

Early Puberty in Children: Psychological, Social, and Parental Impacts

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Abstract. *Precocious puberty, or sexual development that occurs earlier than normal, has significant implications for child development. This scoping review aims to map the existing literature on the psychological and social impacts of precocious puberty in children, and the role of parents in dealing with it. A systematic literature search was conducted in PubMed, ScienceDirect, Scopus databases, using Research-Rabbit and Google Scholar search engines. Inclusion criteria included studies that examined the psychological and/or social impacts of precocious puberty in pre-adolescent and early adolescent children, and discussed the role of parents in this context. Data were extracted regarding study characteristics, definition and measurement of precocious puberty, reported psychological and social impacts, and how the role of parents was conceptualized. Narrative synthesis was used to summarize the findings. The review identified five relevant articles. Findings suggest that earlier pubertal timing is associated with increased risk of mental health problems and decreased emotional quality of life. Social challenges such as bullying were also reported. The role of parents appears to be crucial, with social support correlated with children's readiness for change, and parenting style mediating the effect of parental stress on children's behavioral problems. Broader social determinants, such as peer support and school environment, also play a role in the psychological well-being of adolescents with early puberty. Early puberty is a complex phenomenon with significant psychological and social consequences for children. Social support from the environment, especially parents, plays an important role in mitigating negative impacts. Further research, especially longitudinal studies and those that consider the socio-cultural context, is needed for a deeper understanding and development of effective interventions.*

Keywords: *Child, Early Puberty, Psychological Impact, Social, and Parental Role*

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INTRODUCTION

Puberty is a transformative developmental period marked by a series of significant biological, psychological, and social changes in children and adolescents (Uktamovna, 2025; Dorn et al., 2019; Worthman et al., 2019). The hormonal changes underlying puberty are often associated with an increased risk of emotional and behavioral problems, such as anxiety and depression (Kaltiala-Heino et al., 2003; Cameron, 2004; Pfeifer & Allen, 2021; Boivin et al., 2017). Variations in the timing and pace of puberty are also believed to have implications for young individuals' psychological adjustment (Marceau et al., 2011; Susman & Rogol, 2004).

One important marker of puberty, particularly for girls, is menarche, the first menstrual period. A girl's readiness for menarche can be influenced by various factors, including information received, family support, and cultural perceptions (Stubbs, 2008; Mukminah & Hirlan, 2024; Uskul, 2004). A study at Baginda 2 Public Elementary School in 2022 (as implied in

the title "The Relationship Between Parental Social Support and Readiness for Menarche in School-Age Children at Baginda 2 Public Elementary School in 2022") highlighted the importance of parental social support in facilitating this transition.

Emotional, informational, and instrumental support from parents is believed to increase girls' self-confidence and reduce anxiety in facing bodily changes and new experiences related to menarche. More broadly, family dynamics and the quality of relationships within them play a crucial role in children's psychological well-being during puberty. A study in Chongqing, China (as reflected in the title "The association between family impact and health-related quality of life of children with idiopathic central precocious puberty in Chongqing, China") demonstrated a relationship between family impact and quality of life in children with idiopathic central precocious puberty.

Precocious puberty, defined as pubertal development occurring earlier than the normal age, can pose unique psychological and social challenges for children and their families. Parenting style is also believed to be an important mechanism influencing how factors such as pubertal timing or social pressure can affect psychological outcomes in adolescents (as indicated by the title "The mediating effects of parenting style"). Research suggests that a supportive and responsive parenting style can be a protective factor against the development of emotional and behavioral problems during the pubertal transition (Baumrind, 2013).

In addition to individual and family-level factors, broader social determinants also contribute significantly to the risk of emotional and behavioral problems in children and adolescents (as suggested by the title "The Social Determinants of Emotional and Behavioral Problems in"). Factors such as socioeconomic status, parental education level, access to health services, and residential environment can independently or interact to influence psychological well-being during the vulnerable period of puberty.

Precocious puberty, or sexual development that occurs earlier than normal, is a phenomenon that is receiving increasing attention in modern society. Its impact is not limited to individual physical changes but extends to psychological, social, and even long-term health aspects. From a societal perspective, a comprehensive understanding of precocious puberty is crucial given its potential consequences for adolescent well-being, family dynamics, and the burden on health services. Research highlighting pubertal timing and its relationship to mental health (Dehestani et al., 2024), readiness for biological changes such as menarche (Nabilah & Amalia, 2022), and the impact of this condition on the quality of life of children and families (Yang et al., 2021) underscores the need for appropriate social responses.

Furthermore, studies examining the role of parental social support (Nabilah & Amalia, 2022) and parenting styles (Kwon et al., 2023) in mitigating the risk of behavioral problems, as well as the influence of broader social determinants (Vijayakumar et al., 2024), demonstrate that precocious puberty is not simply a biological issue, but a complex social phenomenon that requires in-depth understanding to ensure healthy and optimal adolescent development within society.

