

The Influence of Gender on Puberty-Related Anxiety: A Case Study of Adolescents in Urban School Settings

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ABSTRACT

KEYWORDS

Puberty; Anxiety;
Adolescent; Gender

Puberty is a critical transitional period in individual development marked by significant biological, psychological, and social changes. This study aims to determine the differences in anxiety levels when facing puberty between male and female adolescents. The method used is a quantitative approach with a comparative design. The research population consisted of students aged 12 to 15 years from SMPN 159 West Jakarta. A sample of 214 students was selected using stratified random sampling. Data were collected through an anxiety scale questionnaire developed by the author based on Spielberger's anxiety theory. The results of the independent-samples t-test showed a significant difference in anxiety levels between male and female adolescents ($t = 4.761$, $p = 0.030$), with female adolescents exhibiting higher anxiety levels ($M = 78.42$, $SD = 12.31$) compared to male adolescents ($M = 71.85$, $SD = 11.47$). In conclusion, there is a significant gender-based difference in anxiety levels during puberty, with female adolescents experiencing higher anxiety. This study contributes to the understanding of developmental psychology and serves as a basis for gender-sensitive psychological interventions in schools.

INTRODUCTION

Puberty is one of the most crucial stages in an individual's development. This phase marks the onset of sexual maturation and a series of significant changes in physical, psychological, and social aspects (Boivin et al., 2017; Cherenack & Sikkema, 2022). Puberty is often described as a period of "storm and stress" due to the intense emotional upheaval, drastic hormonal changes, and search for self-identity experienced by adolescents (Banerjee & Bajpai, 2023; Fantuz et al., 2024; Horton, 2024).

Recent studies reveal that when puberty occurs earlier than the normative age, it can trigger heightened anxiety. Adolescent girls are a vulnerable group as they must adapt to bodily changes and social perceptions more rapidly than their peers. Common symptoms of anxiety include nervousness, lack of self-confidence, and tension in social interactions (Zheng et al., 2024; MedlinePlus, 2023).

From a neurobiological perspective, the dual systems model explains that during puberty, the brain systems involved in emotional regulation (the limbic system) develop faster than those responsible for behavioral regulation and self-control (the prefrontal cortex). This imbalance can make adolescents more impulsive, prone to anxiety, and less capable of calming themselves when under pressure (Fryt, 2017; Harris, 2018; Hawks et al., 2015; Romer & Khurana, 2021; Steinberg, 2017). Additionally, the epigenetic approach suggests that stress experienced during puberty can leave biological traces on gene expression, which may

contribute to an individual's stress response patterns later in life (Zannas et al., 2022). In other words, puberty does not only have short-term impacts on adolescent emotions but also has the potential to influence long-term psychological stability.

Previous research in this area has provided valuable insights into gender differences in anxiety during adolescence. For example, a study by Zheng et al. (2024) found that early pubertal timing is significantly associated with higher levels of anxiety, particularly among female adolescents. Similarly, MedlinePlus (2023) reported that adolescent girls are more likely to internalize emotional distress compared to boys, who often externalize it through behavioral issues. Furthermore, Steinberg (2011) emphasized that the neurodevelopmental gap between emotional arousal and regulatory control during puberty is more pronounced in females, potentially explaining their higher vulnerability to anxiety. Earlier studies such as those by Arnett (1999) also highlighted that societal expectations and gender roles further amplify anxiety differences, with girls facing greater pressure regarding body image and social acceptance.

Kartini Kartono (1990) also emphasized that puberty is a time full of confusion and the search for identity. Adolescents at this stage are learning to recognize who they are but are often confronted with internal conflicts, societal norms, and expectations from their environment. This is where gender roles become relevant. Female adolescents tend to internalize their anxiety, whereas male adolescents are more likely to express it through external behaviors.

The researcher observed that in dealing with anxiety, everyone has different ways of acceptance based on gender. Males and females naturally display distinct behavioral traits in response to anxiety. Male behavior tends to appear more intense and explosive, while female behavior seems more emotionally restrained and bound by tradition and family rules. Males often begin to demand the right to determine their own fate and take part in decision-making, while females strive harder to seek affection and attention from their surroundings. Males generally seek to display a sense of heroism, whereas females are more likely to engage in daydreams and admiration of heroic traits. These behavioral differences sparked the researcher's interest in examining anxiety in boys and girls as they enter the developmental phase of puberty. The researcher considers this important because understanding anxiety during puberty is not merely a trivial or temporary issue but something that needs to be addressed appropriately. Understanding gender differences in responding to puberty can serve as a strong foundation for designing more effective and empathetic psychological interventions.

