

## Original Article

# Assessment of Puberty Changes Knowledge Scale and Challenges Faced by University Students of Islamabad, Pakistan; A Cross-sectional Survey

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## Abstract

**Objective:** To assess the knowledge of physical and emotional changes during puberty in male and female university students (18-24 years) in Islamabad

**Introduction:** Puberty is a crucial developmental phase, marked by significant adjustments in physical, emotional, and mental well-being. The ability of university students to cope with the changes of puberty is essential for their academic achievements & overall health,

**Methodology:** A cross-sectional study assessed knowledge of puberty changes among university students (18 – 24 years) in Islamabad. A survey of 175 students was carried out with an effect size of 0.3, a significance threshold of 0.05, and a power of 0.8 through G Power.

**Results:** The overall puberty knowledge score of girls was greater than that of the boys (65 vs 51%). Merely 18% of college students possessed adequate, 42% moderate and 40% possessed low knowledge. According to the logistic regression analysis, students who exercised regularly had a 57% lower likelihood of experiencing emotional challenges than students who did not (Odds Ratio -OR = 0.43, p = 0.03). A 50% lower chance of suffering from mental discomfort was linked to a balanced diet (OR = 0.50, p = 0.04). Students who received mental health support were 67% less likely to face emotional difficulties related to puberty (OR = 0.33, p = 0.01), indicating the strongest protective effect among the factors. Good & adequate sleep reduced the chance of emotional problems by 43% (OR = 0.57).

**Conclusion:** Cultural taboos and lack of health information continue to hinder young people's capacity to effectively manage the changes that come with puberty. This emphasizes the importance of interventions for college students to improve awareness of puberty changes.

**Keywords:** Knowledge, Puberty Changes, Adolescent Health, Mental Health, University Students

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## Introduction

Puberty, a critical growth stage, is characterized by profound changes in one's physical, emotional, and psychological well-being. It often starts in youth and lasts throughout young adulthood, frequently coinciding with when people start college. University students' academic success, well-being, and sense of self are all dependent on their ability to understand and manage the changes that accompany puberty.<sup>1</sup> Self-care is necessary to deal with these mental and physical changes effectively. When developing interventions for

college students, it is crucial to take into account the concepts of puberty changes and self-care.<sup>2, 3</sup>

University students experience a variety of changes that can impact their physical and mental health during this time. Physical changes like growth spurts, the emergence of secondary sexual traits, and hormonal changes can cause a variety of problems, such as problems with self-esteem, body image, and emotional control.<sup>4</sup> Navigating these changes can be intimidating for many students, particularly in an academic

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environment where personal independence, social connections, and academic demands can all add to stress.<sup>5, 6</sup>

The notion of self-care has gained relevance for university students globally in reaction to these shifts.<sup>7</sup> Self-care techniques including exercise, eating right, managing emotions, and having supportive relationships with others are vital resources for assisting adolescents in navigating the difficulties of puberty.<sup>8</sup> Many universities throughout the world have started to realize how important it is to support students' self-care by offering tools like wellness programs, health education, and counseling services. The major goals of these programs are to teach students how to take care of their physical health, deal with stress, become resilient, and promote good mental health.<sup>9</sup>

However, depending on personal aspects including socioeconomic level, cultural background, and resource accessibility, the efficacy of self-care behaviors varies greatly. Students' responses to these changes are influenced by a variety of factors, including gender roles, cultural perspectives on puberty, and awareness levels regarding mental and physical health.<sup>10</sup> Some university students may encounter cultural taboos and stigma that make it difficult for them to engage in effective self-care, while others may have access to comprehensive healthcare resources and a setting that promotes candid conversation about issues connected to puberty.<sup>10, 11</sup>

