

When Age-Based Guidance Is Not Enough: The Problem of Early Puberty

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In this issue of *Pediatrics*, Mendle et al¹ examine the longitudinal connections between menarchal age and depression symptoms and antisocial behavior. The study was done by using data from Add Health, a well-known, nationally representative data set that reported on various health behaviors and outcomes from adolescence to adulthood (final age was late 20s or early 30s). The researchers found that the earlier the participants experienced menarche, the more likely they were to have depression symptoms and antisocial behavior in adolescence. In addition, these outcomes persisted into adulthood, 13 years later. A large body of literature has described the link between early puberty and behavioral concerns, and this study extends that evidence into adult behavioral outcomes.

Several biologic mechanisms may contribute to early puberty's relationship with depressive symptoms. In women, estradiol may modulate the production of serotonin receptors; this potentially influences mood for a prolonged time in those with early puberty.² Chronic stress (for example, from early childhood abuse or neglect) can accelerate the activation of the hypothalamic-pituitary-gonadal axis and contribute to early puberty.³ Because chronic stress is also known to be connected with depression and antisocial behavior later in adolescence and into adulthood, it may be that on a biologic level, this mechanism predates puberty. Therefore, pediatricians should have history of trauma in mind when counseling on the timing of pubertal changes.

Social mechanisms are also at play in the development of depressive symptoms in puberty. Children with early puberty experience a paradox in which they appear older and are treated as such by peers and adults, yet cognitively and socially, they lack the skills needed to meet the expectations of the age they appear to be.⁴ This discordance can lead to distress and perpetuate depressive symptoms. Other social factors that may be at play include the well-known association between overweight and/or obesity and early puberty.⁵ Overweight girls may experience poor body image and bullying victimization, which by itself has been shown to have significant mental health consequences into adulthood.⁶ If compounded with the stress of early physical puberty, these factors can increase the risk for depressive symptoms. Because the latter are risk factors for perpetuating such behavior into adulthood, it follows that early intervention with these girls is important.

This study also supports the connection between early puberty and antisocial behavior. A significant contributing factor to antisocial behavior among adolescents who go through puberty early may be friend groups.^{7,8} Girls who develop earlier may seek out friends who are older than them to fit in with peers who look like them, but they may feel pressured to then engage in risky behaviors. Counseling parents on close monitoring of friend groups and encouraging spending time with age-appropriate friends is always important but especially so for girls

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experiencing puberty earlier than their peers.

The core mission of the pediatrician is to guide children and adolescents into healthy adulthood. As Mendle et al¹ have shown in their study, the onset of puberty may present a window of opportunity for preventing adolescent and adult behavioral concerns. The US Preventive Services Task Force recommends consideration of depression screening beginning at age 12 years.⁹ However, if girls who have earlier puberty are at a higher risk for depression and antisocial behavior, then it makes sense to monitor for these concerns at a younger age for select patients and refer to developmentally appropriate community and mental health resources for additional support.

CONCLUSIONS

At any given time, each child and adolescent is experiencing stages of physical, cognitive, and socioemotional development that may not be synchronous with each

other. It is the task of the pediatrician to assess the individual patient and recognize the behavioral health consequences that discordant developmental stages may have and counsel patients and parents accordingly.

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