Previous research on precocious puberty has explored various aspects of its development and impact. One group of studies focused on accurate pubertal timing measurement methodologies and their implications for adolescent mental health. These studies sought to develop more sensitive methods for identifying pubertal timing and understanding how variations in biological maturation may influence the risk of psychological problems (Dehestani et al., 2024). Another group highlighted the importance of preparation and support for specific puberty-related changes, particularly in girls experiencing menarche.

This study investigated the role of parental social support in enhancing preparedness and reducing anxiety related to menarche (Nabilah & Amalia, 2022). Furthermore, there has been significant focus on the impact of precocious puberty on individual and family quality of life. These studies explored how the diagnosis and management of precocious puberty can impact

children's emotional, social, and functional well-being, as well as the burden felt by families in caring for them (Yang et al., 2021).

Furthermore, research has investigated the role of family dynamics, such as parental stress and parenting styles, in moderating or mediating the relationship between precocious puberty and behavioral problems in adolescents (Kwon et al., 2023). Finally, a growing body of research recognizes the importance of the broader social context, including socioeconomic factors, school environment, and peer support, as determinants of emotional and behavioral problems in adolescents experiencing early puberty (Vijayakumar, Ph, et al., 2024). Overall, previous research has provided an important foundation for understanding the various dimensions of precocious puberty and its impacts, but there is still room for integration of findings and further exploration of underlying mechanisms and effective interventions.

While previous research has provided valuable insights into precocious puberty, several challenges, gaps, and weaknesses remain to be addressed. First, pubertal timing measurement methodologies often rely on self-report or clinical assessment, which may be subjective and less accurate in capturing subtle individual variations (Dehestani et al., 2024). The development of a machine learning-based method introduced in one article demonstrates an attempt to address these limitations, but its validation and applicability across diverse populations require further research.

Second, research on menarche readiness (Nabilah & Amalia, 2022) often focuses on knowledge and attitudes, but lacks in-depth exploration of more complex psychological factors such as body image and social anxiety that may be influenced by early puberty. Third, studies on the impact of early puberty on quality of life and family (Yang et al., 2021) are sometimes limited to specific populations (e.g., based on comorbid medical conditions) and may not fully explore cross-cultural and socioeconomic differences in experiences. Fourth, studies investigating the role of parenting style (Kwon et al., 2023) often use cross-sectional designs, which limits the ability to draw causal conclusions about the direction of the relationship between parental stress, parenting style, and child behavior problems. Longitudinal studies are needed to understand the development of family interactions over time.

Finally, while research on social determinants (Vijayakumar, Ph, et al., 2024) is important, it is often difficult to isolate the specific influence of multiple, interrelated social factors. Furthermore, the exact mechanisms by which these social factors influence the psychological developmental trajectories of adolescents with precocious puberty may not be fully understood. These gaps highlight the need for further research using more sophisticated methodologies, longitudinal perspectives, and a deeper consideration of sociocultural contexts to provide a more comprehensive understanding of precocious puberty and its impacts.

Given the importance of precocious puberty to society, the complexity of the interactions of the factors involved, and the existence of several obstacles and gaps in previous research, this scoping review aims to provide a comprehensive overview of the current research landscape related to precocious puberty and its impact on adolescent and family well-being. Specifically, this review aims to: (1) Map the various methodologies used to measure pubertal timing and evaluate their strengths and weaknesses. (2) Summarize findings regarding the association between precocious puberty and various aspects of adolescent psychological and social well-being, including mental health problems, readiness for biological changes, and quality of life. (3) Identify the role of family factors, such as parental social support and parenting styles, in moderating or mediating the impact of precocious puberty. (4) Explore the influence of broader social determinants on psychological outcomes in adolescents with precocious puberty.

The significance of this scoping review lies in its ability to identify established research areas and areas requiring further investigation. The results of this review are expected to provide valuable insights for researchers, health practitioners, policymakers, and families in understanding the challenges faced by adolescents with precocious puberty and developing more effective and holistic interventions to support their optimal development. By summarizing

existing evidence and highlighting knowledge gaps, this scoping review will contribute to the development of more targeted and impactful future research.

METHODS

Materials

This scoping review includes primary research articles, including experiments, interviews, surveys, and observations published between 2020 and 2024. Several databases were searched using Google Scholar and ResearchRabbit, while other databases used included ScienceDirect, Scopus, and PubMed. The following keywords were used for title or abstract bibliographic searches. ScienceDirect and Scopus used the keywords "early puberty OR precocious puberty AND child OR adolescent AND psychological impact AND social AND role of parent"; PubMed used the keywords "(((((((child) OR (adolescent)) AND (early puberty*)) OR (precocious puberty*)) AND (psycholog* impact)) AND (social impact))) AND (role of parent*)". The protocol used was the Preferred Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-Scr) to design the reporting method for the scoping review in this study. Prisma-Scr is a checklist for scoping review protocols containing 20 essential reporting items and 2 optional items that were developed.

