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# Knowledge, attitudes, and coping strategies regarding pubertal changes among adolescent girls: Risks and compliances for health promotion in puberty

Malihe Farid, Zahra Amirkhanzadeh Barandouzi<sup>1</sup>, Nasimeh Setayesh Valipour<sup>2</sup>

## Abstract:

**BACKGROUND:** Adolescent girls experience physical, psychological, and social changes during puberty. Lack of sufficient information, skills, and readiness to overcome this stressful situation make them vulnerable. The present study aims to assess the level of knowledge, attitude, and strategy used for coping with puberty crises of female secondary school students in Karaj, Iran.

**MATERIALS AND METHODS:** Five-hundred and seventy female secondary school students from Karaj, Iran participated in this cross-sectional study. Knowledge, attitudes, and coping strategies of adolescents about puberty were evaluated using various questionnaires. The obtained data were analyzed using Chi-square, Fisher's exact, Kruskal-Wallis, Mann-Whitney, and Spearman tests.

**RESULTS:** The average age of participants was  $15.28 \pm 1.58$  years old. About 85.1% of the participants had high knowledge about puberty and 66.7% had a good attitude toward it. Nearly, 54.2% of the girls used the avoidance-oriented coping strategy. There was no significant relationship between knowledge and attitude regarding selective strategies to cope with stressful situations in puberty.

**CONCLUSION:** According to the results, continuous training in secondary schools is necessary to improve adolescents' knowledge and attitudes toward puberty. Moreover, more training is required to change the dominant avoidance-oriented coping strategy to a task-oriented approach, especially at the first-grade level in secondary school.

## Keywords:

Adolescent, attitude, coping strategy, girl, knowledge, puberty

Department of Community Health, Alborz Medical Science University, Karaj, Iran, <sup>1</sup>School of Nursing, University of Connecticut, Storrs, CT, USA, <sup>2</sup>School of Nursing and Midwifery, Alborz University of Medical Sciences, Karaj, Iran

## Address for correspondence:

Mrs. Nasimeh Setayesh Valipour,  
Alborz University of Medical Science, Karaj, Alborz, Iran.  
E-mail: [nasimsetayesh95@gmail.com](mailto:nasimsetayesh95@gmail.com)

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## Introduction

Adolescence is one of the most charming and convoluted periods in the life span which is bridging childhood and adulthood.<sup>[1]</sup> According to the World Health Organization definition, adolescence covers the time between 10 and 19 years of age.<sup>[2]</sup> Adolescent population constitutes about 1.2 billion and 85% of them live in developing countries.<sup>[3]</sup> According to the report of the population and housing

census (2011), 16.4% of Iran's population is within the 10–19 age group.<sup>[4]</sup>

The International Conference on Population and Development (2016) emphasized the unique needs of adolescents compared to adults.<sup>[4]</sup> Furthermore, the United Nations Population Fund has identified the health of girls as a key to breaking the cycle of poverty and meeting the millennium development goals.<sup>[5]</sup> United Nations International Children's Emergency Fund declared the need to focus on the improvement

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of juveniles, especially girls, as a way of accelerating the fight against poverty, inequality, and gender discrimination.<sup>[4]</sup> Iran, a country with a young population where about half of adolescents are girls, needs to be aligned with these goals.<sup>[6]</sup>

Despite the huge impact of girls' puberty on their family and child health, adolescence is also a time of potential substantial risks.<sup>[1]</sup> Adolescent girls experience various physical, emotional, and behavioral adjustments during puberty, due to dynamic changes in the brain and endocrine system. The unique nature of puberty highlights the importance of having knowledge and coping strategies to overcome the crisis of this period.<sup>[2,7]</sup> Previous research indicated the effects of puberty on adolescents' mood, self-image, and interaction with peers and parents.<sup>[8]</sup> Failure to pay enough attention to adolescents' needs during puberty may cause numerous issues such as infectious diseases, unsuccessful marriages, high-risk pregnancies, preterm birth, maternal and infant morbidity and mortality. In addition, more than 50% of adolescent girls experience mild to severe stress due to pubertal changes.<sup>[8]</sup> Various mental and psychological problems in adulthood rooted in this period.<sup>[9]</sup> Despite the potential risks of puberty and the critical needs in this time, adolescent girls usually do not receive specific health information and services.<sup>[5]</sup>

