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# Mental Health and Psychosocial Outcomes of Early Puberty: Coping and Support in Adolescents: A Narrative Review

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**Abstract**

Early puberty, particularly early menarche and precocious puberty, is increasingly recognized as a public health concern worldwide. The timing of pubertal development may have important consequences for the psychological, emotional, and social well-being of adolescent girls. This narrative review examines the effects of early puberty on the mental health and social well-being of adolescent girls and explores coping strategies and support systems that may facilitate healthy adjustment. Information was identified through searches of PubMed and Google Scholar using terms including early puberty, adolescents, mental health, and coping strategies. Peer-reviewed original studies, systematic reviews, and narrative reviews published between 2019 and 2026 that examined the relationship between early puberty and mental health in adolescent girls were considered. Evidence indicates that early pubertal development is associated with increased risks of anxiety, depression, emotional and behavioural difficulties, psychotic-like experiences, and substance use. Early-maturing girls may also experience challenges related to body image, peer relationships, social interactions, and emotional preparedness for menarche. Coping strategies, family support, puberty education, and appropriate emotional guidance may facilitate adjustment and reduce psychological distress. However, access to mental health services remains limited in many low- and middle-income countries. Early puberty is associated with important mental health and psychosocial challenges among adolescent girls. Early recognition, age-appropriate puberty education, emotional support, and access to mental health services may help promote healthy development and reduce the potential for persistent psychological difficulties.

**Keywords:** Early Puberty, Early Menarche, Precocious Puberty, Mental Health, Anxiety, Depression, Psychosocial Outcomes, Adolescents.

## Introduction

Puberty is a crucial stage in development that leads to the transition between childhood and adulthood and the ability to reproduce. Menarche, the first menstrual period, is one of the most important indicators of female reproductive maturation [1.] Puberty timing is affected by a range of factors including genetics, nutrition, socioeconomic conditions, environmental exposures and geographic variation [2].

Early puberty has become an increasing public health concern in recent decades. Changes in nutritional status, lifestyle patterns and environmental influences have been associated with a progressive decline in the age range of pubertal onset in many populations [3.] Early menarche is associated with several adverse long-term health outcomes, such as obesity, type 2 diabetes mellitus, cardiovascular diseases and breast cancer [1,4.]

Early puberty has a substantial impact on psychological well-being in addition to its effects on physical health. Anxiety, despair, emotional distress, low self-esteem, and behavioural issues are more common in teenagers who mature earlier than their classmates, according to research[1.] Anxiety levels are higher in girls who menarche early than in those who reach puberty at the anticipated age [4]. Additionally, at this time of transition, feelings of anxiety, premature menarche, and later. Puberty, embarrassment, and emotional stress may be exacerbated by insufficient awareness and readiness for pubertal changes [5.]

Adolescence is a stage for emotional and psychosocial development. Understanding how early puberty affects health is essential. Although research increasingly links pubertal timing with anxiety, depression, emotional distress, behavioural problems and psychosocial difficulties, findings are scattered across many studies. A thorough review of the health and psychosocial consequences of early puberty and of the coping strategies and support systems that can lessen these challenges is therefore needed. This narrative review looks at the health and psychosocial outcomes related to early puberty in adolescent girls, focusing especially on anxiety, depression, psychosocial challenges, coping strategies and support systems.

## Methodology

A literature search was conducted using PubMed and Google Scholar. The search was conducted using the key terms “early puberty,” “adolescents,” “mental health,” and “coping strategies.” Articles published from 2019 to 2026 were included. Peer-reviewed original research articles, systematic reviews, and narrative reviews focusing on the relationship between early puberty and mental health outcomes among adolescent girls were included.

A total of 317 articles were identified through the literature search. After removing duplicates and applying the screening criteria, 310 articles were screened based on their titles and abstracts. Following full-text assessment for eligibility, 21 articles that met the inclusion criteria were finally included in this narrative review.

## Search Strategy

A comprehensive literature search was conducted in PubMed and Google Scholar to identify studies examining the mental health and psychosocial outcomes of early puberty among adolescent girls. The last search was performed on 8 June 2026. Articles published between January 2019 and June 2026 were considered for inclusion.