Puberty in South Asia is frequently perceived through the prism of conventional cultural norms and societal expectations, which profoundly influence the experiences of young adults (<sup>12</sup> Similar puberty-related difficulties are faced by university students in nations like Bangladesh, Sri Lanka, and India, but they are exacerbated by regionally specific socioeconomic and cultural variables.<sup>13, 14</sup> The focus placed by society on modesty and family values can affect how puberty changes are viewed and dealt with, which frequently prevents candid conversations about sexuality, reproductive health, and physical changes. Because of this, a large number of university students in the area might not have the information and resources needed to deal with puberty and engage in healthy self-care.<sup>15, 16</sup>

In 2022, 58.5 million out of 207 million people in Pakistan were in the 20–24 age bracket, making them the most populous age group, according to the United

Nations Population Fund (UNFPA).<sup>17</sup> Therefore, Pakistan having high number of young people has a difficult time making sure that they have the information and support needed to develop normally during puberty. In order to adequately serve this expanding population, it is imperative that knowledge gaps in sexual and reproductive health and rights (SRHR) be addressed.

According to a survey conducted in Lahore, 62% of teenagers said they were unable to exercise their SRHR because they lacked the necessary information and tools, while 52% blamed structural obstacles including a dearth of accessible literature and friendly surroundings. There are similar problems in other areas. A comparable lack of understanding on sexual health was observed in Riyadh, Saudi Arabia, where 54% of teenagers under the age of 15 and 70.7% of those over the age of 15 were found to have inadequate knowledge.<sup>18</sup> Additionally, a study done in United States found that 9.5% of students tried suicide, 28.5% had poor mental health, 20.4% seriously pondered suicide, and 39.7% of students had ongoing depression and hopelessness. These figures highlight the critical need for sexual and mental health education in order to enhance the resilience and general wellbeing of adolescents.

By filling in these gaps, a targeted study on Pakistani puberty-related information can assist pinpoint key areas for intervention and guide educational programs to improve SRHR, mental health support, and general adolescent health outcomes.

## Methodology

A total of 175 interviews were conducted for a survey to assess puberty knowledge among university students (18 – 24 years) in Islamabad, assuming an effect size of 0.3, a significance threshold of 0.05, and a power of 0.8 through G Power. Students of bachelor's & master's programs from the social and natural sciences departments at Quaid-e-Azam, COMSATS, and Islamic University were approached in libraries, labs, and departments. Participants were given a pretested, anonymous, self-administered structured questionnaire about their perceptions of puberty changes and a knowledge score sheet was prepared. These students were informed of the study's goal and their verbal consent was sought.

The study evaluated participants' comprehension of puberty knowledge through a validated instrument. Pilot

testing was done to improve its general efficacy, clarity, and dependability. Following the pilot group's input, the

tool was revised and examined by subject-matter specialists to make sure it was thorough and suitable for the goals of the study. Stratified sample approaches were employed to pick participants, breaking them down by departments, academic years, age groupings, and gender. By ensuring that a variety of viewpoints within the population were represented, this stratification improved the study's validity and generalizability by enabling it to gather a broad range of insights from various demographic subgroups.

The objectives of the study were to assess the knowledge of physical and emotional changes during puberty in male and female university students (18-24 years) in Islamabad, Pakistan through a knowledge level score and to find out the barriers faced by these students to access the sexual and reproductive health (SRH) information and services.

## Results

The demographic data of the study population indicates that 59.4% of the participants were female and 40.6% were male, reflecting the typical gender distribution in Pakistan's higher education institutions. The age range of the participants was between 18 and 24 years, with a mean age of 21 years. The socioeconomic backgrounds of the participants varied as well, with 51% reporting that they came from middle-income families and 44% from high-income families (Table I).