According to several studies, adolescent females lack sufficient knowledge regarding puberty. A dearth of knowledge could lead to a negative attitude toward the pubertal changes and inappropriate emotions such as anxiety and low self-esteem.<sup>[10]</sup> In turn, illiteracy and negative attitudes toward puberty could direct adolescents to select ineffective coping approaches.<sup>[11]</sup> Studies have also shown that girls use inefficient coping strategies such as avoidance more than boys,<sup>[11,12]</sup> which result in various behavioral and mental health issues such as aggression depression and anxiety in girls.<sup>[11,13-15]</sup> Thus, increasing knowledge and improving the attitudes of adolescent girls could create healthy behavior.<sup>[10]</sup> Research indicated that good knowledge and attitudes regarding puberty prepares adolescents not only for promoting their physical health but also for gaining more experience in coping with the struggles of puberty.<sup>[16]</sup>

Being equipped with coping skills to deal with various pubertal changes can result in a better adjustment of adolescents to the environment.<sup>[17]</sup> Coping strategies are often classified in three categories: emotion focused, task oriented, and avoidance coping. Emotion-focused coping attempts to reduce one's stress using techniques such as relaxation, crying, and screaming.<sup>[18]</sup> Task-focused coping includes strategies such as planning, active coping, and making use of social support. In avoidance coping, individuals attempt to avoid stressors or their

consequences. Adolescents who choose poor coping styles in critical situations generally experience lower self-esteem in the future.<sup>[18]</sup> Hence, gaining knowledge of puberty and having skills to cope with the struggles in this period could lead to better behaviors.<sup>[19]</sup>

In the present study, we have used the "knowledge, attitude and behavior" model, which asserts that the interaction between knowledge and attitude could shape behavior.<sup>[20,21]</sup> Moreover, attitude could motivate a person to gain more knowledge and consequently lead individual to select the coping strategy as kind of behavior in puberty [Figure 1].

Considering the needs of adolescents for better adjusting to the crisis of puberty, and the rapid pace of cultural change in the community, we aimed to determine the level of knowledge, attitude, and the selected coping strategy among the first- and second-grade adolescent girls regarding pubertal changes.

## Materials and Methods

### Study design and sampling

This cross-sectional study used a multistage random sampling method. First, simple random sampling was used to select schools in each stratum (study region). Then, in each school, a number of classes were selected randomly. According to the equation of determining sample size "estimation of a qualitative trait in a society," we considered the frequency of 50% as a good knowledge and frequency of 30.2% as positive attitude toward puberty.<sup>[18]</sup> The sample size was calculated 570 people by considering design effect of 1.5 and accuracy of (d) 0.05.

### Study setting and participants

The participants of this study were adolescent girls between ages 12 and 19 years and who were willing to participate in the study.

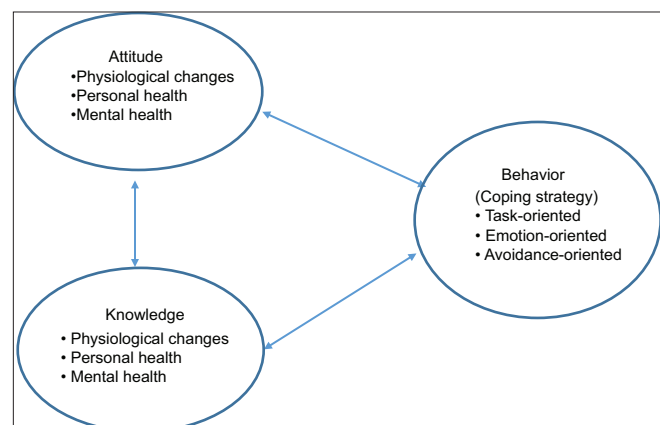


Figure 1: Knowledge, attitude, and behavior model

### Study questionnaires

In the present study, socio-demographic variables, knowledge, attitude, and coping strategies toward puberty among adolescent girls were evaluated. Sociodemographic variables such as age, grade, child order in the family, area of residence, education, employment status of the parents, and participants' source of information on puberty were examined using multiple choice questions.