Data Collection Procedures

An online search was used in data collection. Data collected was limited to articles in Indonesian and English. The types of articles collected were primary research articles, including experiments, interviews, surveys, and observations. The publication date of the articles was limited from January 2020 to December 2024. The articles used discussed Early Puberty in Children, Psychological Impacts, Social Impacts, and the Role of Parents, regarding sources of information obtained by parents and children about early puberty, regarding The study identified the needs and expectations for reproductive health services in children with precocious puberty. The study subjects were female only. Articles with titles related to the scoping review topic were used, and those that did not match were excluded. Furthermore, suitable articles were evaluated following the scoping review structure, and those that did not match were excluded. Exclusion criteria for this scoping review were those that were not fully met, including articles that were reviews, protocols, and commentaries. Articles that addressed the topic of puberty with hormonal disorders or specific diseases were excluded.

Data Analysis Procedures

Initial selection was based on article titles and abstracts. Afterward, the full texts of the selected articles were read, and the reference lists within those articles were also reviewed to obtain additional references. All articles deemed relevant were included, and duplicate articles were removed. The selected articles were then summarized using the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews Checklist) to organize and explain how the articles were selected, screened, and analyzed (Figure 1). Data charting was performed on the articles processed in PRISMA-ScR. (Table 1). This article serves as the reference for this Scoping Review.

PRISMA 2020 flow diagram for updated systematic reviews which included searches of databases, registers and other sources

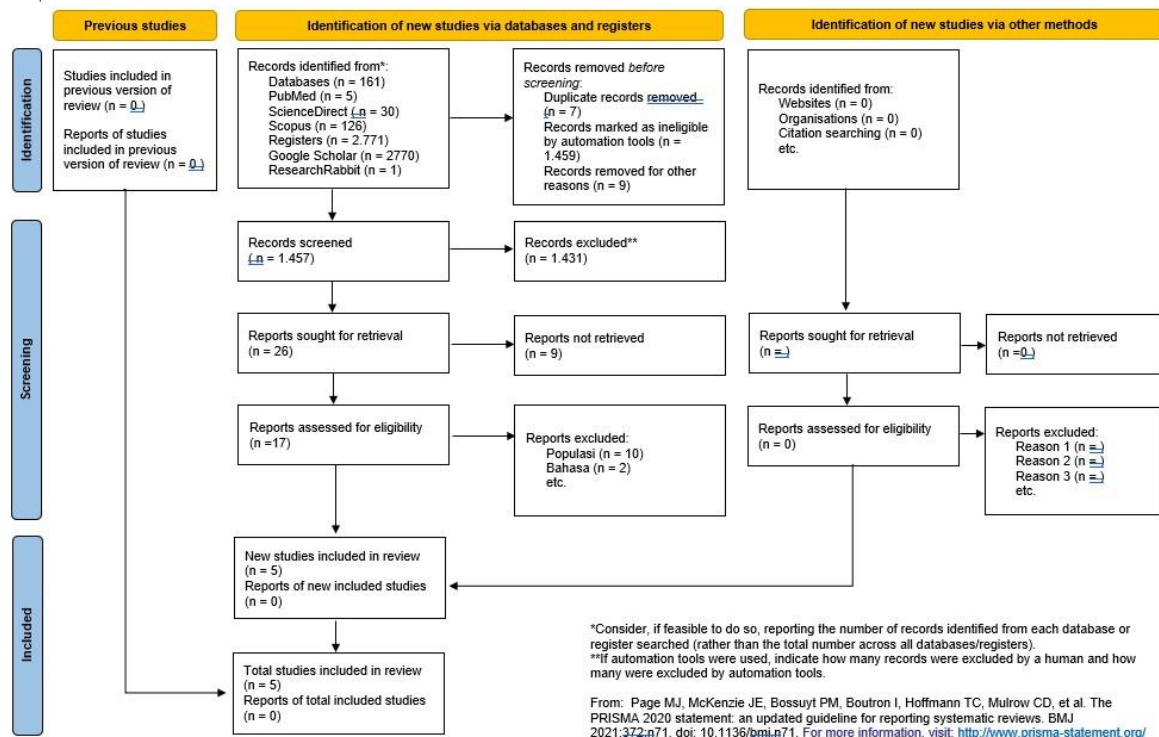


Figure 1. Prisma-ScR

Figure 1. 2,932 articles identified by examining article titles, abstracts, and full texts. Based on the review process conducted to select five studies related to Early Puberty in Children: Psychological, Social, and Parental Impacts.

