



Why Girls Are Starting Puberty Early

As causes become clearer, scientists worry about lasting social effects

For the past two decades scientists have been trying to unravel a mystery in young girls. Breast development, typical of 11-year-olds a generation ago, is now occurring in more seven-year-olds and, rarely, even in three-year-olds. That precocious development, scientists fear, may increase their risk for cancer or other illnesses later in life. Time has not resolved the puzzle. Nor is there any indication that this trend is slowing. More and more families are finding themselves in the strange position of juggling stuffed animals and puberty talks with their first and second graders.

Obesity appears to be the major factor sending girls into these uncharted waters. The rate of obesity has more than doubled in children over the past 30 years. And whereas only 7 percent of children aged six to 11 were obese in 1980, nearly 18 percent were obese in 2012. The latest studies, however, suggest that weight gain does not explain everything. Family stress and chemical exposures in the environment may also play a role, but the data do not yet paint a very clear picture of their

contribution. As for boys, the data are murkier, but one 2012 study did suggest that they, too, may be starting puberty earlier than before—perhaps by as much as six months to two years.

Clinicians say that slightly early development of breasts is likely not physically harmful and so does not require medical or pharmaceutical therapy for most girls. (Among the few exceptions are pituitary disorders.) The psychological effects, though, are another matter that warrants more attention from schools and parents; early puberty seems to augment the risk of depression and to promote substance abuse and early initiation of sexual intercourse.

OBESITY'S ROLE

PRECOCIOUS DEVELOPMENT was first thrust into the spotlight in 1997, when a landmark U.S. study declared that at least 5 percent of white and 15 percent of black girls had started to develop breasts by age seven—much earlier than expected. “That finding evoked a lot of passion,” says Paul B. Kaplowitz, a pediatric endocrinologist at Children’s National Health System in Washington, D.C. Moreover, the 1997 work found that the trend toward early development was not happening only in outliers. Puberty was happening earlier in most girls and again differed by race: instead of age 11, the typical age of breast development by the early 1990s was 8.87 years in African-Americans and 9.96 in white girls, researchers found. Other studies soon reached similar conclusions in Europe as well as the U.S. According to the most recent U.S. data (from 2013), 23 percent of black girls, 15 percent of Hispanic girls and 10 percent of white girls have started to develop breasts by the age of seven. Those findings suggest the proportion of girls with significantly earlier breast development may still be ticking upward.

From a biological point of view, whether puberty begins early or late, it still starts in the brain. Something cues the brain to produce a substance called gonadotropin-releasing hormone, or GnRH. This process activates the pituitary gland, which then signals the ovaries to produce estrogen, which in turn stimulates the breasts to grow and puberty to begin. (Pubic hair forms as the result of a different biological process.) Menstruation usually begins a few years later. Focusing too much on the latter meant researchers tended to overlook the breast trend.

The ovaries are not the only place in the body where estrogen is produced, however. Fat cells manufacture the hormone as well. Thus, with obesity levels on the rise around the world, it is not surprising that earlier puberty would result. Although girls’ breasts are developing earlier than before, the age at which they start to menstruate—and at which ovaries start pumping out large amounts of estrogen on a regular basis—has advanced by about only three months compared with decades past. As a result, puberty not only begins earlier but lasts longer than before.

The most obvious physical consequence of early puberty is a prolonged exposure to estrogen. Although excessive amounts of the hormone appear to increase the risk of developing breast

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cancer, no data so far indicate that starting one’s period a few months earlier than the previous norm exposes a girl to enough extra estrogen to cause a health problem. The potential effect probably is minimal, researchers say—particularly when weighed against myriad other factors—such as genetics, alcohol consumption and exercise—that also affect cancer risk. The much smaller exposure to estrogen that occurs in conjunction with early breast development has not yet been definitively studied.

Against that backdrop, many experts now believe parents should focus on the psychosocial consequences of early puberty rather than the potential physical risks. Frank M. Biro of Cincinnati Children’s Hospital Medical Center has spent his career studying puberty. He is also the father of three children. In his estimation, one of the biggest issues with early puberty is social well-being. “We interact with girls as they appear,” Biro says. “People relate to an early-maturing girl as if she is older than she is, but there is really no correlation between age of onset of puberty and one’s social or emotional maturation.” The result can be incredibly confusing for girls—who may face sexual innuendo or teasing long before they (or their parents) are ready for it.