Knowledge and attitude of adolescent girls regarding puberty (including physiological changes, personal health, and mental health) were examined using a valid and reliable questionnaire with Cronbach's alpha of 0.78% and 0.76% for questions assessing knowledge and attitude about puberty, respectively.<sup>[22]</sup> The questionnaire included 26 questions related to knowledge of the girls and 20 questions were related to attitude. Accordingly, the score higher than 70% was considered as good knowledge, a score of 50%–70% was classified as moderate, and a score of lower than 50% was determined as poor knowledge. A positive attitude was defined as a value higher than 70% of the maximum score, while a negative attitude was defined as <70%.<sup>[22]</sup> For assessing the coping strategies, the Endler and Parker's coping scale for stressful situations was used, which is also a multidimensional scale, including 48 items with a total of three task-oriented (16 items), emotion-oriented (16 items), and avoidance-oriented (16 items) coping strategies. The Persian version of this questionnaire had Cronbach's alpha of 0.83 for all 48 items: 0.86 for task-oriented items, 0.81 for emotion-oriented items, and 0.79 for avoidance-oriented coping strategy items.<sup>[23]</sup> The questions of this scale were scored on a five-point Likert scale. The dominant coping strategy of an individual was determined according to the highest score obtained. The minimum and maximum scores in all three coping strategies were 16 and 80, respectively.<sup>[24–26]</sup>

### Study data collection procedure and ethical consideration

After coordination with education districts and schools, a trained individual was sent to the selected schools to speak with students concerning the purpose of the study. Data were gathered after obtaining the informed consent from the students and providing explanations about the confidentiality of information.

### Data analysis

The SPSS statistical software (version 19, IBM Corp. Armonk, NY, USA) was used. Descriptive statistics as well as Chi-square test, Fisher's exact, Kruskal–Wallis, Mann–Whitney, and Spearman were utilized to analyze the data and determine the relationship between variables.

## Results

### Participants' demographics

In this study, 570 students participated, in which 98.8% of them belonged to the urban areas and the rest were from the countryside. The minimum age of the participants was 12 years and the maximum age was 19 years, with an average age of 15.28 ± 1.58. There were 299 students (55%) in the first grade and 245 students (45%) in the second grade of the secondary school. The most common source of information about puberty was mothers (39.6%) and then friends (10%). The highest education level of the parents was a high school diploma. Most of the mothers (83.6%) were homemakers, while 97.7% of fathers were employed [Table 1].

### Knowledge, attitude, and coping strategies about puberty

More than half of the participants (50.5%) had moderate knowledge about puberty and 66.7% of the participants had a good (positive) attitude toward puberty [Table 2]. The most frequent coping strategy selected was avoidance oriented (54.2%) [Table 3]. Spearman test showed a significant relationship between knowledge and attitude (Spearman coefficient = 0.54) (*P* = 0.000). However, Chi-square test did not reveal a significant relationship between knowledge and attitude regarding selective strategies to cope with pubertal changes [Table 4].

**Table 1: Sociodemographic information**

Variable	n (%)
Mother education, n (%)	
Lower diploma	256 (45.1)
Diploma and higher	312 (54.9)
Mother employment, n (%)	
Homemaker	470 (83.6)
Employee and retired	93 (16.4)
Father education, n (%)	
Lower diploma	228 (40.7)
Diploma and higher	332 (59.3)
Father employment, n (%)	
Jobless	3.2 (13)
Employee and retired	541 (97.7)

**Table 2: The knowledge and attitude status of students about puberty**

Knowledge and attitude	n (%)	Mean±SD
Knowledge		
Low	85 (14.9)	38.5 4±9.02
Medium	288 (50.5)	76.46±4.28
High	197 (34.6)	60.8 4±6.05
Attitude		
Weak	190 (33.3)	51.45±16.35
Good	380 (66.7)	81.68±7.98

SD=Standard deviation

### Knowledge, attitude, coping strategies, and related factors

Regarding the effects of parents' education on adolescents' knowledge, we did not see a significant relationship between student's knowledge and mother's education ( $P = 0.07$ ). However, there was a significant association with father's education ( $P = 0.005$ ). Moreover, the results of Chi-square test showed significant relationship between students' attitude and mother's and father's education ( $P = 0.003$ ,  $P = 0.001$ ) but the significant relationship between students' coping strategy and mother's and father's education ( $P = 0.35$ ,  $P = 0.084$ ) was not seen.