Table 1. Data Charting LR

No	Author(s), Year	Title	Objective	Country	Research Design	Data Collection Methods & Instruments	Sampling Technique & Sample Size	Data Analysis Methods	Findings
1	Kwon et al., 2023	<i>The Mediating Effects of Parenting Style on the Relationship Between Parental Stress and Behavioral Problems in Girls with Precocious Puberty in Korea: A Cross-Sectional Study</i>	To examine the mediating effect of parenting style on the relationship between parental stress and behavioral problems in girls with precocious puberty.	South Korea	Descriptive (Quantitative), Cross-sectional	1. Parental stress questionnaire 2. Parents as Social Context Questionnaire (K-PSCQ) 3. Korean Child Behavior Checklist (K-CBCL) ages 6-18	Convenience sampling; 200 participants	PASW version 20.0 and PROCESS version 2; t-test, Pearson correlation, bootstrapping analysis	Significant associations were found between parental stress and negative parenting (r = .305, p < .001), internalizing problems (r = .378, p < .001), and externalizing problems (r = .203, p = .004). Negative parenting mediated the relationship between parental stress and behavioral problems.

2	Vijayakumar et al., 2024	<i>The Social Determinants of Emotional and Behavioral Problems in Adolescents Experiencing Early Puberty</i>	To investigate whether social environments buffer or exacerbate the relationship between pubertal timing and emotional/behavioral problems.	Australia	Longitudinal Prospective (Quantitative)	1. Pubertal Development Scale (PDS) 2. ABCD Study Release 4.0 (social environment) 3. Child Behavior Checklist (CBCL)	Representative sample: 10,254 (4,885 females); Analytic sample: 8,521 (4,050 females)	Exploratory & confirmatory factor analysis; Post hoc gender analysis; Regression analysis	Significant interaction between pubertal timing and proximal social influences (microsystem). Early puberty in adverse environments predicted greater behavioral and emotional problems. Females showed stronger associations with depressive symptoms.
3	Nabilah & Amalia, 2022	<i>The Relationship Between Parental Social Support and Readiness to Face Menarche Among Elementary School Girls at SDN Baginda 2</i>	To examine the relationship between parental social support and readiness to face menarche.	Indonesia	Quantitative	Questionnaires measuring parental support and girls' readiness	Total sampling; 35 participants	Chi-Square test	Significant relationship between parental social support and readiness for menarche ($p = 0.001$). Instrumental support was the most common form (80%).
4	Yang et al., 2021	<i>The Association Between Family Impact and Health-Related Quality of Life of Children with Idiopathic Central Precocious Puberty in Chongqing, China</i>	To assess the relationship between family impact and HRQoL in children with ICPP.	China	Case-Control Study (Quantitative)	1. Parent demographic questionnaire 2. PedsQL™ 4.0 Generic Core Scales 3. PedsQL™ Family Impact Module	Purposive sampling; 134 cases, 210 controls	Chi-square, t-test, ANOVA, Multiple stepwise regression	Children with ICPP had lower HRQoL scores (except physical functioning). Emotional functioning differed significantly ($d = 0.414$, $p < .001$). Family impact scores were significantly lower across domains. Several demographic and family factors predicted HRQoL.
5	Dehestani et al., 2024	<i>"Puberty Age Gap": A New Method of Assessing Pubertal Timing and Its Association with Mental Health Problems</i>	To develop a new multidimensional pubertal timing measure and examine its association with mental health problems.	United States	Longitudinal Cohort (Quantitative)	1. Pubertal Development Scale (PDS) 2. Salimetrics (hormone assessment) 3. Child Behavior Checklist (CBCL)	Purposive sampling; 11,500 children	ABCD Release 4 analysis; Pearson correlation; Wilcoxon Signed-Rank test; Linear regression	The combined pubertal age model predicted age more accurately than unimodal models. Early pubertal timing was consistently associated with various mental health problems in both males and females.

Table 1 shows five articles related to Early Puberty in Children: Psychological, Social, and Parental Impacts. The research was conducted in several countries, including Korea, Australia, Indonesia, China, and the United States. Based on the research design, all articles used a quantitative research design, one article used a descriptive design, two articles used a longitudinal design, one article used a correlational design, and one article used a case-control study.

Eligibility Criteria

Studies were included if they were primary empirical research articles employing quantitative, qualitative, or mixed-methods designs and specifically examined children or adolescents experiencing early puberty or precocious puberty. Eligible studies were required to discuss psychological, emotional, behavioral, social, or family-related impacts associated with early puberty and include parental support, parenting style, family influence, or related psychosocial dimensions. Review articles, editorials, conference abstracts, commentaries, and study protocols were excluded from the review. Studies primarily focused on hormonal disorders, endocrine diseases, or medical treatment outcomes without discussion of psychosocial dimensions were also excluded. Furthermore, articles that did not provide sufficient information regarding psychological, social, or parental aspects of early puberty or were unavailable in full text were not included in the final review. Unlike the previous version, this review did not intentionally restrict participants to females only, as studies involving both male and female participants were considered eligible when aligned with the review objectives.

Study Selection

The study selection process was conducted in several stages consisting of duplicate removal, title screening, abstract screening, and full-text review. Initially, all retrieved records were exported and screened for duplicate entries. Titles and abstracts were then evaluated according to the predefined eligibility criteria. Articles considered potentially relevant proceeded to full-text assessment. During the full-text review stage, studies were further evaluated based on their alignment with the PCC framework and the objectives of the review. The initial search identified 2,932 records, and after the screening and eligibility assessment process, five studies met the inclusion criteria and were included in the final synthesis. The overall article selection procedure was documented using a PRISMA-ScR flow diagram.

