Don’t try to make me grow up before my time… let me be a little girl as long as I can. Louisa May Alcott, Little Women

**Puberty** is a subject that fascinates and repels; a stage that all humans progress through, puberty is both highly personal and a topic of interest to educators in girls’ schools. Most girls will begin puberty at some stage in their schooling, which has implications for educators. This review will outline research debates of pubertal timing, and how the onset of puberty is measured. Consideration is also given to the complex interplay between the determinants and consequences of early puberty for girls. Empirical research findings are balanced with sociological perspectives about girls in the early puberty phase. The review concludes with suggestions for future research and summative ideas for educators in girls’ schools.

A significant caveat when summarising the research literature where samples and populations of girls are discussed, is to acknowledge the limitations of generalising about any group. Necessary attention at the outset is therefore given to links between gender, ethnicity and socioeconomic status. In girls’ schools, the timing of pubertal milestones is fixed but research conclusions and generalisations are constructed from the study of groups of girls, and often reveal little about individuals. Therefore it is important to consider the following research findings as data trends or patterns, rather than as individual case studies or illustrations of what each girl experiences.

### Definitions and mechanisms of puberty

The terms ‘puberty’ and ‘adolescence’ are often used interchangeably but, for the purposes of this report they have been separated. Puberty is a stage that all humans progress through, and adolescence for the physical changes, and adolescence for the development of the maturing bodies, and developing minds.

Potential determinants of early puberty

Although the hormonal pathways associated with the initiation of puberty are known, what triggers these pathways and the determinants of pubertal development are not entirely established. However, the category of ‘early puberty’ remains ambiguous. Studies using different populations of girls have shown that the mean age of menarche has remained stable over the past 50 years. The timing of pubertal milestones can be the onset of an important developmental process that begins in late childhood and progresses into the early puberty phase. The review concludes with suggestions for further research and summative ideas for educators in girls’ schools.

#### Pubertal tempo

Pubertal timing refers to the timing of pubertal onset relative to peers, which can be early, on-time or late (Reardon, 2009). The individual timing of puberty varies widely and is influenced by a range of factors and cues that are not entirely known, but include the effects of nutrition, psychological status, socioeconomic conditions and genetic factors. Early menarche is considered ‘normal’ in terms of pubertal timing varies from population to population (Ponner, 2006, p. 156). For example, African American girls generally begin puberty earlier than Anglo-American or Mexican American girls (Biro et al., 2010). Mensah & Patton, 2011). Puberty typically begins in late childhood. On average, ‘girls’ begin puberty at 11 years of age, at 11.2 years of age. The timing of puberty varies by four to five years among healthy children (Mensah & Patton, 2011, Section 6).

#### Defining early and precocious puberty

Further controversy about early puberty comes from the definition of the term. Researchers, parents, journalists, and doctors are invested in understanding and treating early-maturing girls. However, the category of ‘early puberty’ remains ambiguous. There are many potential adverse outcomes of early puberty, as well as a contributor (Steingraber, 2007). Tempo is defined as ‘highly-elastic trait’ (Steingraber, 2007, p. 20). Tempo is a complex developmental process that begins in late childhood and is characterised by:

- **Maturation of the hypothalamic-pituitary-gonadal (HPG) axis**
- **The appearance of secondary sexual characteristics**
- **AcCELERATION OF ADOLESCENT MATURE 15 YEARS WITH 0.5 YEARS VARIATIONS (i.e. between countries)**
- **According to one study in Greece, the average age of breast development is 10 years. (Papadimitriou et al., 2011, p. 27)**
- **The age of menarche has largely decreased in most developed countries in the past 50 years, averaging 13 years 10.5 years variations in breast maturation, and 11 years in Europe (Mendle, 2007).**
- **The age of menarche is falling more rapidly in the developing world (Steingraber, 2007).**
- **The age of menarche has dropped significantly since the 1980s, when the average age in Western European girls was around 16. Since the early 2000s, the average age of menarche in girls today is around 12 to 13.**

Considering the effects of early puberty, is important to consider the relationships between breastfeeding, with peak height velocity at mid-puberty. Menarche usually occurs between 2.5 and 3.5 years of age (Trenam, 2012). Puberty can still be understood as an ‘integrated transition across multiple domains of development’ (Mendle, 2007).

#### Potential determinants of early puberty

Potential determinants of early puberty are multifactorial, for the purposes of this report they have been separated.

- **Body weight**
- **Sociocultural norms**
- **Family structures and family environment**
- **Exposure to endocrine disrupting chemicals**
- **Genetic risk factors**
- **Stress, as girls adapt to their changing social roles, increasing the risk of early puberty**

### Potential determinants of early puberty

Puberty begins with an increase in the GnRH (Gonadotropin-releasing hormone) pulse frequency, which is secreted by the hypothalamus. This is followed by the release of the gonadotrophins luteinising hormone (LH) and follicle-stimulating hormone (FSH) from the pituitary gland, initially during sleep and, as puberty advances, around four secretions per week (Trenam et al., 2012). The release of adrenarcheal activity which produces pubic hair, pubic hair and skin, acne and adult body odour (p. 121).

#### Definitions and mechanisms of puberty

The terms ‘puberty’ and ‘adolescence’ are often used interchangeably but, for the purposes of this review, they have been separated. Puberty refers to the time when changes occur, and is, for the purposes of this report, starting earlier in girls from developed countries or if pubertal timing has been measured, and the incongruous way that old data is compared to current measurements. Rigorous comparison ‘between studies is fraught with complicating factors’ (Trenam, 2012). Studies have varied in design, population selected, age of the children included, methods of pubertal staging and statistical analyses (Wallwoz, 2010, p. 143). Consider different study designs have led to a lack of ‘standardised cross nationally comparable data to accurately measure any decline’. It is difficult to determine if puberty is starting earlier in girls from developed countries or if puberty timing has become more variable (Trenam, 2012). Conclusive ‘demonstration of a universal trend for earlier puberty in humans is still missing and epidemiological data must be taken with caution until such validation is provided’ (Tena–Sempere, 2013). This can be seen as either positive or negative.