Fisher's exact test showed no significant association between coping strategy ( $P = 0.52$ ), attitude ( $P = 1$ ), and knowledge level ( $P = 0.26$ ) with place of residency. Chi-square test showed that maternal occupancy had a nonsignificant association with coping strategy ( $P = 0.66$ ) and knowledge ( $P = 0.24$ ) but a significant relation with attitude ( $P = 0.007$ ). There was no significant relationship between father's occupation status with coping strategy ( $P = 0.12$ ) and attitude ( $P = 0.71$ ). However, there is a significant one with knowledge ( $P = 0.016$ ). Furthermore, Chi-square test results indicated that the students in the second grade had higher knowledge ( $P = 0.049$ ) and attitude ( $P = 0.005$ ) compared to the first-grade students in the secondary school. Chi-square test also showed a significant relationship between coping strategies and school turnout ( $P = 0.01$ ). Second-grade secondary school students (9.8%) used a task-oriented coping strategy more frequently than the first-grade secondary school students (3.3%).

### Discussion

Adolescence as a transition period from childhood to adulthood encompasses physical, cognitive, emotional, and social changes.<sup>[27]</sup> Lack of knowledge and skills to cope with pubertal changes can result in various negative outcomes.<sup>[8]</sup>

The results of the current study showed that more than half of the adolescents had common knowledge of the signs of puberty that complies with the results of other studies.<sup>[28-35]</sup> However, Abdollahi<sup>[36]</sup> and Malekshahi<sup>[37]</sup> reported poor knowledge regarding pubertal changes among female adolescents. In the current study, more than half of the girls had a good (positive) attitude toward puberty signs, which is aligned with the results of other similar studies.<sup>[28,29,31-34,36]</sup> However, Sedighi Sabet *et al.* showed that most of the girls had apathetic attitude to puberty and only <5% of the participants had positive attitude.<sup>[30]</sup> Moreover, Sandhya and Bimala in a study in Nepal found that more than 80% of the adolescents had unfavorable attitude regarding pubertal changes.<sup>[8]</sup> The

**Table 3: Status of strategies to deal with the crisis of puberty in adolescents**

Coping strategies	n (%)	Mean±SD
Task oriented	35 (6.1)	38.4±9.8
Emotion oriented	226 (39.6)	47.1±10.1
Avoidance oriented	309 (54.2)	50.2±10.6

SD=Standard deviation

**Table 4: Knowledge and attitude regarding selective strategies to cope with puberty**

Knowledge and attitude	Coping strategies			Test	P
	Avoidance oriented (%)	Emotion oriented (%)	Task oriented (%)		
Knowledge					
Low	4 (4.7)	37 (43.5)	44 (51.8)	$\chi^2$	0.88
Medium	17 (5.9)	114 (39.6)	157 (54.5)		
High	14 (7.1)	75 (38.1)	108 (54.8)		
Attitude					
Weak	14 (7.4)	82 (43.2)	94 (49.5)	$\chi^2$	0.25
Good	21 (5.5)	144 (37.9)	215 (56.6)		

difference in results can be due to the discrepancy in the used questionnaires and differences in location of the studies, culture, and parents' education level. The reason for good knowledge and attitude of the adolescent girls in the present study can be attributed to having access to information resources such as internet and media which have been developed more during the last years, as well as increased parental education and better education environments for girls. The emergence of technologies such as mobiles, satellites, and increased knowledge of families are the major factors in improvement of girls' education. Moreover, a review study by Simbar *et al.* indicated that the impacts of increasing knowledge of puberty as well as positive attitude in girls during the recent years have led to a better understanding of issues related to puberty health.<sup>[34]</sup> Furthermore, we found a significant relationship between the scores of knowledge and attitude. Most similar studies in Iran also showed that students' knowledge and attitudes toward puberty are consistent in one domain due to the effects of knowledge on attitude.<sup>[22,23,28-31]</sup>

In the present study, adolescents' girls selected the following coping strategies respectively including avoidance-oriented, emotion-oriented, and last task-oriented strategy. In a study by Kadivar *et al.* on the relationship between the structure of family interactions (i.e., family function) with coping styles and gender differences in pre-university students, the most selected coping methods used by girls were task-oriented, avoidance-oriented, and emotion-oriented styles.<sup>[12]</sup> The results of the study by Bafekri *et al.* showed that the second- and third-grade high school girls had used task-oriented, emotion-oriented, and avoidance-oriented styles, respectively.<sup>[38]</sup> The results of the above research are not in line with the results of the present research

in terms of the order of the use of strategies. Difference in age, culture, and the research environment as well as psychological problems (e.g., depression, the level of anxiety of adolescents, the economic status of families, and the divorce of parents) are the reasons for the difference in the results. However, the reason for choosing the avoidance-oriented coping strategy needs more research. Other research suggests that by changing the cultural and social structures as well as the educational practices, girls use more task-oriented coping strategy to deal with crisis.<sup>[12,38,39]</sup>