Data Charting and Extraction

Data extraction was conducted using a structured charting table developed by the authors to systematically organize the characteristics and findings of the included studies. Extracted information included author and publication year, country of study, research objectives, study design, participant characteristics, sampling methods, data collection instruments, psychological and social outcomes, parental or family-related findings, and the main conclusions of each study. This process facilitated comparison across studies and supported the thematic organization of findings.

Data Synthesis

The findings were synthesized narratively because the included studies demonstrated considerable heterogeneity in terms of study design, participant characteristics, and outcome measurements, making quantitative meta-analysis inappropriate. The synthesis focused on three major thematic areas, namely the psychological impacts of early puberty, the social impacts of early puberty, and the role of parents and family factors in shaping children's psychosocial experiences. Similarities, differences, and recurring patterns across studies were identified and interpreted descriptively to provide a comprehensive overview of the current evidence related to early puberty in children and adolescents.

RESULT AND DISCUSSION

This section will present the main findings from the reviewed articles. After a thorough selection and analysis of relevant articles, this scoping review successfully identified several findings related to systematic compilation under this title, as follows:

Psychological Impact of Precocious Puberty on Children

This section focuses on the emotional and mental consequences experienced by children experiencing precocious puberty. This section covers various aspects such as general mental health problems (e.g., anxiety, depression), self-image, and psychological stress. Article 1 specifically examines the relationship between pubertal timing and mental health problems, while Article 3 also addresses quality of life related to children's emotional health. Article 5 broadly discusses the social determinants of emotional problems in adolescents with precocious puberty. It shows that earlier pubertal timing (based on the difference between predicted age and chronological age using a machine learning model) is associated with higher symptoms of mental health problems in adolescents. This pattern is particularly strong when pubertal timing is measured based on physical development (Dehestani et al., 2024). A relationship was found between the impact of precocious puberty on the child's family and the child's quality of life, including the emotional dimension. The greater the family impact, the lower the child's emotional quality of life (Yang et al., 2021).

Several social determinants, such as low socioeconomic status, school bullying, and peer rejection, were identified as risk factors for increased emotional problems in adolescents with precocious puberty. Social support from peers and a positive school environment appeared to be protective factors (Vijayakumar, Youssef, et al., 2024). These data suggest that precocious puberty, especially when it occurs earlier than biologically and socially expected, can increase vulnerability to emotional problems. Family and social factors also play an important role in moderating this risk. Furthermore, the finding of a negative association between family impact and children's emotional quality of life (Yang et al., 2021) highlights the importance of the family context in the psychological well-being of children with precocious puberty. The stress and difficulties families experience in coping with the changes caused by precocious puberty can create a less emotionally supportive environment, which in turn is detrimental to the child's emotional quality of life. This data pattern is likely due to the fact that physical maturation that is not synchronized with the age of peers can lead to feelings of difference, shame, and increased self-consciousness, which contribute to anxiety and emotional problems (Dehestani et al., 2024).

The stress and difficulties experienced by families in dealing with early puberty (e.g., financial difficulties, changes in routine) can create a less emotionally supportive environment for children, which in turn affects their emotional quality of life (Yang et al., 2021). Negative experiences in social environments, such as bullying and peer rejection, can exacerbate feelings of isolation and low self-esteem in adolescents who may already feel different due to early physical development (Vijayakumar, Youssef, et al., 2024). Conversely, social support can provide a sense of security and acceptance, protecting against emotional problems.

These findings are consistent with previous research showing an increased risk of internalizing problems in children with early puberty. Other research has also highlighted the role of family stress and social support in influencing adolescent mental health. The new pubertal timing measurement method (Dehestani et al., 2024) offers a more sophisticated perspective than traditional methods, which often rely solely on age of menarche or breast development. (Vijayakumar, Youssef, et al., 2024) reinforces the importance of considering the broader social context, which is often underemphasized in research focused primarily on biological or family factors. The practical implications of this research emphasize the need for a multidimensional approach to supporting children with precocious puberty. Interventions need to address not only biological aspects but also consider the impact of family and social factors. Bullying prevention efforts in schools, promoting a supportive school environment, and increasing social support from peers can be important strategies to reduce the risk of emotional problems in this group.

Furthermore, support and resources for families facing the challenges of precocious puberty are also crucial.

