for developing T1D.

The study invited all families with babies born between 1 October 1997 and 30 September 1999 in southeast Sweden to participate. The study subsample included 10,495 families participating in at least one of four data collections carried out when the children were between 2 and 14 years of age. To be included in the study, the child must not have been diagnosed with T1D when participating for the first time. 58 children were subsequently

diagnosed with T1D. Age at diagnosis was obtained from the national register SweDiabKids in 2012.

Family psychological stress was measured via questionnaires given to the parents assessing serious [life events](#), [parenting stress](#), parental worries and the parent's [social support](#).

The authors found that childhood experience of a serious life event was associated with a higher risk of future diagnosis of T1D, with children experiencing such events almost three times more likely to develop T1D than those who had not, even after adjustment for confounding factors (genetic predisposition to T1D, age at entry into the study, genetic predisposition for type 2 diabetes, size for gestational age, the parents' education level and whether the mother worked at least 50% of full time hours before the child's birth).

In relation to other [environmental factors](#) discussed as risk factors, the increase in risk of T1D caused by SLEs found in this study is comparable to that of factors such as birthweight, infant nutrition factors and enterovirus infection. However, when comparing single risk factors, [genetic predisposition](#) is still much more important. In this study sample, there was a 12-times increase in risk of developing T1D for a child from a family in which another first degree member has T1D - about four times higher than the increase in risk associated with an SLE. The authors say: "Psychological stress should be treated as a potential risk factor, and should be examined further in future epidemiological studies, for instance in relation to genetic risk."

Discussing possible mechanisms, the authors say one possibility linking SLEs with developing T1D is suggested by the beta cell stress hypothesis, which proposes that the child's experience of an SLE could contribute to beta cell stress via increased insulin resistance as well as increased insulin demands due to the physiological stress response, including elevated levels of the stress hormone cortisol. Another possible mechanism linking stress

to immunological diseases is a more general imbalance in the immune system as a result of chronic stress. This imbalance may contribute to an immunological reaction against the insulin producing beta cells.

The authors conclude: "Consistent with several previous retrospective studies, this first prospective study concludes that the experience of a serious life event (reasonably indicating psychological stress) during the first 14 years of life may be a risk factor for developing type 1 diabetes. The current study examined serious life events experienced at any time before diagnosis; further studies are thus needed to determine when in the autoimmune process psychological stress may contribute, and in association with which other factors such as genetic factors, infections or other periods of pronounced beta cell [stress](#). As experience of stressful life events cannot be avoided, children and their parents should get adequate support to cope with these events to avoid their consequences, which could include medical issues."

Provided by Diabetologia

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