The search strategy used combinations of free-text keywords and Boolean operators (AND, OR). The primary search string was:



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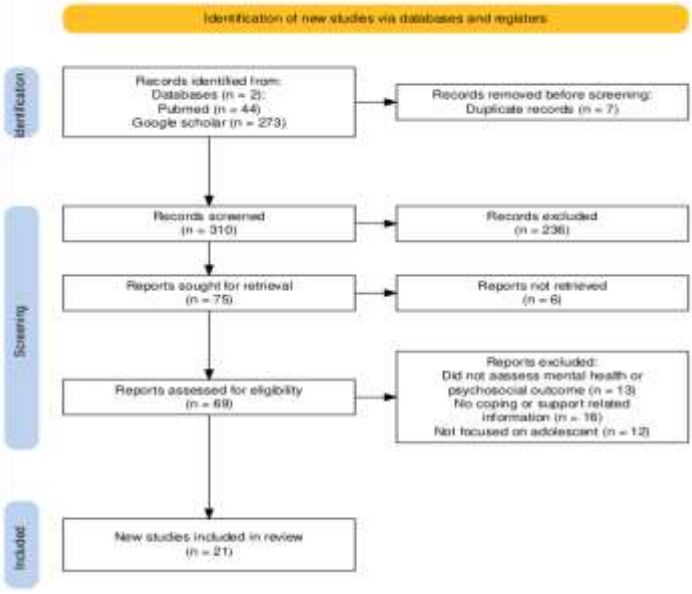
("early puberty" OR "early menarche" OR "precocious puberty") AND ("mental health" OR anxiety OR depression OR psychosocial outcomes) AND (coping OR "coping strategies") AND (adolescent OR teenage OR "school girl")

**'The inclusion criteria were:**

- Peer-reviewed original research articles, systematic reviews, meta-analyses, and narrative reviews
- Studies involving adolescents, particularly girls experiencing early puberty, early menarche, or precocious puberty
- Studies reporting mental health, psychological, behavioural, psychosocial, or coping-related outcomes
- Articles published between January 2019 and June 2026
- Full-text articles published in English.

**The exclusion criteria**

Included duplicate records, conference abstracts, editorials, letters to the editor, case reports, dissertations, studies focusing solely on endocrine or biological mechanisms without reporting mental health or psychosocial outcomes, non-English publications, and studies without accessible full text.




**Epidemiology of Early Puberty**

**Prevalence and Global Burden**

Early puberty has become a growing public health concern. In parts of the world, the age when puberty starts and when girls have their first period is getting earlier. Recent studies and reviews show that precocious puberty is becoming more common in girls [1,2,5.] This shift in puberty timing is drawing attention because it may affect teenagers' health and overall well-being.

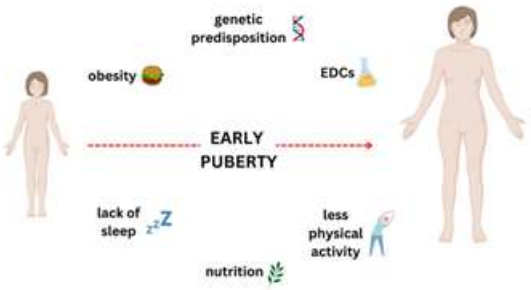
**Early menarche**

Early menarche is defined as menarche before age 12. [6]

**Secular trends**

Secular trends toward earlier puberty continues in recent populations. The authors suggested that pubertal timing may continue to progress due to the increasing prevalence of childhood obesity, exposure to endocrine-disrupting chemicals, dietary habits, and physical activity patterns.[7]

**Risk Factors for Early Puberty.**




**Mental Health Outcomes of Early Puberty**

Adolescents are influenced by mental health disorders, which are among the most common health problems. Recent estimates suggest that 10–20% of adolescents suffer from mental health difficulties, with psychiatric disorders being a leading cause of disability in this developmental period[9]. Cohort studies and review articles have offered evidence that early puberty among adolescents compared with their peers is associated with increased risk for anxiety, depressive symptoms, emotional distress, and other psychosocial challenges [1,9.]