Social Impact of Precocious Puberty on Children

This study demonstrates that social factors such as school bullying and peer rejection are significantly associated with behavioral problems in adolescents with precocious puberty. A positive school climate and supportive peer relationships appear to reduce this risk. This study explores how precocious puberty affects children's social interactions, including peer relationships, social acceptance, the risk of bullying victimization, and overall social adjustment. (Vijayakumar, Youssef, et al., 2024) specifically addresses the social determinants of behavioral problems, which often manifest in social contexts. This article also examines early physical development, which can make children appear and feel different from their peers, which can lead to rejection or bullying. Peer pressure that may emerge early (e.g., related to interest in the opposite sex or risky behavior) can be challenging for adolescents who are not yet emotionally or cognitively prepared (implicating asynchronous development). A supportive and inclusive school environment can help create an atmosphere of acceptance and reduce the risk of exclusion or bullying. The main findings of this study clearly indicate that social factors play a crucial role in the experiences of adolescents with precocious puberty. Conversely, the presence of a positive school climate and supportive peer relationships appear to function as protective factors. An inclusive and accepting social environment can help mitigate the negative impact of differences in physical development and minimize the risk of exclusion or bullying.

Peer support can provide a sense of belonging and social validation, which are essential for healthy psychological development during adolescence, especially for those experiencing early puberty. Previous research has also frequently reported that children with precocious puberty may face difficulties in social adjustment and are more vulnerable to bullying. The role of the school environment and peer support as protective factors has also been documented, and this finding is further strengthened in the context of adolescents with precocious puberty. This study reinforces the findings of previous studies that consistently report that children with precocious puberty may face difficulties in social adjustment and are at higher risk of being bullied. The protective role of a supportive school environment and positive peer relationships is also supported by the existing literature. A key contribution of this study is its confirmation in the context of adolescents with precocious puberty, a group that may require special attention in bullying prevention efforts and the promotion of inclusive social environments. The practical implications of these findings are significant. Schools play a crucial role in creating a positive climate and addressing bullying. Specific anti-bullying programs and efforts to raise awareness about differences in pubertal development can help create a safer and more supportive environment for all students. Furthermore, facilitating the formation of positive peer relationships and providing social support for adolescents with precocious puberty can help reduce the risk of behavioral problems and improve their social adjustment.

The Role of Parents in Addressing Precocious Puberty in Children

How parents influence their children's experiences of early puberty. This includes aspects such as parental social support (Nabilah & Amalia, 2022), parental stress and parenting style (Kwon et al., 2023), and overall family impact (Yang et al., 2021). The article (Nabilah & Amalia, 2022) found a relationship between parental social support and girls' readiness for menarche. Higher levels of support were associated with better preparedness. Greater impacts on the family due to early puberty were associated with lower quality of life (including emotional aspects). This implies that family stress and difficulties can negatively impact children (Yang et al., 2021). Parenting style mediates the relationship between parental stress and behavioral problems in girls with early puberty. Parental stress can influence parenting style, which in turn influences children's behavior (Kwon et al., 2023). The focus emphasizes the important role of parents. Positive support correlates with better outcomes for children, while parental stress and negative

family impacts can exacerbate the challenges children face. Parenting style appears to be an important mechanism in the transmission of parental influence.

Parental social support can provide information, emotional comfort, and a sense of security for girls facing menarche, thus enhancing their preparedness (Nabilah & Amalia, 2022). Parental stress caused by the challenges of caring for a child with precocious puberty can create a less supportive family environment and increase child behavioral problems (Kwon et al., 2023) and (Yang et al., 2021). Effective parenting styles (e.g., authoritative) can help children develop healthy coping mechanisms and mitigate the negative impact of parental stress or social pressure (Yang et al., 2021). Previous research consistently emphasizes the importance of parental support and positive parenting styles for adolescent development. Parental stress has also been identified as a risk factor for various childhood problems. These articles reinforce these findings in the specific context of precocious puberty. Nabilah & Amalia (2022) specifically highlighted the role of parental support in coping with menarche, a crucial aspect of puberty for girls. Yang et al. (2021) provided insight into the mediating mechanisms of parenting styles, furthering our understanding of how parental stress can influence children's behavior.

These findings are consistent with previous research that broadly recognizes the importance of parental support and positive parenting styles for overall adolescent development. The articles analyzed in this study specifically reinforce these findings in the unique context of precocious puberty, highlighting the additional challenges children and their families may face. Specifically, Nabilah & Amalia (2022) placed significant emphasis on menarche as a crucial aspect of puberty for girls, while Yang et al. (2021) and Kwon et al. (2023) highlighted the role of parental stress and parenting styles in influencing the psychological well-being and behavior of children with precocious puberty. The practical implications of this research emphasize the need for interventions and support aimed not only at children with precocious puberty but also at their parents and families. Programs aimed at reducing parental stress, improving effective parenting skills, and strengthening social support within the family can significantly improve outcomes for children experiencing precocious puberty.

