Investigating Factors Affecting the Early Onset of Puberty in Primary School Girls

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ABSTRACT

Background and objectives: The aim of this study was to identify the factors affecting early onset of puberty in primary school girls.

Methods: This study was done on 687 primary school girls living in Kordkuy, Iran. The sample size was calculated using the Krejcie-Morgan sample size determination table. Data were collected using interviews and a researcher-made questionnaire. The collected data were analyzed by SPSS (version 22) using the Chi-square test, Spearman's correlation coefficient and exploratory factor analysis.

Results: There was a strong positive correlation between level of awareness of girls and physical and psychosocial changes. Overweight, type of diet and watching satellite films were associated with the earlier onset of puberty.

Conclusions: Based on the results of our study, raising awareness of families about the harmful effects of satellite films and unhealthy eating habits may have a significant role in physical and psychosocial health of girls.

KEYWORDS: Age of puberty, health, students, girls

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INTRODUCTION

The term puberty is regarded as the first stage of adolescence, when effects of increase in hormones manifest by enlargement of ovaries and breasts in girls and growth of testicles and pubic hair in boys [1]. Boys and girls reach the peak of puberty by the age of thirteen and eleven years, respectively [2]. However, girls can reach puberty at the age of nine in some societies. Factors such as gender, inheritance, geographical region, body structure, nutrition, and health can affect the onset of puberty [3,4]. Nevertheless, many of the physical, cognitive, and social changes that occur during puberty introduce a negative feeling of unworthiness in adolescents toward themselves [5]. Neglecting the mental health of teenagers and the community is one of the major health problems. In Iran, inadequate education on puberty health based on standard resources is among the most important issues faced by adolescents [6,7]. Given the above, education on puberty health is necessary due to the unique circumstances and possible mental crises during adolescence. Family environment also has a main role in reducing anxiety. In addition, reliable sources of knowledge about puberty are generally limited to friends and peers, which are at best insufficient or sometimes incorrect [8-11].

Menarche (first occurrence of menstruation) is identified as the last sign of puberty, and its age of onset is influenced by several factors [12]. Considering the lack of information about the age at menarche and its associated factors, we evaluated the factors involved in early puberty of girls and their familiarity with puberty.

MATERIAL AND METHODS

This study was based on combined qualitative and quantitative approaches. We identified the factors affecting the early onset of puberty from the viewpoint of teachers, health educators and students through interviews. A questionnaire was prepared based on the results of the interviews and literature review. After verifying the validity and reliability of the questionnaire, the degree of familiarity of girls with puberty was assessed using a descriptive research method. The study population included all female students (n=687) in public primary schools of Kordkuy (Iran) in academic year 2015-16. The sample size was calculated using the Krejcie-Morgan sample size determination *table*. Fourth and fifth grade students were enrolled via purposeful sampling to prioritize the factors involved in early puberty based on the Delphi method. Next, three students were interviewed, and sampling was stopped when sufficient data were gathered. In order to determine the subjects' familiarity with puberty, fourth, fifth and sixth grade students were enrolled via *non-probability sampling*. The data collection methods included literature review, Delphi method and interview in the qualitative part of the study and a researcher-made questionnaire in the quantitative part of the study. The questionnaire was designed based on keywords obtained in the interviews, consisting of four questions on diet, four questions on films and seven questions on individual interests, which were assessed on a three-point scale of high/medium/low. The collected data were analyzed by SPSS (version 22) using Chi-square test, Spearman's correlation coefficient and factor analysis.

RESULTS

The average age of menarche was 11.4 years. Results of the Spearman's correlation coefficient showed that awareness of girls in primary schools has a direct relationship with physical (R=0.21), psychological (R=0.83) and social (R=0.84) changes during puberty. However, the age of puberty has a significant negative correlation with overweight (R=-0.218), watching satellite films (R=-0.415) and type of diet (R=-0.218) (Table 1).

Table 1. Correlation between factors affecting puberty (awareness, overweight, diet and satellite films) and physical-psychological changes of puberty in girls

Awareness and physical changes	Spearman correlation coefficient	0.218
	Significance	0.005
Awareness and psychological changes	Spearman correlation coefficient	0.830
	Significance	0.000
Awareness and social changes	Spearman correlation coefficient	0.846
	Significance	0.000
Overweight and age of puberty	Spearman correlation coefficient	-0.213
	Significance	0.001
Eating fast foods and puberty	Spearman correlation coefficient	-0.218
	Significance	0.000
Watching satellite films and puberty	Spearman correlation coefficient	-0.415
	Significance	0.000

Linear regression analysis showed that the variable of social changes had the greatest standardized coefficient (ß = 0.81) and a greater contribution to explaining of the dependent variable (Table 2).

Table 2. Standardized and unstandardized regression coefficients of variables affecting the awareness on puberty-related changes

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	**Standard error**	**ß**		
Constant	70.216	6.945	0.344	10.110	0.000
Psychological	6.271	1.257	0.344	4.911	0.000
Social	5.153	1.239	0.810	4.911	0.000
Physical	4.267	1.308	0.140	0.204	0.008

In exploratory factor analysis, three factors explained 82.06% of the variance scores for questions related to the factors affecting the reduced age of puberty, which indicates the favorable factor validity of these questions.

DISCUSSION

Most teenagers have insufficient information about puberty, sexuality and sexual health. Parents have a significant role in the physical education of their children. Therefore, raising the awareness in this regard and facilitating the access of teenagers to the correct and relevant information are crucial for their physical, psychological and social health. In this study, the average age of menarche was 11.4 years, which is lower than the results of similar studies [14-16].

In our study, the level of awareness of primary school girls in the city of Kordkuy

was related to physical changes and physical health during puberty. Awareness had a strong positive correlation with psychological changes and social changes. It can be concluded that timely education in the field of puberty health increases the level of awareness and creates a more positive attitude in girls. We found that the age of puberty had a negative correlation with overweight and fast food consumption. This finding is in line with the results of a previous study [1]. However, the association of delayed puberty and malnutrition has been demonstrated [15]. People who live urban areas have more access to the necessary nutrients and therefore may reach puberty earlier than those living in rural areas. Sufficient consumption of proteins, fatty foods and sweets has a significant role in this regard [1].

The results of our study also showed that watching satellite films decreases the age of puberty in girls. Exposure to sex-related stimuli and access to erotic films, magazines or images are among the factors that are involved in early puberty. These results are in line with findings of a study by Mollaei et al. [9].

CONCLUSION

The results of this study indicate that raising awareness of families about the harmful effects of satellite films and unhealthy eating habits has a significant role in physical and psychosocial health of girls.

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