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Therefore, understanding the relationship between early pubertal development and mental health outcomes is important to promote adolescent well-being and guide timely interventions.

**Anxiety**

Early puberty is associated with increased risk of psychological distress and anxiety in adolescent girls. Pubertal development occurring before the majority might result in difficulties coping with new changes, which can raise cases of anxiety and other internalising issues [10.] A study performed in the United States and published recently concluded that there was an increased likelihood of anxiety symptoms in females who went through puberty earlier and progressed quicker through the different stages[10.] Similar results were found in Tirupati when it came to anxiety about pubertal changes. Most respondents had mild anxiety (49.1%), moderate anxiety (42.7%) and a minor percentage suffered from severe anxiety (8.2%). The study further established a relationship between anxiety and coping measures, showing that proper coping mechanisms could reduce emotional challenges among the participants [11.]

The research also revealed that female children who experience menarche earlier than average are more susceptible to anxiety disorders than those who start their puberty at a normal time. Disorientation, fear, emotional pressure, and lack of preparation for menstruation and other developments in puberty were cited as reasons for anxiety during puberty [6].

**Depression**

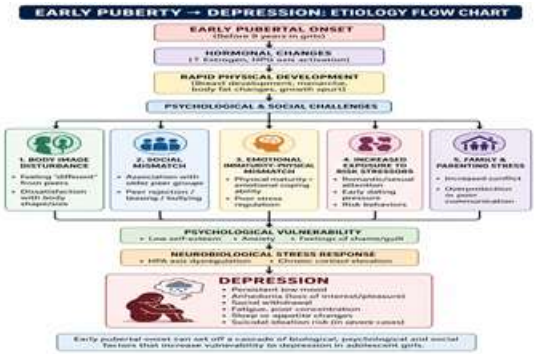
Early puberty has been strongly associated with an increased risk of depression and emotional disturbances among adolescent females. Pubertal development encompasses rapid hormonal, physical, and psychosocial changes that can evoke emotional distress and negatively affect mental well-being. Studies have suggested that depressive symptoms increase significantly during adolescence, particularly following the age of 12 years, and are more prevalent in girls during the middle and late stages of puberty. [12] Rapid physical maturation, hormonal fluctuations, and difficulties in acclimating to bodily changes can contribute to emotional instability and depressive symptoms during this period. [12]

Research further suggests that psychosocial stressors play an important role in the relationship between puberty and depression. Negative body image, dissatisfaction with physical appearance, interpersonal conflicts, peer pressure, and academic stress were identified as major contributors to depressive symptoms among adolescents undergoing pubertal transition. [12] Girls experiencing early puberty often report higher levels of emotional stress as a result of feeling psychologically unprepared for the sudden physical and social changes associated with maturation.[10]

A longitudinal study conducted amongst an ethnically diverse group of adolescent girls reported that the girls who entered puberty earlier experienced an increased risk of depressive symptoms, particularly White adolescent girls.[10] The developmental readiness hypothesis suggests that the girls who enter puberty earlier than their peers are not emotionally and cognitively prepared for the pubertal changes and therefore they develop anxiety, poor self-esteem, and depression.[10] In addition, the early-maturing girls experience increased social pressure and comparison with their older peer group and attention from their older peers, which places them at greater psychosocial risk.[10]



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Another review exploring the association between early puberty as a risk factor for mental disorders reported that early puberty is associated with increased prevalence of depression, internalising symptoms, and emotional problems during adolescence.[1]

The review asserted that the rapid hormonal and neurobiological changes which occur during early puberty could influence brain development and the emotional regulation capacity, thereby increasing vulnerability to depressive disorders. [(1)] In addition, poor preparedness regarding menstruation and bodily changes could cause fear, confusion, and negative emotions among adolescent girls.[1]