Table 2. Demographic and Descriptive Characteristics of Included Studies

Characteristic	Category/Description	Frequency (Number of Studies)	Percentage (%)
Country of Study	United States	2	40%
	South Korea	1	20%
	China	1	20%
	United Kingdom	1	20%
Research Design	Cross-sectional	4	80%
	Longitudinal	1	20%
Main Focus of Study	Psychological Impact	2	40%
	Parental Role & Behavioral Impact	1	20%
	Family Impact & Quality of Life	1	20%
	Social Determinants & Emotional/Behavioral Problems	1	20%
Age Range of Participants (Children)	Mean age 8-12 years	3	60%
	Mean age 11-15 years	1	20%
	Mixed age range (broad age span)	1	20%
Gender of Participants (Children)	Predominantly Female	3	60%
	Mixed Male and Female	2	40%
	Anxiety and depression questionnaires (e.g., SCARED, CDI)	2	40%

Measurement of Psychological Impact	Quality of life scales (including emotional subscales)	1	20%
	Assessment of pubertal timing and correlation with mental health problems	1	20%
Measurement of Parental Role	Parental social support questionnaires (e.g., MSPSS)	1	20%
	Parental stress scale (e.g., PSI)	1	20%
	Parenting style assessment (e.g., PARQ)	1	20%
	Family impact assessment (condition-specific instruments)	1	20%

The theoretical implications of this study support models of child development that emphasize the importance of social context, particularly the family, in influencing healthy developmental transitions. Parental social support appears to be an important resource for girls in navigating the challenges and changes associated with early puberty. From a practical perspective, these findings underscore the need for interventions that involve parents in their children's reproductive health education. Programs aimed at increasing parents' awareness and skills in providing emotional and informative support to their daughters leading up to and during menarche could be particularly beneficial. Schools and health professionals could collaborate to develop educational materials and sessions that involve parents in this process. However, this study has several limitations.

The cross-sectional design does not allow for determining the direction of causality in the relationship between parental social support and menarche readiness. Future longitudinal research is needed to understand how this relationship evolves over time. Furthermore, this study was conducted on a single student population in a single geographic location, so generalizing the findings to different cultural or socioeconomic contexts should be done with caution. The sample size may also be a limitation in detecting smaller effects. For future research, it is recommended to use a longitudinal design to track changes in social support and menarche readiness over time. Research with larger, more diverse samples from various cultural and socioeconomic backgrounds is also needed to increase the generalizability of the findings. Qualitative research can also be conducted to gain a deeper understanding of girls' and parents' experiences and perspectives regarding social support and menarche readiness. Furthermore, future research could explore the role of other mediators or moderators, such as children's knowledge about menarche, peer attitudes, or cultural factors, in the relationship between parental social support and menarche readiness.

Psychological Dimensions of Early Puberty

The findings of this scoping review indicate that early puberty may be associated with increased psychological vulnerability among children and adolescents (Mastorci et al., 2024; Kretzer et al., 2024; Montreuil et al., 2025; Colich & McLaughlin, 2022; Ullsperger & Nikolas, 2017). Across the included studies, earlier pubertal timing was consistently linked with emotional and behavioral difficulties, although the strength and context of these associations varied between studies. Dehestani et al. (2024) reported that earlier pubertal timing was associated with higher levels of mental health problems in both males and females, while Yang et al. (2021) identified lower emotional quality of life among children with idiopathic central precocious puberty. These findings suggest that psychological outcomes related to early puberty are not limited to clinical symptoms alone but may also involve broader dimensions of emotional well-being.

The reviewed studies also demonstrate that psychological outcomes are shaped by contextual factors rather than biological maturation alone. Vijayakumar et al. (2024) showed that adverse social environments were associated with greater emotional and behavioral difficulties

among adolescents experiencing earlier pubertal timing. This pattern indicates that psychosocial experiences surrounding puberty may differ depending on family and social conditions. However, the included evidence primarily reflects statistical associations derived from observational studies. Therefore, although early puberty appears to be linked with emotional difficulties, the current literature does not yet provide sufficient evidence to establish direct causal mechanisms explaining how these psychological outcomes develop over time (Huppert, 2009; Lewis et al., 2020; Voelkle et al., 2018; Hinshaw, 2002; Hedström & Ylikoski, 2010).

Another important finding concerns the heterogeneity of psychological measurements across studies (Linden & Hönekopp, 2021; Olsson-Collentine et al., 2020; Van et al., 2017; Putnick & Bornstein, 2016). Some studies assessed emotional functioning through quality-of-life instruments, whereas others focused on behavioral symptoms or mental health indicators. This variation highlights the absence of a standardized approach for evaluating psychosocial outcomes in children with early puberty. Consequently, comparisons between studies should be interpreted cautiously, particularly because differences in measurement tools may influence the types of psychological outcomes identified (Nye & Drasgow, 2011; Sechrest et al., 1996; Podsakoff et al., 2003; Hui & Triandis, 1985).

Social Context and Adolescent Adjustment

The social impact of early puberty was less extensively examined within the included literature, although several studies suggested that social context may play an important role in adolescent adjustment. Vijayakumar et al. (2024) found that negative peer and school environments were associated with greater emotional and behavioral problems among adolescents experiencing early puberty. In contrast, supportive peer relationships and positive school climates appeared to be associated with lower psychosocial difficulties (Long et al., 2021; Odeyemi & Afonja, 2026; Wang, 2009; Butler et al., 2022).