Variables	Categories	N	%
Age	18-20	78	44.6
	21-24	97	55.4
Gender	Male	71	40.6
	Female	104	59.4
Education	Bachelors	136	77.7
	Masters	39	22.3
Marital Status	Single	166	95
	Married	9	5
SES	Lower Class	6	3.3
	Middle	89	51
	Upper Middle	77	44
	Upper Class	3	1.7
Parents Education	Secondary	28	16
	Graduate	137	78.3
	Masters	10	5.7
Residence Area	Rural	65	37.2
	Urban	110	62.8
Categories	Hosteller	85	48.6
	Day Scholar	90	51.4

## Awareness of Puberty Changes

Knowledge Level Score: Only 18% of university students had satisfactory knowledge, compared to 42% who had moderate knowledge while 40% had low knowledge. The girls had higher knowledge (65%) in comparison to boys (51%) (Table II).

**Table II: Knowledge Level Score in Girls and Boys of University Students. (Girls n = 104, Boys n = 71)**

Knowledge Level	Good Knowledge (11 – 15 score) n (%)	Moderate Knowledge (6 – 10 score) n (%)	Less Knowledge (0 – 5 score) n (%)
Girls	21 (20)	47 (45)	36 (35)
Boys	10 (14)	26 (37)	35 (49)
Total	31 (18)	73 (42)	70(40)

The majority of students cited parents and friends as their primary knowledge source (40%), social media coming up next (30%), schools and educational institutions (20%), and only 10% learned anything from doctors.

Knowledge of Physical Changes: Sixty-five percent of female students knew about the menstrual cycle, and seventy percent of them accurately identified typical changes that occur during puberty. Compared to female students, male students knew less and were only 54% aware of changes that were distinctive to men.

Knowledge of Emotional Factors: Anxiety, impatience, and mood swings were among the strong feelings that many individuals reported feeling, however, 65% were unaware of the reasons for these changes. Only a few students (22%) were able to connect these feelings to changes in hormones. In addition, they had misconceptions regarding emotional health, such as the idea that mood swings are abnormal or should be repressed.

Dietary Habits: The majority of students (70%) ate a lot of processed and sugary meals, which was associated with poor energy and made mood swings worse. The particular dietary requirements throughout puberty, such as an increase in protein, calcium, and iron intake, were poorly understood.

Myths and Misperceptions: 29% of respondents thought that puberty was a myth, and growth stops at this stage. Just 32% of people felt comfortable talking about puberty-related subjects with family, compared to 66% with peers.

### Knowledge Barriers:

**Cultural Constraints:** Given societal standards and the stigma associated with talking about sexual and reproductive health issues, more than half of the students (55%) said they felt uneasy talking candidly about the changes that come with puberty.

**Lack of All-Inclusive Education:** About 75% of respondents said that their knowledge of puberty and self-care was limited due to a lack of material in school curricula.

**Limited Media Awareness:** There are frequently insufficient educational programs on media platforms, especially TV and internet channels, that are expressly focused on puberty and reproductive health. During a critical developmental stage, this omission restricts the amount of correct and age-appropriate information that adolescents can access.

### Mental Health Considerations

**Stress and Apprehension:** The participants reported that university students frequently suffer from elevated levels of stress and anxiety as a result of social expectations (62%), academic demands (74%), and difficulties in transitioning to adulthood (55%). Stressors like these can intensify the emotional difficulties that come with puberty, making feelings of inadequacy or fear of the future worse.

**Socio-economic Factors:** Participants from low socioeconomic backgrounds and rural settings demonstrated reluctance to discuss or seek treatment for mental health difficulties, while those from urban areas (65 vs. 45%).

**Regular Exercise** The students who exercised more had less mental stress and showed a 57% decreased risk of emotional discomfort.

**Balanced Diet:** The student who had good dietary habits (eating more fruit and vegetables and less junk) had less emotional distress by 50%.

**Sleep Patterns:** Students with irregular sleeping patterns showed more emotional distress and regular sleep showed 43% decreased emotional distress.

**Health Services Support:** There was a lack of support from health facilities, especially for emotional difficulties. There was a 67% decreased risk of emotional problems if appropriate support was available timely for mental stress to the students.