BEYOND OBESITY

ALTHOUGH RESEARCHERS AGREE that obesity plays the central role in the earlier development of puberty, there is evidence implicating other factors as well. Lise Aksglaede and her colleagues at Rigshospitalet in Copenhagen followed more than 2,000 girls and discovered that although heavier individuals were indeed entering puberty earlier, a similar—if slightly less pronounced—trend also existed among normal-weight girls. In a 2009 study published in *Pediatrics*, they concluded that the increases in body mass index (a standard measure of weight in relation to height) between 1991 and 2006 were simply not large enough to account for girls’ breast development dropping by a year during that period. “In my view, this is the best study that suggests it may not all be body fat and that there’s something else here,” Kaplowitz says.

What might that something else include? Researchers have long suspected that exposure to certain compounds known as endocrine disruptors might have a part in triggering early puberty. These substances, among them pesticides, polychlorinated biphenyls and bisphenol A, mimic the effects of estrogen in the body—and so could potentially stimulate early breast growth. Discerning how much of an influence exposure to these chemicals might play is complicated, however, by the obesity epidemic. Because the body often stores chemicals in fat cells, an overweight girl is more likely to be exposed to more chemicals—making it difficult to apportion blame between endocrine disruptors and weight gain. Other investigators have implicated intense stresses in childhood, such as sometimes occurs with the absence of the biological father in the home or if a child is

sensitive to conflict around her, as possible causes of earlier puberty—although the biological mechanism of action is not known. What is evident is that there is a symphony of moving parts to make puberty happen instead of a solo actor.

WHAT TO DO?

GIRLS ARE NOT HAPLESS CREATURES, of course, buffeted by the winds of change without any control over their actions. Regular physical activity may prove beneficial to help counteract at least some of the trend toward early puberty by improving mood and combating weight gain. Helping daughters to maintain a healthy diet rich in fruits and vegetables may also offer some protection, psychologist Julianna Deardorff and pediatric endocrinologist Louise Greenspan write in their new book, *The New Puberty: How to Navigate Early Development in Today’s Girls*.

One thing mothers can do to try to avoid the problem in the first place is to breast-feed their children. Children who are breast-fed appear to be less likely to enter puberty early, although the reasons are still unclear. A 2015 study that tracked some 1,200 girls and their mothers’ breast-feeding habits found that breast-feeding—and longer duration of breast-feeding—correlated with later onset of breast development in daughters in some populations. Parents and communities can also help protect girls from the painful psychological effects of early development. One way, Deardorff says, is preparing girls for puberty by talking about developmental changes in a positive, nonstigmatizing way. Living in a homogeneous neighborhood may also be helpful: early-maturing fifth graders of Mexican descent showed fewer symptoms of depression by seventh grade when they lived in Hispanic neighborhoods compared with similar girls living in more diverse neighborhoods, according to another study. It is unclear, however, why homogeneity may have helped.

Regardless of where girls live, they could well benefit from a change in school curriculums. Schools typically do not offer sexual education classes covering body maturation until fifth grade, when most children are around age 10 or 11. Puberty education should start earlier, Deardorff and Greenspan believe, with age-appropriate materials beginning in the first semester of fourth grade to more closely conform with present reality.

Identifying the triggers that push individual girls into early puberty remains a challenge that leaves parents short of a simple action plan. As Marcia E. Herman-Giddens, lead author of the watershed 1997 early puberty paper, says, “People always want to know the reason, but I don’t think people will ever be able to sort out the reason or the fix. It’s a lot of things interacting together, and they have different effects on different individuals.”

It remains to be seen if the early puberty trends will continue. “You would think at some point you would hit a biologic minimum, but I don’t know when that is or when it would be,” Biro says. Will every girl start maturing earlier? If obesity trends reverse course, will puberty begin later? As researchers look for answers, it is clear that parents and doctors alike need to be aware of the changes happening right now. ■

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