Despite these findings, evidence regarding bullying, peer rejection, and social exclusion was relatively limited within the reviewed studies. These themes were primarily discussed in one longitudinal study rather than consistently identified across the entire body of literature. Therefore, the current review cannot conclude that social difficulties are universal outcomes of early puberty. Instead, the available evidence suggests that social experiences may vary according to environmental conditions, peer dynamics, and sociocultural contexts.

The included studies also reflect differences in study populations and settings. Some studies focused on clinically diagnosed precocious puberty, while others examined pubertal timing more broadly in community-based adolescent samples (Chavan et al., 2026; Mendle et al., 2019; Keenan et al., 2014; Keyes & Platt, 2024). These differences may contribute to variation in reported social experiences and psychosocial outcomes. As a result, the current evidence supports the importance of considering social context in understanding early puberty, while also highlighting the need for further longitudinal and culturally diverse research.

Parental and Family-Related Factors

Parental and family-related factors emerged as important themes across the reviewed studies, although the literature addressed these factors through different conceptual approaches. Nabilah & Amalia (2022) focused on parental social support and readiness for menarche, Kwon et al. (2023) examined parental stress and parenting style, while Yang et al. (2021) explored family impact and children's quality of life. Although these studies collectively emphasize the importance of family context, they represent distinct psychosocial constructs and should not be interpreted as interchangeable dimensions.

The findings suggest that supportive family environments may be associated with more positive psychosocial adjustment during early puberty. Nabilah and Amalia (2022) reported that higher parental social support was associated with better readiness for menarche among school-aged girls. Meanwhile, Kwon et al. (2023) found that higher parental stress levels were associated with negative parenting styles and greater behavioral problems in girls with precocious puberty.

Yang et al. (2021) similarly reported that greater family burden was associated with lower emotional quality of life among affected children.

Although these findings indicate the potential importance of family dynamics, most included studies used cross-sectional or observational designs. Consequently, the direction and stability of these relationships remain unclear. Family stress may contribute to children's psychosocial difficulties, but children's behavioral or emotional challenges may also increase parental stress. The current literature therefore suggests interrelated associations between family factors and psychosocial outcomes rather than clear causal pathways (Schreier & Chen, 2013; Devenish et al., 2017; Matthews & Gallo, 2011; Stilley et al., 2012).

Methodological Patterns and Research Gaps

Several methodological patterns emerged across the included studies. Most studies employed quantitative observational approaches, including cross-sectional, case-control, and longitudinal designs (Mann, 2003; Pérez-Guerrero et al., 2024; Mabikwa et al., 2017). Sample characteristics varied substantially, ranging from small school-based samples to large population cohorts. In addition, most studies focused predominantly on female participants, particularly in relation to menarche and precocious puberty, while evidence involving male adolescents remained comparatively limited (Cousminer et al., 2014; Parent et al., 2003).

The review also identified important gaps within the current literature. First, relatively few studies explored social experiences in depth, particularly regarding peer interaction, school adjustment, and broader sociocultural influences. Second, substantial heterogeneity existed in the measurement of pubertal timing, emotional outcomes, and family-related variables, limiting direct comparison across studies. Third, although two longitudinal studies were identified, much of the current evidence remains observational and cross-sectional, restricting understanding of developmental changes over time.

These findings indicate that future research may benefit from longitudinal and mixed-methods approaches capable of capturing the interaction between biological maturation, family context, and social environments across adolescence. Greater attention to cultural diversity and gender differences may also strengthen understanding of how early puberty is experienced in different populations.

CONCLUSION

This scoping review aims to map the existing literature on the psychological and social impacts of precocious puberty on children and the role of parents in coping with it. It also analyzes the relationship between parental social support and readiness for menarche in elementary school-aged children, as hypothesized in the introduction that higher social support would be positively correlated with better readiness. The results indicate that precocious puberty can increase the risk of psychological problems such as anxiety and reduce children's emotional quality of life, especially if pubertal timing does not align with developmental norms. In the social context, children with precocious puberty may face challenges such as bullying, while social support from peers and a positive school environment can be protective. The role of parents was proven to be significant, where good social support increases children's readiness for change, and parenting styles mediate the impact of parental stress on children's behavioral problems. These findings provide a comprehensive picture of the psychosocial challenges faced by children with precocious puberty and highlight the importance of social support from the surrounding environment, especially parents, in mitigating negative impacts. Longitudinal research with more sophisticated methodologies and considering diverse cultural contexts is needed to understand causal mechanisms and develop effective interventions. Substantially, these findings emphasize the importance of active parental involvement in their children's reproductive health education. Adequate parental support not only provides necessary information but also builds self-confidence and reduces anxiety that may arise with pubertal changes. Practical implications

highlight the need to develop and implement programs that empower parents with the knowledge and skills to provide effective support to their children during this transition.

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