The results of the logistic regression analysis showed a strong correlation between different self-care behaviors and university students' risk of developing emotional difficulties throughout puberty. Exercise was linked to a 57% decreased risk of emotional discomfort (Odds Ratio (OR) = 0.43,  $p = 0.03$ ), while eating a balanced diet was linked to a 50% decrease in emotional difficulties (OR = 0.50,  $p = 0.04$ ). The biggest impact was found in the availability of mental health services, which was associated with a 67% decreased risk of emotional problems (OR = 0.33,  $p = 0.01$ ). Good sleep quality was associated with a 43% drop in emotional problems (OR = 0.57), although this result approached but did not reach statistical significance ( $p = 0.07$ ). Social support was linked to a 61% decrease in the likelihood of experiencing emotional distress (OR = 0.39,  $p = 0.01$ ). These results demonstrate how important self-care behaviors are for helping university students effectively manage the emotional difficulties associated with puberty. These activities include social connections, mental health assistance, physical activity, and a healthy diet.

## Discussion

The results of the present study on puberty knowledge scale in Pakistan show that teenagers have a poor awareness of important puberty-related topics, and many of them feel awkward talking about them because of social and cultural taboos. They have different perspectives on puberty and self-care due to cultural norms, ignorance, and restricted access to relevant health information. They are often poorly informed about sexual and reproductive health, according to studies done in urban Pakistan; this knowledge gap is exacerbated by a lack of access to trustworthy information. About 62% of Pakistani teenagers in an urban region, for instance, said they were unable to exercise their rights related to sexual and reproductive health, and 52% of them attributed this to systemic obstacles such as restricted access to resources and material that is suitable for their culture.<sup>19</sup> This local setting highlights the critical need for community-led and school-based initiatives that sensitively and accurately convey puberty information according to the local norms.

Other South Asian nations deal with comparable issues on a regional level. For instance, a 2013 study in Saudi Arabia revealed that 70.7% of adolescents over 15 and 54% of adolescents under 15 had inadequate knowledge of sexual health, indicating a regional trend



in which cultural and religious considerations restrict candid conversations about puberty and reproductive health.<sup>18</sup> This is comparable to Pakistan, where talking about puberty and sexual health is frequently seen as improper. According to regional comparisons, teenagers in South Asia face similar obstacles to puberty education, such as constrictive cultural attitudes and a lack of resources. This suggests that cooperative regional initiatives could be useful in resolving these problems.

Talks about puberty are often cloaked in cultural taboos, especially when it comes to SRH. Because of these social stigmas, a large number of university students in Pakistani universities struggle with puberty-related issues like mood swings, body image issues, and managing menstruation health without receiving enough support. Many young people lack knowledge about the physiological and emotional changes that occur during puberty, which can lead to stress and anxiety, according to the present study done in Islamabad. This is especially true for female students, who face additional challenges because societal norms prevent them from having open discussions.

Puberty presents several challenges, but self-care techniques like regular exercise, a healthy diet, and mental health awareness are crucial for coping. A study done in Lahore showed that there is a gap in health education on these matters at the school and university levels.<sup>20</sup> The study's logistic regression analysis supported the hypothesis that a low adoption rate of beneficial self-care activities is a result of this lack of education. The likelihood of emotional distress was lower among students who regularly exercised or had social support, indicating the value of creating an atmosphere that promotes candid discussions on SRH and helps students develop good self-care routines.

Additionally, cultural and religious beliefs frequently have an impact on students' health-related activities, such as their reluctance to meditate or practice yoga or seek mental health assistance.<sup>21</sup> Despite these obstacles, improvements in reproductive health education have been made, especially in major cities like Karachi, Lahore, and Islamabad.<sup>17</sup> To provide safe spaces for young people to address puberty-related difficulties and learn about self-care, more extensive interventions at the public university level are necessary. Nevertheless, these initiatives are frequently restricted to private institutions or community-based organizations.<sup>21</sup>