**Behavioural and Psychosocial Problems**

Early pubertal development and menarche can have a significant influence on the behavioural and psychosocial well-being of adolescent girls. Girls who begin puberty earlier than their friends may have difficulty adjusting emotionally and socially because they are often not ready for the rapid physical and hormonal changes of pubertal transition.[13] Early maturity has been associated with emotional instability, behavioural problems and difficulty in adjusting to changing social expectations in adolescence. [13] Early menarche has been associated with increased levels of psychosocial stress, maladjustment, and emotional problems in adolescent girls.[13] It is frequently reported that during the first menstruation, feelings such as fear, embarrassment, confusion, shame and insecurity are experienced, particularly by girls with insufficient knowledge about menstruation and pubertal changes.[13,14] Early puberty may also be linked to adverse outcomes in peer relationships, self-concept, and general social adjustment.[13]

A comparative cross-sectional study of adjustment in girls with early onset menarche found that early-maturing girls had poorer emotional, social and psychological adjustment than girls who reached menarche at the expected age.[13] The study suggested that deviation from normal pubertal timing may increase susceptibility to psychosocial problems and emotional distress.[13] Lack of awareness and inadequate preparation about menstruation were also identified as factors for adjustment problems among adolescent girls.[13]

Adolescent girls in Korea have also shown behavioural problems linked to precocious puberty.[15] Early puberty was associated with internalising behavioural problems, such as anxiety, fearfulness, depression and social withdrawal, and externalising problems, such as aggression, anger and poor behavioural regulation.[15] Rapid physical development and early onset of secondary sex characteristics were related to body image concerns, psychological distress and social discomfort.[15] Parental stress and parenting practices were also identified as significant contributors to behavioural outcomes in girls with precocious puberty.[15] More parental stress was associated with more emotional and behavioural problems in adolescent girls. Negative parenting practices such as rejection, coercion and inconsistent discipline worsened psychosocial maladjustment.[15]

The emotional readiness for menarche is another important aspect of psychological well-being in adolescence.[14] A survey performed among Chinese adolescent girls revealed that many of the participants experienced anxiety, stress, fear, and emotional discomfort during menarche due to the lack of



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knowledge and preparation for pubertal changes.[14] Although mothers were considered the primary source of information on menstruation, several girls reported receiving limited guidance before the onset of menstruation.[14] Lack of puberty education and emotional preparedness was found to negatively impact girls' emotional experiences during menarche.[14]

These findings suggest that early puberty is strongly associated with behavioural, emotional, and psychosocial challenges among adolescent girls. The provision of adequate puberty education, emotional support, positive parenting practices, and early psychological guidance will help adolescents adjust more effectively to pubertal changes and prevent long-term mental health problems.

**Psychotic-Like Symptoms**

Emerging evidence suggests that early pubertal development may be associated with an increased risk of psychotic-like experiences among adolescents.[16] Psychotic-like experiences may include unusual thoughts, suspiciousness, perceptual disturbances, and hallucination-like symptoms occurring during adolescence.[16] The hormonal and neurodevelopmental changes accompanying puberty can influence brain regions involved in emotional regulation, stress processing, and cognitive functioning, thereby increasing vulnerability to psychological disturbances. [16]

Girls who experience puberty earlier than their peers may encounter greater emotional stress, social pressure, and body image concerns during the pubertal transition.[16]

Difficulty coping with rapid physical maturation and increased social expectations may further contribute to emotional and psychological distress.[16] The maturational disparity hypothesis proposes that early-maturing adolescents are often not emotionally prepared to manage pubertal changes, increasing susceptibility to mental health problems.[16]

A longitudinal study examining pubertal timing and adolescent mental health reported that early pubertal development was significantly associated with higher levels of psychotic-like experiences.[16] Early-maturing girls demonstrated greater emotional difficulties and were more likely to report unusual perceptions and psychological distress compared to adolescents with normative pubertal timing.[16] The study suggested that both biological changes during puberty and psychosocial stressors may contribute to the emergence of psychotic-like symptoms during adolescence.[16]

These findings highlight the potential psychological impact of early pubertal development on adolescent girls. Early recognition of emotional difficulties, timely psychological support, and adequate puberty education may help reduce distress and promote positive mental health outcomes during adolescence.[16]