Regarding the effects of age on knowledge and behavior, the results of this study showed that students in the second grade of secondary school had more knowledge and positive attitude toward puberty compared to the first-grade secondary school students. Furthermore, these second-grade secondary school students had used the strategy of task-oriented coping strategy significantly more than first-grade secondary school students. The results can highlight the role of age on the level of knowledge and attitude toward puberty as well as choosing the type of coping strategy. It seems that by increasing age and education, the skills of adolescents in solving problems will increase. The results of other studies also indicated that knowledge and attitude are related to the age of the student.<sup>[6,22,28,33]</sup> Given the effect of age on knowledge, the need for improving education and knowledge on puberty issues should be considered at lower ages. Moreover, Hojjatkhah *et al.* found that the 17-year-old boys who participated in the study compared to the 15-year-old boys were significantly more likely to use task-oriented coping style in dealing with stressful situations,<sup>[39]</sup> which is consistent with the results of the present study. It can be said that in both sexes, as the age increases, the use of the task-oriented approach is also increased. Also, in some studies, the dominant approach used by adolescents during puberty is task-oriented strategy, which emphasizes the validity of the current study's results.<sup>[12,40]</sup>

The present study showed that education level of parents was effective on students' knowledge and attitudes regarding puberty. Interestingly, adolescent girls receive health behaviors' information about puberty mostly from their mothers, which is consistent with the results of various studies.<sup>[6,34-36]</sup> Based on different researches, the level of maternal education is the most important factor affecting the level of knowledge, attitude, and practice of adolescents on issues related to puberty health.<sup>[28,32,33,35]</sup> The results of a study by Sajjadi *et al.* In 2010 showed that fathers with higher education were more knowledgeable and have better attitudes toward puberty signs. Moreover, Afsari *et al.* in 2017 in a study found that father's education had a direct impact on adolescents' knowledge about puberty health.<sup>[41]</sup> Father's

higher level of education in terms of culture provides the basis for more information exchange on puberty and more effective communications between fathers and daughters to overcome the crisis of the puberty.<sup>[42]</sup> Nevertheless, in a study by Kashefi *et al.*, there was not a significant relationship between student's knowledge and mother's education in this study. In other words, the average knowledge of puberty in girls whose mothers had elementary education was more than the average knowledge of girls who had mothers with a high school diploma.<sup>[43]</sup> One of the reasons for the dissimilar findings can be related to difference in research environment and culture. Mothers in bigger cities have less interactions with their children for education; so, the amount of time spend by parents is as important as the education level of parents in improving the adolescent girls' knowledge.

The results of the current study indicated the necessity of adding training courses about physical, psychological, and social health in puberty and the establishment of counseling offices regarding puberty health. In addition, mothers as the main source of knowledge acquisition for adolescent girls need to be trained by holding training sessions. Considering the fact that the dominant selected strategy was avoidance oriented, which is associated with lower self-esteem and higher levels of anxiety in adolescents, more studies are recommended to explore designing the type of effective training that will lead to increasing the knowledge and positive attitude of adolescents toward more effective task-oriented coping strategies.

## Conclusion

While the adolescent girls had good knowledge level and positive attitude toward pubertal changes, they suffered from lack of suitable coping skill in terms of using task-oriented coping strategy. It seems that good knowledge level and attitude cannot solely help the adolescents to cope with struggles in puberty. Further research is required to assess the best approach for educating and training of necessary coping skills and providing more practical and accurate plans for implementing these coping strategies among adolescent girls. Furthermore, in the present study, first-grade students had low knowledge and less favorable attitudes which lead them to use less task-oriented coping strategy in compared to the second grade students. Thus, the needs to focus on the education and training plans in younger ages is crucial to lessen the vulnerability of this group.

## Limitations

There are some limitations in the current study which must be considered during interpretation of the results. The limited sample size and cross-sectional design of this research limit the expanding of the study findings

regarding knowledge level, attitude, and their relations with coping strategies toward pubertal changes among adolescent girls. Another weakness of the study was the lack of male participants studying at equal grades as girls in the research. Hence, conducting a study on this group as a supplement to the present study is recommended.

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### Conflicts of interest

There are no conflicts of interest.

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