The research aims to identify the difference in anxiety levels between adolescent boys and girls in dealing with puberty within urban school settings. The findings of this study are expected to provide empirical insight into gender-specific anxiety patterns during puberty, which can inform the development of targeted school-based mental health programs. Additionally, this research contributes to the broader field of developmental psychology by offering a contemporary understanding of how puberty-related anxiety manifests differently across genders in an urban Indonesian context, thereby supporting more nuanced and culturally responsive intervention strategies.

METHOD

This study employed a quantitative comparative approach to determine differences in anxiety levels related to puberty between male and female adolescents. There are two main

variables in this study: Independent variable is Gender (male and female adolescents) and Dependent variable-Anxiety level in facing puberty. The population of this study consisted of all students in grades VII, VIII, and IX at SMPN 159 Grogol, West Jakarta, aged between 12 and 15 years. The sample was selected using stratified random sampling based on grade level. The sample size was determined using the Morgan Table, resulting in 214 students from a total population of 569. Prior to this, a pilot test of the instrument was conducted on 70 students. Data were collected using a closed-ended questionnaire based on a Likert scale, developed by the researcher based on anxiety indicators adapted from Panut Panuju (1999). This instrument measured common anxiety aspects experienced by adolescents during puberty. Data were analyzed using a comparative statistical test (t-test) to examine differences in anxiety levels based on gender.

Validity testing was conducted to ensure that each item on the instrument accurately measured the intended construct—puberty-related anxiety. Validity was tested using internal consistency through the Pearson Product-Moment Correlation, comparing each item score with the total score. Additionally, factor validity testing was conducted by correlating between factors and between each factor and the total score. These analyses were conducted using SPSS version 7.5, following procedures described by Saifuddin Azwar (1997). Reliability testing aimed to measure the consistency of the instrument when applied to the same subjects under similar conditions. It was assessed using Cronbach's Alpha formula via SPSS version 7.5. The reliability scores were classified according to standards from Guilford & Fruchter (in Agus, 1995) as follows:

Table 1. Reability

Reliability Value (r)	Category
> 0,90	Very reliable
0,70 – 0,90	Reliabel
0,40 – 0,69	Moderatly reliabel
0,20 – 0,39	Less reliabel
< 0,20	Not reliabel

Source: Adapted from Guilford & Fruchter (in Agus, 1995)

RESULT AND DISCUSSION

The questionnaire used in this study was a puberty-related anxiety scale developed by the researcher based on the theory of Panut Panuju (1999). A pilot test was conducted on 70 students, resulting in 41 valid items out of a total of 74 questions, with validity scores ranging from 0.213 to 0.598 ($p < 0.05$). The reliability test showed a Cronbach's Alpha coefficient of 0.782, which falls into the "reliable" category based on the classification by Guilford & Fruchter (in Agus, 1995). Further analysis of the valid items was performed using factor correlation with the Pearson Product-Moment formula, analyzed via SPSS version 7.5.

The main sample was selected using stratified random sampling based on grade levels. Using the Morgan Table, a sample of 214 students was determined from a total population of 569 students in grades VII, VIII, and IX at SMPN 159 West Jakarta, with an age range of 12–15 years.

Data analysis using a comparative statistical test (t-test) through SPSS revealed significant differences in anxiety levels between male and female adolescents. The results

showed a t-value of 4.761 with a significance level (p-value) of 0.030. Since the p-value is less than the predetermined alpha threshold of 0.05, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted. This indicates a statistically significant difference in anxiety levels between male and female adolescents when facing puberty.

Descriptive analysis further demonstrated that female adolescents exhibited higher mean anxiety scores ($M = 78.42$, $SD = 12.31$) compared to male adolescents ($M = 71.85$, $SD = 11.47$). These findings align with previous studies suggesting that female adolescents tend to experience higher levels of anxiety during puberty, which may be attributed to a combination of biological factors such as hormonal changes and menstrual cycles, as well as psychosocial factors including greater sensitivity to social evaluation and internalized stress responses.

The results support existing theoretical frameworks, such as the dual systems model (Steinberg, 2011), which highlights the developmental gap between emotional and regulatory systems during adolescence, and are consistent with earlier findings by Zheng et al. (2024) regarding gender differences in pubertal anxiety. This study contributes empirical evidence from an urban Indonesian educational context, reinforcing the need for gender-sensitive approaches in adolescent mental health support and school-based psychological interventions.

CONCLUSION

The data analysis reveals a significant difference in puberty-related anxiety levels between male and female adolescents at SMPN 159 West Jakarta, with females exhibiting higher anxiety influenced by biological factors like the menstrual cycle, as well as their greater susceptibility to instinctual and affective responses to change—findings consistent with prior views on gender disparities during this stage. Schools should implement gender-sensitive interventions, such as tailored group counseling or educational modules, while parents and teachers enhance their understanding to offer empathetic support. For future research, studies should broaden sample sizes and incorporate mediating variables like social support, parenting styles, or cultural factors to provide a more comprehensive view of adolescent anxiety dynamics.

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