
Early puberty under scrutiny

[Health](#)[1]

[Health](#)[1][Children and adolescents](#) [2][Health](#) [3][Sex](#) [4][The Body](#) [5][Denmark](#) [6][Videnskab.dk](#) [7]

Today's children reach puberty one year earlier on average than only 15 years ago. Researchers are now sending questionnaires to 11-year-olds in search of a cause.

Pimples, bras and pubes are part of everyday life for an increasing number of Danish children aged 13 and below.

Many start growing breasts as early as at age seven and menstruation appears only a few years later. And the latest figures from the US show that one in ten American girls starts to grow breasts at the age of eight.

Mother's lifestyle can affect the child

The cause of this early pubertal development has mystified scientists for years. But now a team of Danish researchers have embarked on what may well be the hitherto most comprehensive study in this area.

"Not a lot is known about the causes of early puberty. We believe a contributing factor may be found in something you are exposed to while you're still a foetus in your mother's womb," says Associate Professor Cecilia Ramlau-Hansen, of Aarhus University's Department of Public Health. She is one of the researchers behind the new study, which is funded by [The Danish Council for Independent Research](#) [8].

"The mother's lifestyle, diet, smoking, use of medication, stress or other factors during pregnancy are likely to interfere with the baby's hormones, causing an early onset of puberty."

Thousands of children to be studied

A total of 22,500 children will, from the time they are 11 years old, be helping the researchers figure out exactly why children mature at an earlier age than they used to. The children will be asked to answer a series of simple questions about their development.

"We want to know at which stage of puberty they are in, so we'll be asking the girls if they have started having periods and if they have started to grow breasts," says Ramlau-Hansen.

"The boys will be asked whether they have ejaculated, and whether their voice is in transition. Do they have acne, pubic hair, etc.? The children will be shown some pictures of the various stages of puberty, and then they'll be asked to click on the stage where they believe they are."

So far, some 7,500 children have filled in the questionnaire online. Every six months, up to their 18th birthday, they will be asked to fill in a new questionnaire, so the researchers can monitor their pubertal development over time.

Childhood shortened by four years

The participating children can not only show the researchers whether the Danish puberty age continues to fall; they can also help to find the reason why the innocent years of childhood have been reduced over the past couple of centuries. Today's average girl has her first period aged 13, whereas in the 19th century this happened at age 17.

The reason the 22,500 Danish children can be so helpful is that they are not randomly selected. They are sons and daughters of women who are part of the comprehensive national birth cohort '[Better Health for Mother and Child](#)' [9]. The researchers behind this cohort have followed 92,000 women and their 100,000 children since the women were pregnant in the period 1996-2003.

While they were pregnant and up to today, the women regularly answered questions about their dietary habits, use of medications, alcohol intake, work environment, financial matters, mental state, the development of the child, etc.

"We now have some valuable information about many early exposures," says the researcher.

"By adding the information from the children's questionnaires to the information we have about their mothers, we can examine whether there's a link between something that happened while the mother was pregnant and early onset of puberty in her child."

Tools for the next generation of researchers

Previous studies have shown that children who reach puberty prematurely are more likely to become overweight and insulin-resistant than other children. These children also appear to have a greater risk of developing certain types of cancer later in life.

Puberty triggers certain hormones, and it is conceivable that these hormones can have a negative effect on our health if they affect the body for longer than they usually do, explains Ramlau-Hansen.

Her study may provide more accurate indications of which diseases a child is more likely to get if he or she hits puberty too early.

"In the long term – when the children get older and perhaps are diagnosed – we will have information about their pubertal development, which will enable us to see with a great degree of certainty which diseases are more likely to hit those who entered puberty early on than those who did so at a later point. This provides us with some useful tools for prevention," she says.

"And further out in the future, new researchers can then pass this study on to the next generation."

A bank of useful information

Population studies of this magnitude are only possible in the Scandinavian countries. This is due to the unique Central National Register in which all Scandinavians are given a number at birth. These numbers make it possible to store information about the citizen's health in national registers.

Researchers can gain access to these national registers, allowing them to monitor the health of the population over time.

"It's a bank of useful information – a great source of data, which researchers from other countries can also access," she says.

"Having such a system is truly special. Nowhere else in the world can we collect information about large

populations over such long periods and then compare it with data from national registers. This puts us in a unique position in the international research community.”

[Read the Danish version of this article at videnskab.dk](#) [10]

 [An increasing number of children reach puberty before they have turned 13. A new study seeks to unravel this mystery. \(Photo: Colourbox\)](#) [11]

 [teens.jpg](#) [12]

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[Teen girls dance away the blues](#) [13] [One in three teenagers suffers chronic stress](#) [14] [Youths are tired of drinking binges](#) [15] [Swedish teens now toe the line](#) [16] [Teens need more sleep, but don't sleep enough](#) [17]

[Cecilia Ramlau-Hansen's profile](#) [18]

[Anne Ringgaard](#) [19]

Dann Vinther

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[2] <http://sciencenordic.com/category/keywords/children-and-adolescents>

[3] <http://sciencenordic.com/health>

[4] <http://sciencenordic.com/sex>

[5] <http://sciencenordic.com/category/keywords/body>

[6] <http://sciencenordic.com/category/countries/denmark>

[7] <http://sciencenordic.com/videnskabdk>

[8] http://fivu.dk/en/research-and-innovation/councils-and-commissions/the-danish-council-for-independent-research?set_language=en&cl=en

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- [11] <http://sciencenordic.com/sites/default/files/teens.jpg>
- [12] http://sciencenordic.com/sites/default/files/teens_0.jpg
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