**Early Puberty and Substance Use**

Early pubertal maturation has been linked with a greater likelihood of substance use during adolescence, particularly among girls.[17] Girls who experience puberty earlier than their peers may face increased emotional distress, peer pressure, body image dissatisfaction, and challenges in adapting to rapid biological and psychosocial changes.[17] Early maturation can also lead to closer association with older peer groups, which may increase exposure to and opportunities for engaging in risky behaviours such as smoking, alcohol consumption, and drug use. [17]

Evidence suggests that earlier pubertal timing is associated with higher levels of substance use during adolescence.[17] Cognitive and emotional factors play an important role in this association.[17] Adolescents who exhibit negative cognitive patterns, including low self-



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esteem, pessimistic thinking, and heightened concern about consequences, may be more susceptible to substance use behaviours.[17] In addition, early-maturing adolescents who experience emotional distress and limited coping skills are more likely to initiate the use of nicotine, alcohol, marijuana, and other substances.[17]

The study also highlights that psychosocial stress, increased emotional sensitivity, peer influence, and heightened reward-seeking tendencies during puberty may contribute to substance use risk in early-developing adolescents. [17] The presence of supportive relationships, effective coping strategies, and appropriate psychological guidance may help reduce the likelihood of engaging in such behaviours.[17]

Overall, early pubertal timing appears to increase vulnerability to substance use through a combination of emotional, cognitive, and social mechanisms. Early preventive strategies, including puberty education, parental involvement, and mental health support, are essential for promoting healthy adolescent development and reducing substance-related risks. [17]

**Coping Strategies and Emotional Support**

Coping strategies and emotional support are important factors in helping adolescent girls manage the physical and psychological changes associated with puberty and menarche. Puberty involves rapid biological, emotional, cognitive, and social transitions that may lead to anxiety, confusion, stress, and fear in adolescent girls.[(11)]Menarche, as a key developmental milestone, is often accompanied by emotional reactions such as embarrassment, insecurity, discomfort, and worry, particularly when girls are not adequately prepared for its onset.[14] Support from parents, teachers, and family members plays a crucial role in shaping how positively girls experience and adjust to these changes. [14]

A descriptive study conducted among pre-adolescent girls in Tirupati reported that anxiety related to pubertal changes was common, although most girls demonstrated moderate to good coping abilities.[11] The findings indicated that pubertal stress is influenced by the interaction of physical changes and psychosocial challenges during adolescence.[14] A significant association was observed between anxiety levels and coping strategies, suggesting that stronger coping mechanisms are linked with reduced emotional distress during puberty. [11] The study further highlighted that structured education and psychological preparation can enhance coping skills and reduce anxiety among adolescent girls. [11]

Similarly, a cross-sectional survey among Chinese adolescent girls emphasised the importance of emotional preparedness and familial support during menarche. [(14)] Many girls reported experiencing fear, stress, and anxiety during menstruation, particularly when prior knowledge and guidance were limited.[14] Mothers were identified as the primary source of both information and emotional support regarding menstruation.[14] Girls who had received prior education about menarche demonstrated more positive emotional responses and better adjustment during the onset of menstruation.[14] The study also suggested that adequate puberty education and emotional reassurance can improve confidence, reduce fear, and support healthier coping during adolescence. [14]

**Public Health Importance and Long-term Outcomes**

Early puberty and precocious puberty are increasingly recognised as public health concerns because of their long-term physical and psychological consequences. Evidence indicates that early pubertal timing is associated with metabolic disorders, cardiovascular diseases, depression, anxiety, behavioural problems, and adverse reproductive outcomes later in life[1,5] Early



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menarche has also been identified as a risk factor for breast cancer due to prolonged estrogen exposure[4] Additionally, a nationwide cohort study reported an increased risk of psychiatric disorders among adolescents with precocious puberty. [18]