#### Potential determinants of early puberty

There is also crossover between the causes and effects of early puberty, and the factors that influence early puberty may be part of an accelerated transition to adult development which begins early in life. When, in turn, heightens the risks for emotional and behavioural problems. Although the relationship between these factors and early puberty is multifactorial, for the purposes of this report they have been separated.

#### Body weight

A recent research finding is a link between early menarche and body weight (Christensen et al., 2010). Studies using different populations of girls from around the globe have shown that girls
Body weight is influenced by both genetic and environmental factors. Christensen et al. (2010, p. 282) found that having a mother who was associated with more advanced breast stages in a girl’s puberty. Early puberty has also been strongly associated with unhealthy body image. Women aged 34 countries in Europe and North America. There has been growing concern about the effects of puberty and adolescence in girls. Maturing earlier than one’s peers can have ‘negative psychological effects.’

• Psychological effects
A number of stress-related psychological disorders become more prevalent in women than men after puberty. Although many of these disorders are common in all age groups, teenagers and young women may be more vulnerable to them. This is because the brain is still developing during adolescence, and the brain’s structural and functional changes during this time can increase the risk of developing psychological disorders. Early puberty is also associated with a higher risk of developing psychological disorders, such as depression, anxiety, and eating disorders.

• Physical effects of early puberty
Early puberty is associated with a higher risk of developing physical health problems, such as osteoporosis, cardiovascular disease, and cancer. Early puberty is also associated with a higher risk of developing psychological disorders, such as depression, anxiety, and eating disorders.

• Social effects of early puberty
Early puberty can have significant social consequences for girls, particularly in terms of peer relationships and academic performance. Early puberty is also associated with a higher risk of developing psychological disorders, such as depression, anxiety, and eating disorders.

• Cultural and societal effects of early puberty
The cultural and societal norms surrounding puberty and adolescence can have a significant impact on girls’ psychological and social well-being. For example, the Western culture places a high value on physical appearance and attractiveness, which can increase the risk of developing psychological disorders, such as depression, anxiety, and eating disorders.

• Overall conclusions
Early puberty is associated with a higher risk of developing psychological disorders, such as depression, anxiety, and eating disorders. This is because the brain is still developing during adolescence, and the brain’s structural and functional changes during this time can increase the risk of developing psychological disorders.

• Future research
Future research should focus on understanding the underlying mechanisms that link early puberty to psychological disorders, and developing effective interventions to prevent or treat these disorders. This is particularly important given the significant impact that psychological disorders can have on girls’ social, emotional, and academic well-being.
Factors that influence girls’ development and early puberty include medical doctors, and (to some extent) parents – for adults – journalists, newspaper readers, researchers, and much of the research into early puberty has pathologised early puberty in girls. She concluded that the media ‘have focused on the pubertal development of more than three-fourths of these articles, they were rarely ever heard speaking for themselves’ [p. 44]. The narrative ‘about early puberty is constructed by adults: journalists, newspaper readers, researchers, medical doctors, and (to some extent) parents – for a readership of adults. Girls themselves have left out of the conversation’ [p. 52]. According to this researcher, early puberty in girls has become ‘a narrative written by journalists prore to reporting scientific research in a decontextualized and often sensationalized manner’ (Mazzarella, 2010, p. 53).

Although this feminist, theoretical analysis of early puberty is provocative, it raises two important points; the lack of girls’ voices, and the difficulty that western societies face in ‘dealing’ with the sexual development of young girls.

Posner (2006, p. 316) agrees that societal anxiety about ‘puberty’ has inhibited young women’s abilities to healthfully and positively consolidate their sexuality into their identities. Much of the current research on early puberty ‘has aimed at discovering the “causes” of early puberty, and has produced a subject that pathologizes early puberty in particular, and female sexual development in general’ [p. 520]. For girls who are already facing the challenges of early puberty, they must also ‘navigate the conflicting messages they receive about their growing bodies and their emerging sexuality, and much of the research into early puberty has not helped girls chart these treacherous waters’ [p. 520]. Posner also concurs with Mazzarella that the voices missing from the research ‘about adolescent female sexuality has inhibited the lack of girls’ voices, and the difficulty that western societies face in “dealing” with the sexual development of young girls.

Clearly there is also a need to hear from girls. Posner and Mazzarella have identified a gaping hole in the representation of girls in the research literature, in the media and in society as a whole. Subjective experiences and the voices or girls who are experiencing early puberty, or who have recently ended their pubertal development, will add greatly to the existing and future research on early puberty.

Conclusions

The majority of girls, including early developers, will begin puberty while they are at primary school or early secondary school. Therefore educators in girls’ schools are strategically placed to provide positive frameworks to support these girls through this phase of their lives. Supportive families, peers, educators, counsellors and health service providers are helpful for all girls going through puberty. Early developing girls require adequate support and emotional resources; schools can be a key provider of such resources.

Every girl’s developmental journey is unique. Although each girl will progress through the same stages in puberty, the timing and experience for each girl is distinct. Educators may therefore consider working with individual girls, in collaboration with parents, to support each child through this complex developmental process. School programs and supports for cohorts of early puberty are still necessary but there may be specific provision for each individual girl.

The Alliance of Girls Schools Australasia

References


