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Should females and males avoid having their children late in life?
Impact of parental ages at childbearing on congenital anomalies

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Summary

During the last decades, all developed countries have experienced a considerable fertility decline, with total fertility rates largely under two children per woman. In most developed countries, the average age at childbearing, both for males and for females, has moreover significantly increased. This older childbearing pattern is not due of course to an increase in higher-order births, which have practically disappeared in most European countries, but to the fact that couples are bearing their one or two children later than before. Though much research has been devoted to the consequences of low fertility levels, much less has been written on the possible effects of late childbearing. Various studies, including those from the present authors (see references below), have however shown that late childbearing has a deleterious impact on infant survival and health. If this is the case, it would be preferable for females and possibly males to avoid having their children too late in life.

The purpose of this paper is to examine the possible association between the risk for the live born child of suffering from various congenital anomalies on the one hand, and parental ages at childbearing on the other hand. The impact of maternal age is better known, e.g. in the case of Down syndrome (trisomy 21). A possible impact of father's age at birth of the child on congenital anomalies is on the other hand still being debated, and the few studies available do not all lead to the same conclusions. The data set used for this paper has been obtained by linking the information contained in the Czech National Registry of Mothers at Childbirth and the National Registry of Newborns to the data from the National Registry of Congenital Anomalies of the Czech Republic, for the whole country and for the years 2000-2007.

For comparison with previous results for Hungary (Vandresse *et al.* 2008), we have examined the relation between parental ages and all congenital anomalies, but also for children born alive with Down syndrome, congenital anomalies of the cardiovascular system, or with oral clefts, taking into account the other covariates in the data set. We are furthermore examining other groupings of congenital anomalies. Besides age of the mother and of the father at birth of the child, the covariates include previous number of miscarriages, previous number of live births, previous number of perinatal deaths, multiplicity, education of the mother, marital status of the mother, smoking, diabetes, and recourse to assisted reproductive technologies. A particular attention is given to the problem of possible residual confounding between both parental ages.

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