**Integration into school health programmes**

Schools play a central role in promoting adolescent mental health by providing a structured environment where health promotion activities can be delivered effectively. Integrating mental health services into school health programmes enables adolescents to receive puberty education, life-skills training, counselling, and psychosocial support within their daily learning environment. [19] These interventions help improve mental health awareness, build resilience, strengthen coping skills, and foster positive peer and teacher relationships while reducing stigma surrounding mental health problems.[19] School-based programmes also facilitate the early identification of emotional and behavioural concerns, allowing timely referral and appropriate support for adolescents who require specialised care.[19] Evidence indicates that comprehensive school health interventions contribute to healthier school climates, encourage positive health behaviours, and improve psychosocial well-being among adolescents.[19] Incorporating mental health promotion into routine school health programmes can therefore support healthy development, enhance emotional adjustment, and improve overall mental health outcomes during adolescence. [19]

**Adolescent mental health screening**

Integrating mental health screening into school health programmes can facilitate the early identification and timely support of adolescents experiencing anxiety, depression, and other emotional difficulties.[20] The Project SAMA intervention recommends a whole-school approach that combines mental health promotion, prevention, and early intervention through the active involvement of students, teachers, parents, and the wider school community. The programme aims to improve mental health literacy, reduce stigma, encourage help-seeking behaviour, and strengthen protective factors, including positive student–teacher relationships, school connectedness, psychological safety, and effective parent–child communication. [20] Teachers are trained to recognise early signs of mental health problems and provide appropriate support, while parents receive education to enhance mental health awareness and communication with adolescents. [20] The intervention also includes psychoeducation, resilience-building, problem-solving, and emotional regulation activities. Overall, comprehensive school-based mental health programmes can promote early detection, strengthen psychosocial support, and improve adolescent mental health outcomes.[20]

**Menstrual preparedness programs**

School-based menstrual preparedness programmes are essential for equipping adolescent girls with accurate knowledge before menarche and supporting a positive transition into adolescence.[21] Evidence suggests that participatory teaching methods, such as peer education, group discussions, question-and-answer sessions, and practical demonstrations, effectively improve menstrual knowledge, attitudes, and hygiene practices.[21] Incorporating menstrual health education into routine school curricula and delivering it through trained teachers or health educators can increase confidence, preparedness, and self-management during menstruation. [(21)] These programmes also help dispel misconceptions, reduce menstrual stigma, encourage open communication, and create supportive school environments for adolescent girls.[21] Integrating structured



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menstrual preparedness initiatives within school health services can enhance menstrual health outcomes, promote psychosocial well-being, and ensure a more informed and positive experience of menarche. [21]

**Limitations**

This narrative review was based on studies retrieved from PubMed and Google Scholar and included only English-language publications. Variations in study designs and assessment methods across the included studies may have influenced the comparison of findings. Despite these limitations, the review provides a comprehensive overview of the current evidence on the mental health and psychosocial outcomes of early puberty among adolescent girls.

**Future Directions**

Future research should focus on longitudinal and multicentre studies to better understand the long-term mental health and psychosocial outcomes of early puberty among adolescent girls. Standardised definitions and validated assessment tools are needed to improve the consistency and comparability of findings across studies. Further studies should evaluate school-based interventions, family support programmes, and culturally appropriate mental health strategies, particularly in low- and middle-income countries.

**Conclusion**

Evidence from epidemiological reviews and cohort studies consistently shows that early pubertal timing in females, particularly early menarche and precocious puberty, is associated with adverse long-term health outcomes. Early puberty in girls is linked with increased risk of metabolic disorders such as obesity, insulin resistance, type 2 diabetes, and cardiovascular disease, suggesting a sustained impact on cardiometabolic health beyond adolescence.[4]

In addition to physical health effects, early pubertal onset in females is strongly associated with mental health morbidity. Early menarche has been shown to increase the risk of anxiety symptoms in adulthood, indicating long-term vulnerability to internalising psychiatric disorders.[7] Furthermore, large cohort evidence demonstrates that girls with precocious puberty have a significantly higher risk of multiple psychiatric disorders, including anxiety, depression, eating disorders, ADHD, and autism spectrum disorder.[11] These associations suggest that early hormonal and psychosocial transitions may contribute to persistent neuropsychiatric vulnerability.

Overall, early pubertal timing in females represents an important public health risk marker for both metabolic and psychiatric disorders. Early identification and psychosocial support during puberty may help reduce long-term disease burden in this population [4,7,11.]

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