Due to similar cultural and societal frameworks, Pakistan is not alone in facing the difficulties associated with puberty and self-care. The South Asian area as a whole faces similar obstacles, as shown by the studies done in Bangladesh, Nepal, India, and other countries from talking about puberty and from getting enough knowledge about SRH.<sup>16</sup> The stigma associated with puberty and menstruation in India frequently prevents young women from receiving the care they need, which increases their chance of developing reproductive health problems later in life and causes mental anguish.<sup>22</sup>

Studies conducted in South Asia have demonstrated that young people's inability to manage the transitions associated with puberty is greatly impacted by their lack of health literacy. Adolescent health care is not given priority in public health systems in other South Asian nations, including Pakistan.<sup>13</sup> There aren't many school-based health education initiatives, and conversations about puberty changes are frequently left out or handled insufficiently. These gaps in SRH knowledge might cause kids to have more anxiety, despair, and problems with body image while they are in college when peer pressure and academic stress are already major factors.

Puberty education and self-care practices have drawn more attention globally, especially in high-income nations where substantial resources are devoted to the health of adolescents.<sup>23</sup> Comprehensive sexual health education, encompassing puberty management and self-care, is typically included in curricula in nations such as the United States, Canada, and many in Europe.<sup>24-26</sup> Young individuals who receive this kind of education have an easier time adjusting to the changes that come with puberty.<sup>27</sup> These environments promote the adoption of healthy self-care behaviors by students, which have a positive influence on their general well-being while attending university, including physical activity, stress reduction, and mental health assistance.<sup>28</sup>

## Conclusion

University students everywhere go through the changes associated with puberty; yet, how well they can handle these changes through self-care varies greatly depending on local, cultural, and geographical circumstances. The survey reveals a notable disparity in Islamabad University students' understanding of puberty and self-care. Although there is a general awareness, cultural norms, and inadequate educational

content are primarily to blame for the shallow and inaccessible nature of the information. The qualitative results highlight the necessity of gender-specific and culturally sound educational programs that foster emotional well-being and provide safe spaces for talking about puberty transitions. In conclusion, Globally, students gain from increased self-care awareness and resources, but local and regional differences, like those in Pakistan and South Asia, present serious obstacles. It is crucial to address these differences through health care, education, and cultural transformation to assist college students in controlling puberty and enhancing their general well-being.

This study on teenage puberty knowledge in Pakistan offers important new information about young people's present sexual and reproductive health awareness, obstacles, and educational requirements. The findings point to serious knowledge gaps, with many teenagers lacking correct information and encountering institutional or social barriers that prevent candid conversations about puberty. These results highlight the critical need for all-encompassing educational programs that close these gaps and support adolescents' healthy growth and mental health.

**Study Limitations:** There are several study limitations e.g. it was carried out in the universities in urban locations, which might not accurately reflect the levels of knowledge and difficulties that adolescents encounter in rural areas, where resources and support networks are scarce. Furthermore, because it is a cross-sectional survey, it only collects data at a single moment in time and is unable to evaluate how attitudes or understanding about puberty have changed over time. Response biases may also be introduced by self-reported data because participants may have been reluctant to provide complete or correct answers to delicate topics.

**Implications for the Future:** The study identifies important intervention areas and can guide future legislative and instructional initiatives. Addressing the identified knowledge gaps requires creating educational activities that are community-centered, school-based, and culturally sensitive. Furthermore, teenagers can better manage the emotional and physical changes of puberty by combining mental health care with puberty education, which will ultimately promote healthier transitions into adulthood. To gain a deeper understanding and provide tailored solutions for Pakistan's various teenage populations, future research should take into account longitudinal studies and expand sampling in the rural areas.

#### Student Recommendations:

- When creating university curricula, education authorities ought to take comprehensive sexual and reproductive health education into account.

- Initiatives involving parents and teachers could help create an open dialogue and reduce the stigma around puberty and self-care practices.
- University campuses can better meet the emotional requirements of students throughout puberty by establishing peer support networks and easily available counseling services.

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